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Healthcare Financing and Health Status Analysis in Nigeria

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Abstract

Low coverage of modern health care, low health service utilization, coupled with low and volatile income among households makes healthcare financing an important issue in low-income countries like Nigeria. Inadequate funding of the health sector and inequity in the distribution of health facilities across regions are the main constraints of providing basic health facilities in Nigeria. Nigerians are vulnerable to diseases of all kinds. The infant mortality and under-five mortality rates are high. Also, there is high prevalence of preventable ailments such as Malaria, Cholera and Lassa fever in some states of the country. Similarly, incidences of Tuberculosis and HIV/AIDS as well as death related cases are still on the high. Based on the Grossman's Model of Health Production Function and time series data spanning a period of 35 years, the study conducts an investigation into the Impact of Public Health Spending on the Status of Health in Nigeria. Public Health Spending has an inverse and significant impact on the rate of Infant mortality in Nigeria. The Government of Nigeria should improve on budgetary allocation to healthcare.

Key words: Healthcare Financing, Infant Mortality Rate, Nigeria

JEL Classification: I15, I110, I140

Paper Classification: Research Paper

Introduction

The importance of health to individuals, national productivity and growth cannot be over–emphasized. This is evidenced by the numerous enquiries into the relationship between health and human welfare in the literature. Evidence of the importance of health in growing the economy of a country have shown that good health raises the level of human capital, promotes the productivity capability of individuals in the country and facilitates the rate of economic growth (Cooray, 2013; Nkpoyen, Bassey, & Uyang, 2014). It enhances labour productivity by limiting incapacitation and un-healthiness among workers as well as reduces absenteeism associated with sick leave. Furthermore, sound health assists in improving the educational qualification attained by individual and household, thereby raising the scholastic performance

(Bloom, Canning, & Sevilla, 2004). While good health is desirable and important for the attainment of sustainable development, the health sector in Nigeria has experienced varying crisis that negatively impacted the growth of the economy. These are evidenced by the poor health outcomes recorded over the years. Nigerians are exposed to diseases of all kinds. For example, diseases, such as HIV/AIDS has a prevalence rate of 1,996 per 100,000, with an estimated 140,000 deaths reported in 2016; Tuberculosis incidence was 219 per 100,000 in 2016, with about 16% of them being HIV positive. In 2016, Nigeria accounted for 27% of malaria cases in Africa and an estimated 24% of global malaria death (WHO, 2018). The Nigerian health sector is further characterised by high rate of death associated with children under the age of one. For instance, about 70 deaths were reported in every 1,000 live births, with about 10% of the global figure recorded in Nigeria (United Nations, 2017). Similarly, under-five mortality rate stood at 104 in every 1,000 live births and the number of women that died owing to pregnancy related cases, stood at 814 for each 100,000 live births in 2015 (WHO, 2018). These further attested to the state of the Nigerian health. About 60 to 80 per cent of the country's health problems (majority of the top ten causes of morbidity) are estimated to be caused by preventable infectious diseases and malnutrition.

Furthermore, despite the high diseases burden, Nigerian public health sector has witnessed low coverage rates of modern health care and low health service utilization. Utilization of health care facilities is hampered by poor economic conditions and poor access to healthcare facilities (Umoru & Omolara, 2013; Nkpoyen et al., 2014), and rising cost of medical care. Also, the average health facility-population ratio is low and worse in rural areas. For instance, in 2014, the national doctor-patient ratio stood at 1:3500, much lower than the WHO minimum standard of 1:600. While, there are private healthcare facilities, they are concentrated in the urban areas and characterised by high charges. In addition to these problems are high level of poverty, inequitable and unsustainable healthcare financing. These tended to hamper the effective delivery of the health system in Nigeria. A substantial proportion of Nigeria population is poor with worse health status. Poverty incidence is widespread; Nigeria has the highest number of people living in extreme poverty. About 86.9 million Nigerians which represent 48.3% of about 180 million people is the largest extreme poverty population in the world. A substantial proportion of its population (53.3%) is multidimensionally poor while an additional 17.5 per cent are near multidimensional poverty (OPHI, 2017). The possibility of public financing of healthcare and sustainability of the funding calls for concern in Nigeria with this high level of poverty.

