Impact of Health Sector Reform on Nigeria's Economic Development: An Autoregressive Distributed Lag Model Approach

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Abstract

This study investigates the impact of health sector reforms on Nigeria's economic growth from 1970-2013. The method of analysis is the Bound F-Test approach. The result shows that there is a long-run co-integrating relationship existing among the variables of GDP per capita, improved sanitation facilities (LISF), mortality rate under 5 years (LMTU 5) and Out-of-pocket expenditure (LOPE). It also shows that 58% of the total variation in GDP per capita is accounted for by the changes in LHIV/AID, LISF, LMTUS and LOPE. We therefore, recommend a universal policy of healthcare system that will guarantee the populaces' access to healthcare services. Similarly, there is need to reduce the out-of-pocket expenses, healthcare beneficiaries incur in Nigeria.

1   Introduction

Health is a fundamental driver for economic growth and development. In economics parlance, it is believed that health and education are the two important factors for human capital development and have been demonstrated to be the basis of an individual's economics productivity. As with economic well being of individual households, good health is a critical input into poverty reduction, economic development at the scale of whole societies. (Sachs, 2001). As declared in the WHO constitution adopted in 1948, "health is a state of complete physical, mental and social well being and not merely the absence of disease or infinity." Health is wealth goes the popular saying and therefore in every country, the health sector is critical to social and economic development, with ample evidence linking productivity to quality of health care. Economic development occurs when it has a trickle-down effect on the poor masses by enjoying all the basic necessities of life which are all embodied in having good health. In Nigeria, the vision of becoming one of the leading 20 economies of the world by the year 2020 is closely tied to the development of its capital through the health sector. (Osotimehin, 2009). It is posited that, given poor health infrastructure, illness and disease shorten the working lives of people, thereby reducing their lifetime earnings. Strauss and Thomas (1998) and Schultz (1999) suggested that good health has positive effects on the learning abilities of children, which leads to better educational outcomes—school completion rates, higher mean years of schooling, achievements—and increases the efficiency of human capital formation by individuals and households.

Report of the Global Thematic Consultation on Health (2013) pointed out that "health is both a driver and a beneficiary to economic growth and development and a key indicator of what people-centered, right-based, inclusive and equitable development seek to achieve. For economic development to occur in a country, its citizenry must be healthy. Ill health affects productivity, and therefore, reduces incomes and also tends to wipe away savings and diminish ability to invest, because healthy nation are likely to attract larger amount of foreign direct investment, since investors avoid environment where labour force are likely to be weakened by heavy disease burden and where access to health care is limited. (Alsan et al 2004, 2006).

Since Nigeria inherited the healthcare system from their colonies (British) after independence and the British National Health service on which Nigeria's was modeled has undergone great change over the years because profound thinking and strategizing by policy makers precede each change to the system. Therefore, it is important to point out that reforms in health sector should not be a vague rhetorical concept that means nothing to an average Nigerian but a collection of measurable policies and strategy with well defined measurable outcome. So, the government owes it to the populace to have a clear-cut health related goals on when it wants to take the nation to in terms of healthcare. (Chike et al, 2006).

The health sector reform was expected to strengthen the element of an enabling environment for better health so as to make the implementation of health program achieve their objectives in terms of coverage, efficiency and effectiveness. But the health sector in Nigeria has suffered from decades of neglects, endangering every Nigerian citizen. Some of the factors that affect the overall performance of the health sectors includes: inadequate health facilities and medical equipment, inadequate health centre and personnel, low government spending on health corruption, inaccessibility of healthcare services, high out-of- pocket expenditure, poor human resource management, lack of consumers awareness, among others. The most recent problem and tension generated by the Ebola virus disease (EVD) outbreak is a stiff reminder that it has become compelling more than ever before to have a total overhaul of the Nigeria's health sector. The need to have the laudable reform benefit felt among the citizenry is key to seeing the successful revamping of the Health sector.