The yardstick for accessing the efficacy of health financing system is associated with three distinct fundamentals: generating adequate resources to provide the needed amounts of healthcare, accessible coverage of required services particularly among the low-income households and provision of insurance mechanism for the poor (Normand & Thomas, 2008; Thomas & Darker, 2013). According to Thompson, Moore, Vom, Saal & Swan (2009), there are several forces constraining funding of healthcare, however, a major call for concern is the sustainability of finance.

Out-of-pocket spending is an important channel of financing medical care in Nigeria, while the public funding of healthcare is low as evidenced by the poor resources assigned yearly to the health sector in the budget. Public health expenditure represents an insignificant proportion of overall government spending in Nigeria. The budgetary allocation to health as a percentage of overall public spending was 3.7% in 2014; however, it increased to 4 per cent in the year 2018. In Nigeria, private spending on health constitutes an important proportion of the aggregate health expenditure. Meanwhile, out-of-pocket spending is a significant amount of private health spending, it accounted for about 90 per cent on the average. Out-of-pocket spending as a portion of current expenditure on health was 75.2 per cent in 2011 but declined steadily over

the years and stood at 72.2 per cent in 2015 (World Bank,2018). However, the huge out-of-pocket spending could have adverse consequences on poor household, such as reduction in non-medical consumption resulting in reduced welfare.

Similarly, access to formal insurance is poor. The formal health insurance scheme in Nigeria is not accessible to all and formal risk-sharing institutions are insufficient. Less than ten per cent of Nigerians are insured in the formal health insurance scheme, with most enrolees employed in the formal sector of the economy, while most employees in the informal sector are not captured (NHIS, 2015).

Healthcare financing is a challenge for individuals and most developing countries. The coverage of healthcare funding encompasses all households, the employed and unemployed, rich and poor, and the rural household and urban dwellers. Therefore, funding healthcare involves a huge financial outlay for developing countries in an attempt to operate a sustainable health financing system to the benefit of all stakeholders. The state of health outcomes is a function of the nature of healthcare financing and the behavior of individuals. Therefore, the nature of health funding corresponds with provision of health facilities, and determines the ability of the health system to promote the country's economic development (Rao, Salvaraju, Nagpal, & Sakthivel, 2009).

Although there are different means of financing health in Nigeria, the health system funding is associated with inequality. According to Olaniyan & Lawanson (2010), health resources are not evenly distributed among urban and rural areas. Rural sector suffers from inequitable budgetary allocation to health. However, there seems to be no justification for the limited resources expended on the health sector, as evidenced by the poor health indicators.

Some studies (Kim & Lane, 2013; Asbu, Masri, & Kaissi, 2017; Nwakanma & Namdi, 2013) carried out an investigation on the influence of public financing of health on the status of health in developed countries and high income regions using panel data approach without accounting for the individual characteristics among the countries, this makes generalization of conclusion difficult. Also, the dominant econometric approach applied in the analysis of existing studies (Yaqub, Ojapinwa, & Yussuff, 2012; Ibukun & Komolafe, 2018; Riman & Akpan, 2012) that are country specific was the ordinary least square (OLS) or estimated the Logit regression model, however, results from this technique tends to be biased and leads to inaccurate inferences because OLS breaks down whenever the series are of mixed order of integration. The study bridged this gap by applying the Autoregressive Distributive Lag Approach (ARDL) in exploring the relation among health financing and measures of health outcomes in Nigeria.

Healthcare Financing Mechanisms in Nigeria

Health care financing simply represents the stream of funds from patients to providers of health care in exchange for health services. According to Oyefabi, Aliyu, & Idris (2014) healthcare financing is the mobilization of funds for healthcare services. That is, it is the provision of resources in terms of money or funds to various activities such as the provision of medical and related services put in place by the government to maintain people's health. Thus health care financing concisely refers to the "quantity and quality of resources a country spends on the provision of health care". It is a reflection of the value placed on health in comparison with other categories of goods and services. As opined by Metiboba (2012), the nature of health care financing in a country evidently connotes the formation and conduct of different stakeholders in the country including the nature of health services delivered.

Healthcare financing pattern is argued to be associated and connected with the provision of health services (Rao et al., 2009). Specifically, the issue of funding healthcare should not be limited to the raising of resources to meet health care needs (Riman & Akpan; 2012). It should ensure the accessibility, affordability and guaranteed protection against financial risk in a manner that no household is left worse off because of a necessity for healthcare. In agreement, Metiboba (2012) stated that analyzing health care financing is filled with some difficulties particularly when health care finances are directed towards a particular benefitting groups and community such as immunization against certain transmissible diseases, malaria control and environmental cleanliness. Other identifiable problems when analysing the financing of health care include spending on the basic needs of life by the public. The existence of a jointly exclusive relationship between the abovementioned also amplifies the complexity of health care financing analysis.

In order to sufficiently provide financial protection for healthcare needs of households, health care financing mechanism incorporates a risk-sharing approach whereby healthcare expenditure is not incurred by just an individual or household. This has brought about the "Universal Health Coverage" (UHC). This is to make certain that households have adequate access to medical care without incurring appalling health spending. The government aimed to achieve this by pooling risk through the establishment of the National Health Insurance Scheme in 2005. However, since its commencement, the scheme has only been executed successfully for those employed in the formal population of the federal government and this represents not more than five per cent of the employed population in Nigeria. Though the initial plan was to incorporate the scheme at the state level; nine (9) years after its commencement, the scheme has only been incorporated successfully by two states. As a result of this, the Nigerian government is carrying out deliberate efforts to establish strategies which will expand the coverage of health insurance from the formal employment in the federal government to the state level, to the local level as well as those engaged in the informal sector of the country. It is only when this is put in place that it can be said that the primary aim of universal coverage is achieved.

On the other hand, achieving Universal Coverage is not an easy one particularly in cases where the population employed in the formal sector is small when compared to the entire population. As a result of this, several suggestions has been raised such as coming up with Health Insurance policies that emanate from local communities; that is, a Community-based Health Insurance Policy (CBHI). This entails households pooling resources together and such funds are made available for any household in need of medical care. An additional approach is a situation where the health needs of individuals and households not engaged in insurance schemes are funded from tax revenue. This is referred to as a "Tax-funded Health Scheme". Finally, countries like Ghana are proposing the idea of a onetime payment for health care services known as the "One-time Premium Payment Policy" to particularly serve those engaged in the informal sector.

How a country's health care system is financed determines the way universal coverage for healthcare services in a country is attained. The goal of the universal health system is to ensure adequate mobilization of resources from different sources to meet household need for health care in order not to bear the entire burden of funding healthcare.

In Nigeria, the amount of revenue set aside for financing health services comes majorly from pooled sources such as budgetary allocations, indirect and direct taxation, fund from donors and un-pooled sources. However, the un-pooled sources which come in the form of pocket payments; fees and payments for goods, constitute the highest component; of more than seventy per cent of total health expenditure. Despite this, in Nigeria, health care finances are still unduly distributed and characterised by inequity across different health systems, sectors and regions. The total

amount spent on health services in Nigeria is quite low even when compared to other countries in Africa. The total amount set aside for healthcare spending is an insignificant proportion of the Gross Domestic Product; for instance, it was approximately 5 per cent between 1998 and 2000. This was far below that of other developing economies in Africa; Malawi recorded 7.2%, Kenya estimated 5.3%, Zambia recorded 6.2%, Tanzania had 6.8%, and South Africa 7.5% (Soyinbo, 2005). This can be attributed to ease in accessing the revenue of those employed in the formal sector by the government and this constitutes just 47% of the total working population. Though those employed in the informal sector are in the higher proportion, there is difficulty in accessing their revenue as a result of poor collection systems for taxes, lack of consensus on the formula for revenue collection and also the lack of confidence on tax collectors. Therefore, achieving a thriving and effective system for health care financing remains a challenge in Nigeria.