The prime objective of this study is to examine the impact the health sector reforms have on the economic development in Nigeria and to know how cost effective, efficient, accessibility, availability and affordability the health sector is towards achieving its goals with the view to recommending the appropriate health policies measures. This study review the short and long-run relationship which is based on a further inclusive sample period than that used in existing studies to consent a more convincing conclusion with the aid of autoregressive distributed lag (ARDL) model, or bounds testing approach, proposed by Pesaran *et al*. (2001)

The study is organized as follows: section 1 is the introduction. Section 2 discusses theoretical and empirical literature. Section 3 provides the theoretical framework and methodology. Section 4 presents and discusses the empirical results. Finally, section 5 draws conclusion and recommendation.

2. Literature Review and Empirical Studies

2.1 Conceptual Framework:

Health is of vital importance in the development of an economy of any particular nation and its importance to economic growth and development of a nation cannot be overemphasized. Health is a crucially important economic asset for many poor people and their livelihoods depend upon it. Health is recognized as an essential component of human development. This has created several opportunities for improving the health of people, enhancing quality of life and ensuring a better future. Professor Eyitayo Lambo, former Minister of Health made it known at the January 2013 edition of the Nigerian-South African Chamber of Commerce meeting sponsored by Total Health Trust. Modern theory of economic growth argues that human capital, especially health and education has the principal role on achieving economic growth and development (Gyimah-Brempong and Wilson, 2005). Health affects national economic output because people who are ill are likely to be less productive at work, to lose their job, or to retire prematurely, thereby decreasing household earnings and increasing the risk of poverty. However, health is important both as an end in itself and as an integral part of human well-

being. Prioritizing and refining national health goals are essential steps towards sustainable development which aims at the sustainable improvement in the quality of life for all people as the principal goal of development policy.

Some of the health indicators according to the Nigeria Demographic Health Survey (NDHS 2008) that are often used to compare health status of the population include:

1) **Infant mortality rate:** currently, 75 children per 1,000 live birth die before their first birthday, i.e. 40 per 1,000 before the age of one month and 35 per 1,000 between the age of one and twelve months). 1 child out of 6 die before reaching age five

2) **Under five mortality rate:** the less than five mortality rate for the 10years period before the survey in urban areas is 121 deaths per 1,000 live births compared to 191 in rural areas. However, childhood mortality drops with mother's education. Children of mothers without education are two or three time more likely to die before age five than those whose mothers have education more than secondary education.

3) **Maternal mortality rate**: the maternal mortality ratio in Nigeria is estimated to be 545 deaths per 100,000 live births.

Based on the above survey, health definitely impedes economic development as such rate will reduce productivity, reduce income, savings and there will be low level of investment in the country. Nigeria's figures on each of the three indices are some of the worst in the world, even by the standard of developing countries.

Health Sector Reforms

Health sector reform (HSR) has been described as "A broad-based purposeful and sustainable fundamental change system (that is vision, policies, legislation, institutional arrangement, organization, plans, programs and projects) in order to deliver efficient, quality, affordable, accessible, effective and equitable health care services to the populace and ultimately improve the health status of the people". (Federal Ministry of Health (FMOH) 2004).

According to the World Health Organization, (1995), health sector reform is defined as a sustained process of fundamental change in policies and institutional arrangement, guided by Government, designed to improve the functioning and performance of the Health sector and ultimately the health status of the population.

The Federal Government and the Federal Ministry of Health are committed to undertake a comprehensive Health Sector Reforms in order to reposition the Public Health Sector to be more responsible and responsive to the health needs of the Nigerians and to ensure that Nigerians live healthier, longer and more productive lives. (http://:nannm,org). In fact, the Federal Government of Nigeria had launched the Health Sector Reform (HSR) as a major initiative to improve the health and well being of the citizen

Reform means improvement or change in the health system. The goals of reforms are to make health care accessible and, therefore, equitable, affordable, cost-effective, and cost-efficient. It also includes the reduction of the disease burden, particularly due to the malaria scourge and the HIV/AIDS epidemic and various other communicable and chronic diseases in general (FMoH, 2004; FRN, 2004; NACA, 2002 cited in Obansa et al, 2012). It is the duty of the government to provide the citizenry with accessible, affordable, qualitative, efficient and effective healthcare system. Against this background, the Nigerian government has adopted various national health policies and reforms. Health policy reforms are specifically designed to facilitate the achievement of stated health programs goals and objectives.