Literature Review

Empirical evidence abounds on the influence of health financing and health outcomes in advanced and low-income countries. Bein, Unlucan, Olowu, & Kalifa (2017) studied the relation that exists between health financing and measures of health state among East African countries. The findings revealed that health expenditure and the number of years an individual is expected to live on average moves in the same direction. Meanwhile, the influence of health financing on the prevalence of infant mortality, under-5 deaths and neonatal death was negative. In another light, Anton & Onofrei (2012) argued that a major characteristic of health sector in less-developed economies is the inadequacy of finance. This is largely due to the poor state of the economy that has caused several governments to adjust the amount of resources that go into health sector. The study examines the performance of the health system in some chosen countries in Europe on total health expenditure. The study found that per capita income and total amount of GDP expended on health was significant in explaining the variation in health status across Central and Eastern Europe. Kim & Lane (2013) investigated the association between spending on health by the government and health status in some selected advanced countries. The study finds that increased government spending improves the health status of individuals. (Nwakanma & Namdi 2013) examined the efficacy of financing healthcare on health profile in West African countries. The findings revealed that private spending is the major source of funding health care in West Africa. The study also finds underinvestment in the health system by the governments across West Africa.

Asbu, Masri, & Kaissi (2017) explored the link between health funding and health system. The study finds that the growth of total health expenditure does not correspond with the growth rate of Gross Domestic Product. It was further reported that out-of-pocket spending (OOPS) was catastrophic with a high risk of households becoming poorer due to payment of medical care. Therefore, government should intensify health financing. Similarly, Riman & Akpan (2012) analysed the linkage among health financing and health outcome in Nigeria. The study reveals that infant mortality rate corresponds to high out-of-pocket expenditure and inequitable distribution of income. The study further shows that health facilities are concentrated in urban areas to the detriment of rural areas. Olakunde (2012); Uzochukwu, Ughasoro, Etiaba, Okwuosa, Envuladu, & Onwujekwe (2015) identified tax revenue, out-of-pocket (OOP) spending, aids from donor, and formal and informal insurance mechanism as means of funding health care. The authors opined that low investment is a common feature of health system and suggest re-evaluation of existing means of financing health system in Nigeria. While examining the efficacy of public spending in health on condition of health in Nigeria, Yaqub, Ojapinwa, & Yussuff (2012) showed from their empirical results that government health spending negatively impacts infant and under-5 mortalities; however, this was attributed to corruption in the health system and

Ibukun & Komolafe (2018) analyzed the prevalence of household catastrophic health spending in Nigeria. From their findings, they revealed the need to improve health financing and provide social intervention mechanisms to mitigate the adverse effect of catastrophic health spending.

Theory and Methodology

Theory

In order to establish the linkage between resources invested in health sector and health outcomes in Nigeria, this research uses a framework that captures health financing as health input that generates health outcomes such as provision of modern health facilities and access to health system. This framework draws heavily on the production function of health developed by Grossman (1972). This model views health resources as an input or investment in the health system that yields improvement in the health sector. Developing countries tended to emphasize on the need for adequate health funding given that good health is a catalyst for economic development. Health financing comprises public and private financing; however, the prevailing healthcare system in a country always informs the health financing models need to be adopted. The predominant source of financing health in the less developed economies is direct government funding. This can be attributed to the role of government in the creation and execution of health plans. A major issue of health financing in developing countries is inadequate budgetary allocation or poor implementation, hence the poor state of health.

The economic consequences of health funding on health outcomes, given the health production frontier (shows the corresponding relationship between resources invested in health and health outcome as extra health inputs are used in the production of health) in Nigeria can be examined using the relation specified below

$$HS_t = f(HE_t, X_t) \qquad (1)$$

Where *HS* is health outcome index showing the health status in Nigeria, is total expenditure on health, which is a major force determining health status in Nigeria, while infant mortality is a proxy of health status in Nigeria, socio-economic confounding variables that affect health status over time are denoted as *X*.

Research Methodology

Based on the theoretical framework discussed earlier, this section specifies a model (equation 2) to assess the interrelation between healthcare financing and health outcomes in Nigeria as

$$\mathrm{IMR}_t = \beta_0 + \beta_1 \mathrm{HE}_t + \beta_2 \mathrm{ADR}_t + \beta_3 \mathrm{POP}_t + \mu_t \qquad (2)$$

Where: is infant mortality rate (Per 1,000 live birth) at time t, denotes total expenditure on health at time t, is age dependency ratio (% of working-age population). is the population at time t, while stands for random error term.

β_1, β_2 & β_3 are parameters to be estimated.

Given that the series are of different order of integration, the study employed the ARDL technique proposed by Pesaran, Shin and Smith (2001) to establish the cointegrating relationship among the series. The ARDL model for equation 2 is presented below:

$$\Delta \ln IMR_t = \beta_0 + \sum_{i=1}^{n-1} \beta_1 \Delta \ln IMR_{t-1} + \sum_{i=1}^{n-1} \beta_2 \Delta \ln HE_{t-1} + \sum_{i=1}^{n-1} \beta_3 \Delta \ln ADR_{t-1} + \sum_{i=1}^{n-1} \beta_4 \Delta \ln POP_{t-1} + \lambda_1 \ln IMR_{t-1} + \lambda_2 \ln HE_{t-1} + \lambda_3 \ln ADR_{t-1} + \lambda_4 \ln POP_{t-1} + \mu_t \quad (3)$$

Where Δ lag operator, $\lambda_1 \, to \, \lambda_4$ The long-run association between the variables can be

establised by testing the validity of the hypothesis $\lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = 0$ The F-statistic values must be higher than the critical value of the upper bounds at a conventional significance level, in order for the series to cointegrate, otherwise, the null hypotheses of no long run relationship cannot be rejected. If cointeggration is establised among the series, both short-run and long-run coefficients are estimated (Pesaran et al. 2001).

The impact of health inputs (total health expenditure, age dependency ratio and total population) on health status (infant mortality) in Nigeria was determined by estimating the long-run parameters in equation 3. The short-run dynamics and error correction model are estimated. The error correction model is specified as

$$\Delta \ln IMR_t = \beta_0 + \sum_{i=1}^{n-1} \beta_i \Delta \ln IMR_{t-1} + \sum_{i=1}^{n-1} \theta_i \Delta \ln HE_{t-1} + \sum_{i=1}^{n-1} \delta_i \Delta \ln ADR_{t-1} + \sum_{i=1}^{n-1} \eta_i \Delta \ln POP_{t-1} + \alpha ECM_{t-1} + \mu_t \quad (4)$$

The ECM measures the speed of adjustment to long-run equilibrium after a short-run distortion in the model. According to Narayan (2005), the system can only converge to equilibrium in the long-run, if the coefficient of the error correction model is less than zero and negatively signed.

The study also examines the consistency of coefficients of the estimates based on chi-square and Lagrange Multiplier (LM) test as well as stability test using recursive residuals. The null hypothesis for the respective diagnostics tests stated that the residuals had no serial correlation, are normally distributed and homoscedastic.

On a priori ground, total health expenditure is expected to be negatively and significantly associated with infant mortality. That is, greater spending on health should yield improved health status in an economy.

Data Requirement and Sources

To ascertain the economic outcomes of health financing on health status in Nigeria, this study employs annual series sourced from the Word Bank Development Indicator database over the periods 1981-2015. The selected years were chosen based on data availability. Infant mortality was measured per 1,000 births. In addition to public expenditure on health care, this study includes variables that are identified in previous studies as major determinants of state of health. The natural logarithm of the series is utilized in this study.

Results and Discussion

Descriptive statistics of the series utilized in the analysis are presented in Table 1. The average number of infants dying before their first birthday in every 1,000 births was approximately 108. This figure is alarming when compared to the global average of 31.2 and 29.4 in 2015 and 2017 respectively. Nigeria recorded a maximum value of about 126 infant deaths within the period and

all time low figure of about 68 infants dying before age one. The series recorded positive skewness except IMR whose distribution is tailed to the left.

Table 1: Descriptive Statistics

	Infant Mortality Rate	Health Expenditure	Age Dependency Ratio	Population
Mean	107.5886	49.68796	89.17134	1.21E+08
Median	117.1000	4.742267	88.46192	1.16E+08
Maximum	125.7000	257.7200	92.74294	1.81E+08
Minimum	68.70000	0.041315	86.59807	75482552
Std. Dev.	19.66328	74.77568	2.062069	31467185
Skewness	-0.701753	1.558355	0.409047	0.332600
Kurtosis	1.967004	4.182797	1.736288	1.941891
Jarque-Bera	4.428829	16.20630	3.304942	2.278040
Probability	0.109217	0.000303	0.191576	0.320133
Obs.	35	35	35	35

Source: Authors' compilation

Testing for Cointegration

Using the ARDL bounds approach, cointegration is established among the series if the F-statistic is found above upper critical values at any conventional level of significance.