Benefits of the Health Sector Reform to the Population

- Better quality services that are better organized and linked within a functional and sustainable system.
- Services will be available, acceptable, and accessible from a wide range of public and private health providers.
- Managers will have more evidence-based budgeting and will be able to manage their system more efficiently.
- Providers will have further training to be more responsive to users.
- Both users and providers will have their right and responsibilities clearly delineated, and will be able to act on these rights
- Users also will be provided with much better and wider information about early prevention, care and treatment for the many common diseases and illnesses like malaria and diarrhea. (http://:nannm.org/reforms).

In the case of Nigeria, the argument for HSR is based on the poor health status of the population and the poor rating of the health system itself. Nigeria's health system, for example, was ranked 187 out of 191 countries by WHO in 2000. The infant mortality rate (Number of children that die under the age of 1year per 1000 live births) the under-five mortality rate and the maternal mortality ratio (Number of maternal deaths per 100,000 live births) are some of the indicators that are often used to compare health status of populations. Nigeria's figures on each of the three indices are some of the worst in the world, even by the standard of developing countries. Currently, one tenth of children born in Nigeria die under the age of one year (Infant mortality rate of 100 per 1000 live births) and a fifth die before their fifth birthday (under-five mortality rate of 201 per 1000 live births)(NPC 2004).. According to the most recent estimates from United Nations agencies, over 50,000 mothers die from childbirth-related events – the second highest annual national maternal deaths figure in the world. Nigeria's maternal mortality ratio is estimated to be between 800 and 1,000 maternal deaths per 100,000 live births.

Furthermore, the leading causes of deaths among mothers and children in Nigeria are largely preventable health problems or easily treatable ones. For children, these include vaccine preventable diseases (polio, diphtheria, whooping cough, tetanus, and measles), malaria, and diarrhea. The situation clearly suggests that the Nigerian health system needs more than a cosmetic change - what it requires is a radical reform to improve its performance (Lucas 1998). In the words of Professor Adetokunbo Lucas, (2006), an eminent public health physician, "The Nigerian health system is sick, very sick and in need of intensive care".

As a Federal Ministry of Health (FMOH) documents puts it, the Nigerian health "system is so complex and has grown out of so many obtuse 'needs' that the best approach to reform is to start afresh and plan the system *de novo*".

It is the duty of the Government to provide the citizenry with accessible, affordable, qualitative, efficient and effective healthcare system. Against this background, the Nigerian government has adopted various national health policies and reforms.

According to (FMoH, 2007), "there is no consistently applied, universal package of measures that constitutes health sector policy reform. Rather, the precise agenda for reform will be defined by reviewing how well existing policies, institutions, structures, and systems deal with issues of efficiency, access, cost containment, and responsiveness to popular demand. The response of FMoH to the unacceptable health conditions in Nigeria through increased commitment and willingness was undertaken to achieve a comprehensive health sector reform. A new reform commenced in 2003

within the context of the National Economic Empowerment and Development Strategy (NEEDS), MDGs and NEPAD. The National Health Policy which was enunciated in 1988 and revised in 2004 created the reform environment whilst the health sector reform program 2004 established the framework including goals, target and priorities that should guide the action and work of the FMoH and, to some extent, those of State Ministry of Health (SMoH) and health development partners over a four year period (2004-2007). The document describes the direction for strategic reforms and investment in key areas of the national health system (FMoH, 2004). In 2004, the Federal Government launched the National Economic Empowerment and Development Strategy (NEEDS), in it the government promised to "improve the health status of Nigerians as a significant co-factor in the country's health sector reform aimed at strengthening the national health system and enhancing the delivery of effective, efficient, quality and affordable health services to Nigerians". The federal government explained that the reform was aimed at raising life expectancy in Nigeria to 65 years and reducing infant mortality to 50 per 1,000 births.

The new National Health Policy has been formulated within the context of:

- The Health Strategy of the New Partnership for Africa's Development (NEPAD), a pledge by African leaders based on a common vision and a firm conviction that they have a pressing duty to eradicate poverty and place their countries individually and collectively on a path of sustainable growth and development;

- The Millennium Development Goals (MDGs) to which Nigeria, like other countries, has committed to achieve;

- The National Economic Empowerment and Development Strategy (NEEDS) : in 2004, the Federal Government launched the NEEDS, where they promised to "improve the health status of Nigerians as a significant co-factor in the country's health sector reform aimed at strengthening the national health system and enhancing the delivery of effective, efficient, quality and affordable health service to Nigeria's"; and

- The development of a comprehensive health sector reform programme as an integral part of the NEEDS.

Health Sector Reforms Thrusts
The health sector reform has seven strategic pillars or thrusts and these thrusts are health contribution to economic development. The policy thrust includes:

- Improving Government performance of its stewardship role of policy formulation, health legislation, regulation, resource mobilization, coordination, monitoring and evaluation. That is, by defining the stewardship role of the three tiers of government.
- Strengthening the National Health System and improve its management.
- Reducing the disease burden attributable to poverty, diseases, and health problems including, malaria, tuberculosis, HIV/AIDS and reproductive ill health.
- Ensuring adequate health resources are available and better management systems are put in place (financial, human, infrastructure, etc).
- Improving the populations' physical and financial access to quality health services.
- Enhancing consumers' awareness of their health rights and obligations, and community improvement in health, and
- Fostering effective collaboration and partnership with all health actors.

As reported in the 2008 Nigeria Demographic Health Survey (NDHS), Malaria was the only curative illness and it was reported to account for nearly 110 million clinically diagnosed cases per year, 60% of outpatient visits, 30% inpatient. Also, an estimated 300,000 children die of malaria each year. This contribute to 11% maternal mortality, 25% infant mortality and 30% under-five mortality rate. About N132million was lost to malaria annually in the form of treatment cost, prevention, lost of work time, etc. this health burden affect social and economic development of a community and the country as a whole. (NPC and ICF Macro, 2009).

3. Methodology and Model Estimation

3.1. Model specification

The model equation for this study is stated as follows:

$$lngdp = \alpha + \beta lnLhiv_t + \phi_1 lngdp_{t-1} + \phi_2 lnLisf_t + \phi_3 lnLmtu5_t + \phi_4 lnLope_t + \Sigma \ldots..(1)$$

$$\beta<0, \phi_2, \phi_3, \phi_4>0$$

$$lnLse = \Lambda_0 + \Lambda_1 lnhiv + \Lambda_2 lnLisf + \Lambda_3 lnlmtu5 + \Lambda_4 Lope + \Sigma_2 \ldots\ldots \ldots..(2)$$

$$\Lambda_1<0, \Lambda_2, \Lambda_3, \Lambda_4>0$$

$$lnLle = \beta0 + \beta1 lnhiv + \beta2 lnLisf + \beta3 lnLmtus + \beta4 Lope + \Sigma_3 \ldots\ldots\ldots ..(3)$$

$$\beta1<0, \beta2, \beta3, \beta4>0$$

Where gdp = gross domestic product per capita, Lse= secondary school enrollment and Lle = Life Expectancy at birth and hiv is a measure for HIV and ADIS, Lisf = Improved sanitation facilities, Lmtu5 = Mortality Rate under 5 and Lope = Out-of-Pocket expenditure. The study aims of examining the impact of health on economic development indicators.

3.1 . Method of Estimation

The equation above will be estimated using the ordinary least square (OLS). Before estimation, it would be useful to determine the underlying properties or processes that generate our time series variables, whether the variables are stationary or non-stationary.