Table 2: ARDL Bound Cointegration Test

	5% critical bound		10% critical bound	
F- statistics	I(0)	I(1)	I(0)	I(1)
8.912456	3.23	4.35	2.72	3.77

Source: Authors' computation

The technique establishes existence of cointegration, hence there is long-run linkage among the series included in the function since the F-statistics (8.912456) is beyond the upper critical values.

The Short-run Dynamics Result

Table 3: Short-run Result

Variable	Coefficient	Std.Error	T-Statistics	Prob.
D(Health Expenditure)	0.001851	0.001169	1.582873	0.1277
D(Age Dependency Ratio)	0.103518	0.118017	0.877140	0.3899
D(Population)	-3.06E-06	1.41E-06	-2.173192	0.0408
CointEq(-1)	-0.027639	0.014126	-1.956569	0.0632

Source: Authors' extraction from E-views

The short-run dynamics of the model is reported in Table 3. The coefficient of ECM has the right sign and is statistically significant. The ECT shows the speed at which the short-run disequilibrium reverses itself and converges to equilibrium in the long run. In this study, it can be deduced that only 2% of the short run disequilibrium adjusted to long-run equilibrium within the

period of one year. This further established the existence of long-run relationship between health financing and health status in the model.

The Long-Run Results

The coefficient of infant mortality with respect to total government expenditure on health is negative and significant for the Nigerian data. This suggests that a rise in government spending on health by one per cent will bring about approximately ten per cent reduction in infant mortality in every 1,000 live births in Nigeria. The result reveals that public health spending is a cogent factor that can bring about a significant decline in infant mortality rate and improves health status in Nigeria. The finding is suggestive of the need for higher budgetary allocation for increasing public expenditures on health, it is imperative for improvements in health outcomes in Nigeria. The finding is in conformity with the work of Gani (2009), reported a negative and significant relationship between health financing and health status. The results further reveal that population is a strong determinant of health outcome in Nigeria. The inverse relationship implies rising population has a detrimental effect on the state of health of the citizens. This can be justified by the fact that increased population that is not matched by proportional rise in public spending on health tends to induce unnecessary pressure on the available health facilities.

Table 4: Long-run ARDL Estimates

Variables	Coefficient	Std.Error	T-statistics	Prob.
Health Expenditure	-0.107095	0.025523	-4.195946	0.0002
Age Dependency Ratio	0.626423	0.615340	1.018011	0.316
Population	-3.50E-07	7.72E-08	-4.541239	0.0001
C	99.28668	61.56978	1.612588	0.1170

Source: Extracted from estimation output using E-views

The post estimation diagnostic tests results are presented in Table 5. The null hypothesis for the diagnostics tests is that, the residuals had no serial correlation, are normally distributed, as well as homoscedastic for serial correlation, normality and heteroscedasticity tests correspondingly. All test statistics on each null hypothesis could not be rejected at the conventional levels of significance. Hence, the study tends to assume the absence of serial correlation and heteroscedasticity in the selected model, while presuming the residual are normally distributed.

Finally, the CUSUM and CUSUM square estimated parameters reveal that the slope coefficients are non-oscillating during the sample period.

Table 5: Residuals Diagnostic Tests

Tests	Probability
Serial correlation	0.3961
Normality	0.53135
Heteroskedasticity	0.9946

Source: Extracted from estimation output using E-views

Figure 1(a): Cumulative sum (CUSUM)