Macro- econometrics data often appear to possess a stochastic trend that can be removed by differencing the variables. The popular Augmented-Dickey Fuller test for the co-integration test, the Bound F-Test of the Autoregressive Distributed Lag approach will be used. This test was developed by Pesaran *et al,* (2001) and has the following over and above the Johansen and Juselius co-integration.

First, the ARDL model is the more statically significant approach to determine the co-integration relation in small sample (Ghatak and Siddiki, 2001), while the Johansen co integration technique requires large data samples for validity. Second, the ARDL approach is that… while other co-integration technique require all of the regressors to be integrated of same order, the ARDL approach can be applied whether the regressors are I(1) and I (0). This means that the ARDL approach avoids the pre-testing problems associated with standard co-integration, which requires that the variables be already classified into order of I (1) or I (0) (Pessaran *et a*l, 2001).

As Bahmani Oskooee (2004: 485) explains, the first step in any co-integration technique is to determine the degree of integration of each variable in the model but this depend on which unit root test one uses and different unit roof tests such as the Augmented Dickey-Fuller and Philip-Peron test. In the first step, the existence of any long-run relationship among the variables of interest is determined using an F-test. The second step of the analysis is to estimate the co-efficient of the long-run relationship and determine their values, followed by the estimation of the short-run elasticity of the variables with the error correction version of ARDL, and hence determining the speed of adjustment. According to Pesaran and Pesaran (1997), the ARDL model is represented by the following equation:

$$\phi(L, P)y_t = \sum_{I=}^{k} \beta i(L, qi)\ x_{it} + \delta w_t + u_t \ldots\ldots\ldots \ldots\ldots \quad (4)$$

Where: $\phi(L, \dot{P}) = 1 - \phi_1 L - \phi_2 L^2 \quad \ldots \phi_p L^p$
and $\beta i(L, qi) = 1 - \beta i_1 L - \beta i_2 L^2 \ldots\ldots\ldots - \beta i_{qi} L_{qi},\ i = 1, 2 \ldots, K$

Where y_t is the dependent variable, X_{it} denotes the i dependent variables, L is lag operator and W_t is the Sx1 vector of the deterministic variables, including intercept terms, dummy variables, time trends and other exogenous variables.

The ECM version of the ARDL model can be obtained by re-writing equation (4) in terms of the lagged levels and first difference of y_t, X_{it}, X_{2t} ………X_{kt} and W_t as follows:

$$\Delta yt = -\phi(1,\ P)\hat{E}c_{t-1} + \sum_{i-1}^{k} \beta i0\Delta X_{it} + \delta'\Delta W_t - \sum_{i-1}^{P=1} \phi^* y_{t-I} - \sum \sum_{i-1\ i-1}^{K\ qt-1} \beta ij^* \Delta x + ut \ldots\ldots \quad (5)$$

and finally, in the above equation, the error correction term is defined by:

$$\Sigma_{ct} = y_t - \sum_{i\mu}^{K} \theta_I \hat{X}_{it} - \Psi' w_t \ldots\ldots\ldots \quad \ldots\ldots(6)$$

Where, ϕ^*, δ' and βij^* are the coefficient which is related to the short-run dynamics of the models convergence to equilibrium, and $\phi(1, P)$ is the speed of adjustment.
Following the ARDL model (P, q) of equations (1-3), we formulate the unrestricted Error Correction Model (UECM) as follows:

$$\Delta yt = \sum_{i-1}^{P-1} \beta j\ \Delta y_{t-1} + \sum_{i\mu}^{P-1} \alpha i\ \Delta X_{-t-I} + \phi[y_{t=1} - \{\beta + \delta iX_{t-1}\}] + \Sigma_t \ldots\ldots\ldots\ldots \quad (7)$$

Where Δy_t is difference stationary economic development variable (GDP per capita), Δx_t is a vector of difference stationary explanatory variables (hiv, Lisf, Lmtus and Lope), β and α are short-run co-efficient of the determinants of economic development in our models. As discussed earlier, in the first step, we need to capture the usual F-statistics for testing the null hypothesis (of no co-integration) defined by (H_0: $\delta_1 = \delta_2 = \delta_3 = \delta_4 \ldots = 0$) among the levels of the included variables in the models. The F- statistics are calculated to check the null hypothesis. The calculated F-statistics is compared with the critical value. These critical values are calculated for different regressors and whether the model contains an intercept and a trend.

According to Bahmani –Oseke (2004), these critical values include an upper and lower band covering all possible classifications of the variables into I(1), I (0) or even fractionally integrated. The null hypothesis of no co-integration is rejected if the calculated F-statistics is bigger than the upper bound. If the computed F-statistics is smaller than the lower bound, the null hypothesis cannot be rejected. If it falls-in-between the lower and the upper bound, then the result is inconclusive. In such an inconclusive case an efficient way to establishing co-integration is by applying the ECM version of the ARDL model which in this scenario is specified as follows:

$$\Delta y_t = \alpha_0 + \sum_{i\mu}^{k}\alpha_1\Delta y_{t-1} + \sum_{i\mu}^{k}\alpha_2 hiv_{t-1} + \sum_{i\mu}^{k}\alpha_3 Lisf_{t-1} + \sum_{i\mu}^{k}\alpha_4 Lm/u5_{t-1} + \sum_{i\mu}^{k}\alpha_5 Lope_{t-1} + ut \ldots..(8)$$

Where ect-1 is the first lag of the stationary residual from long-run equation.

4   Discussion of Empirical Result.

4.1   Unit Roof Test

The Augmented Dickey-Fuller (ADF) test is used in testing the null hypothesis that there is a unit root in particular time series of interest. The unit root test is presented in the table below:

Table1: Unit Root Test

Variables	ADF Statistics		Critical Values	Remark
	Level	Difference		Stationary at level
LGDP	-3.468591	-	1% = -3.920350 5% = -3.065585** 10% = -2.673459**	I (0)
LHIV	-5.872508	-	1% = -3.959148 5% = -3.081002** 10% = -2.681330**	I (0)
LISF	-3.741657	-	1% = -3.920350 5% = -3.065585** 10% = -2.673459**	I (0)
LMTU	-4.457080	-	1% = -4.004425 5% = -3.098896 10% = -2.690439	I (0)
LOPE	-3.179920	-	1% = -3.886751 5% = -3.052169** 10% = -2.666593**	I (0)

**Denotes significance at 5% and 10% respectively.

Source: Author's Computation

The results in the Table 1 above, reveals that all the variables are stationary at levels. The unit root test applied to the variables at levels accepts the null hypothesis of stationarity of all the variables. Thus, the variables are integrated of order zero I (0). Given the unit root properties of the variables, we proceed to establish whether or not there is a long-run co-integrating relationship among the variables in estimating equations using the ARDL approach to co-integration.

4.2   Co-integration Test Results

In the estimation of the Unrestricted Error Correction Model of equation (7), we selected the maximum lag length of the parsimonious model from general-to –specific method while checking the significance of the model coefficient.

The appropriate lag order for this study is (1, 1, 1, 1, 1) from which we obtain the result of the test as represented in the Table 2a- 2c below:

Table 2A

ARDL Bounds Test for Co-integration

Unrestricted intercept and Unrestricted Trend		
F-statistics	(LNGDP/LNHIV, LNISF, LNMTUS, LNOPE)	10.97997*,**
Critical Bounds Value		
	5% 10%	
	I (0) I (1)	
	3.539 4.667	

Asymptotic Critical Bounds Value K=4   *=5%,   ** = 10%

Table 2B

ARDL Bound Test for Co-integration

Unrestricted intercept and Unrestricted Trend		
F-statistics	(LNSE/LNHIV, LNISF, LNMTUS, LNOPE)	11.57801*,**
Critical Bounds Value		
	5% 10%	
	I (0) I (1)	
	3.539 4.667	