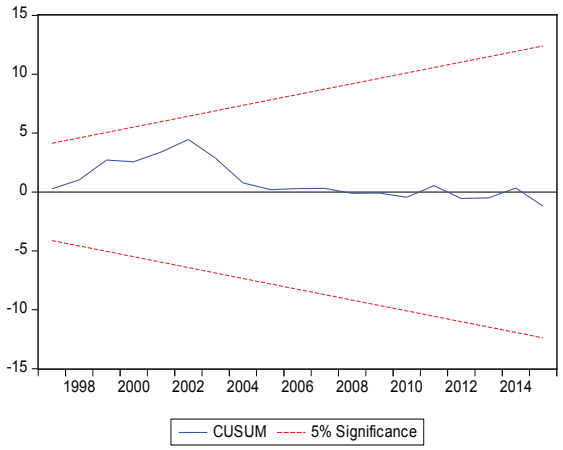
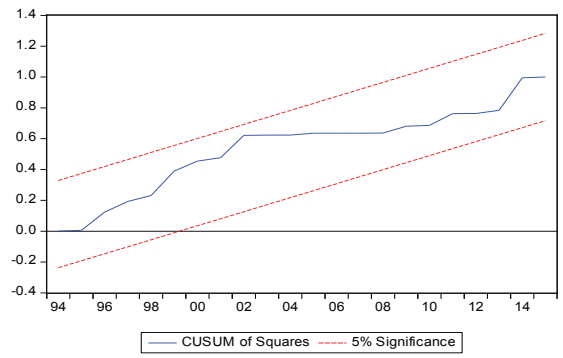


Figure 1(b): Cumulative sum of square (CUSUMSQ)



Conclusion

The study establishes the relationship between government expenditure on health and health status in Nigeria, using annual series that span from 1981 to 2015, in conjunction with some covariates that influence health status. The ARDL result confirmed government spending on health is a key factor influencing health status in Nigeria. Based on the obtained coefficients, increased government expenditure on health reduced infant mortality. There is need for the Nigeria Government to place emphasis on long term linkage of health spending and health outcomes by formulating policy and allocating scarce resources to the health sector thereby resulting in improvement in the quality of health.

The main limitation of the study lies in choosing variables and data. There are no readily available data on the key variables of interest that could impact health outcome. For instance, data on private health expenditure covering the duration of study are not available. Similarly, data on educational level of female adult are not available even though it has been shown empirically (Bokhari et al. 2007) that educated female adult records low level of infant mortality. This study acknowledged the challenges associated with investigating the relation between health financing and measures of health status in Nigeria, hence, the results are interpreted with caution. Future research can investigate the effect of these variables on health outcomes once data on other indicators are made readily available.

References

Anton, S. G., &Onofrei, M. (2012). Health Care Performance and Health Financing Systems in Countries from Central and Eastern Europe. *Transylvanian Review of Administrative Sciences,* 35(1), 22-32.

Asbu,E, Masri, M.D., &Kaissi, K.C. (2017). Health status and health systems financing

in the MENA region: roadmap to universal health coverage. *Global Health and Research Policy,* 2(25), 1-13.

Bein, M.A., Unlucan, D., Olowu, G., &Kalifa, W. (2017). Healthcare spending and health outcomes: evidence from selected East African countries. *African Health Sciences,* 17(1), 247-254.

Bloom, D., Canning, D., &Sevilla, J. (2004). The effect of health on economic growth: A production function approach. *World Development*, 32(1),1-13.

Bokhari, F., Gai, Y., &Gottret, P. (2007). Government health expenditures and health outcomes. *Health Economics,* 16(3), 257–273.

Cooray, A. V. (2013). Does health capital have differential effects on economic growth? *Applied Economics Letters,* 20 (3), 244-249.

Gani, A. (2009). Health Care Financing and Health Outcomes in Pacific Island Countries. *Health Policy and Planning,* 24(1),72-81.

Grossman, M. (1972). On the Concept of Health Capital and the Demand for Health. *Journal of Political Economy*, 80(2), 223-55.

Ibukun, C. &Komolafe, E. (2018). Household Catastrophic Health Expenditure: Evidence from Nigeria. *Microeconomics and Macroeconomics,* 18(6), 1-8.

Kim, K. T. & Lane, R. S. (2013). Government Health Expenditure and Public Health Outcomes: A Comparative Study among 17 Countries and Implications for US Health Care Reform. *American International Journal of Contemporary Research,* 3(9), 8-13.

Metiboba, S. (2012). Primary health care services for effective healthcare development in Nigeria. A critical study of selected rural communities. *Journal of Research in National Development*,7(2), 29-36.

Nwakanma, C. P., &Nnamdi, K. C. (2013). *Health care Financing and Health Profile in West African Countries.* Retrieved from http://cega.berkeley.edu/assets/miscellaneous_files/5-ABCA-Nnamdi-HealthCare_Financing_and_Health_Profile_in_WAfr.pdf

Nkpoyen F, Bassey G.E., &Uyang, F. A. (2014). Health Capital and Poverty Reduction in Rural Cross River State, Nigeria. *Journal of Education and Research*, 2(5),357-372

Normand, C., & Thomas, S. (2008). Health Care Financing and the Health System, In Harald Kristian Heggenhougen, Stella R. Quah (Eds.), *International Encyclopaedia of public health (*pp 133-141*)*. Oxford: Elsevier.

Narayan, P.K. (2005). The saving and investment nexus for China: Evidence from cointegration tests. *Journal of applied econometrics,* 37(1), 1979-1990.

Olakunde, B.O. (2012). Public health care financing in Nigeria: Which way forward? *Ann Nigerian Med,* 6(1), 4-10.

Olaniyan, O. &Lawanson, A. (2010). *Health Expenditure and Health Status in Northern and Southern Nigeria: A Comparative Analysis Using NHA Framework*. Paper presented at the 2010 CSAE conference held at St Catherine College, University of Oxford, Oxford, U.K. Retrieved from www.csae.ox.ac.uk/conferences/2010-EDiA/.../451.

Oyefabi A, O., Aliyu, A. A., &Idris, A. (2014). Sources of health care financing among patients at the Ahmadu Bello University Teaching Hospital, Zaria, Nigeria. *Journal of Medical Trop,* 16(1),27-31.

Pesaran, M.H. and Shin, Y. (1999). An Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis. Econometrics and Economic Theory in the 20th Century (Chp 11): In Strom, S. (Eds.), *The Ragnar Frisch Centennial Symposium*.UK: Cambridge University Press.

Pesaran, M.H., Shin, Y., & Smith, R.J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics*, 16(1), 289–326.

Rao, S K., Selvaraju, S., Nagpal, &Sakthivel, S. (2009). *Financing Health in India.* Retrieved from www.whoindia.org/.../Commision_on_Macroeconomic and Health Finance.

Riman, B. H., &Akpan, S. E. (2012). Healthcare Financing and Health outcomes in Nigeria: A State Level Study using Multivariate Analysis. *International Journal of Humanities and Social Science,* 2(15), 295-309

Soyinbo, A. (2005). *National Health Accounts of Nigeria 1999-2002*. Final report submitted to World Health Organization. Ibadan: University of Ibadan.

Thomas, S., & Darker C. (2013). Which is the right model of Universal Health Insurance for Ireland? In Tom O'Connor (Ed.), *Integrated Care for Ireland in an International Context. Challenges for Policy, Institutions and Specific Service User Needs* (Chp.4). Cork, Oak Tree Press.

Thompson R. C., Moore C. J., vomSaal F. S., Swan S. H. (2009). Plastics, the Environment and Human Health: current consensus and future trends. *Philos. Trans. R. Soc. Lond. B Biol. Sci,* 364(1526), 2153–2166.

Umoru, D., &Omolara, Y. (2013). Labour Productivity and Health Capital in Nigeria: The Empirical Evidence. *International Journal of Humanities and Social Science,* 3(4),199-221.

Uzochukwu, B., Ughasoro, M.D., Etiaba, E., Okwuosa, C., Envuladu, E., &Onwujekwe, O.E. (2015). Health care financing in Nigeria: Implications for achieving universal health coverage. *Nigerian Journal of Clinical Practice,* 18(4), 437-444.

World Health Organization. (2018). *Monitoring Health for the SDGs, Sustainable Development Goals.* Retrieved from https://www.who.int/gho/publications/world_health_statistics/2018/en/

World Bank. (2017). *World Bank Annual Report.* Retrieved from http://pubdocs.worldbank.org/en/908481507403754670/Annual-Report-2017-WBG.pdf

Yaqub, J. O., Ojapinwa. T. V., & Yusuf, R. O. (2012). Public Health Expenditure and Health Outcome in Nigeria: The Impact of Governance. *European Scientific Journal,* 8(13),189-201.

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