Asymptotic Critical Bounds Value K=4   *=5%,   ** = 10%

Table 2C

ARDL Bound Test for Co-integration

Unrestricted intercept and Unrestricted Trend		
F-statistics	(LNLE/LNHIV, LNISF, LNMTUS, LOPE)	11.57801*,**
Critical Bounds Value		
	5% 10%	
	I (0) I (1)	
	3.539 4.667	

Asymptotic Critical Bounds Value K=4   *=5%,   ** = 10%

The F-statistics show the results for each calculated variable when considered as a dependent variable in the ARDL-OLS regression. The calculated F-statistics is compared with the critical values for the bound test using the Pesaran *et al* (2001). Thus, the null hypothesis of no co-integration is rejected if the F-statistics is higher than the upper bound critical values at the significant level chosen, and the null hypothesis of no co-integration is accepted, if the F-statics is lower than the lower bound critical value. Based on the statement above a 5% level of significance is adopted for the critical values for the bound testing techniques and therefore we deduced that the null hypothesis of no co-integration is rejected for the variables of GDP per capita, HIV/AIDS, Improved Sanitation Facilities (LISF),

Mortality Rate under 5 (LMTU) and Out-of Pocket Expenditure (LOPE) implying that there is a long-run co-integration relationship existing among the variables.

The computed F-Statistics of 10.979, 11.5780 and 7.087 is greater than both the lower bound I (0) 3.539 and upper bound I (1) of 4.667.

4.3 Long –Run Result.

Once the long-run co-integration has been established, it becomes necessary to estimate the long-run coefficient presented below. This is covered in Tables 3a-3c.

Table 3A: Associated ARDL (1, 1, 1, 1, 1) and ECM Result
Dependent Variable: LGDP

Variable	Coefficients	Std. Error	t-statistics	Prob.
C	0.067260	0.206511	0.325697	0.7521
D (LGDP (-1))	0.305665*	0.177670	1.720408	0.0895
D(LHIV (-1))	0.035589	0.012299	2.893649	0.0209
D(LISF (-1))	0.346457*	0.636181	0.544589	0.5993
D(LMTU (-1))	-0.019992	0.021056	-0.949448	0.3672
D(LOPE (-1))	0.005695	0.003625	1.570830	0.0907
ECM (-1))	-0.416335	0.175279	-2.375270	0.0338

R-squared 0.578115, F-statistics 2.055475*, DW = 2.247201

Note: * indicates significant at 1%.

The result of the table implies that for a percentage increase in LHIV/AIDS, LIsf, LMtu5 and Lope, current GDP per capita increases/decreases by (0.04%), (0.35%), (-0.02%) and 0.01% respectively. Table 3A also reveals that Lmtu5 was found to influence GDP per capita negatively and this does not conform with the a prior. This implies that increase in LMtu5 decreases GDP per capita by 0.2%.

The F-statistics result shows that the variables of the LISF variables is significant at 5% critical level, while the adjusted R-squared results showed that 58% of the total variation in GDP per capita is accounted for by changes in LHIV, LISF, LMTU5 and LOPE. The ECM result and its coefficient is properly and negatively signed meaning that the disequilibrium between the short-run and short-run dynamics is corrected by 42% revealing that there is a 42% speed of adjustment between the dependent variables and the independent variables from the short-run to the long-run.

Table 3B: Estimation Result with Associated ARDL (1,1,1,1,1)
Dependent Variable (LSE)

Variable	Coefficient	Std. Error	t-statistics	Prob.
C	5.641296	5.187325	1.087515	0.3051
D (LSE (-1))	0.702667*	0.254131	2.764977	0.0219
D(LHIV (-1))	4.528736*	3.238328	1.398480	0.1955
D(LISF (-1))	21.57373*	14.21938	1.517206	0.1635
D(LMTU5 (-1))	-0.585305	0.432714	-1.352636	0.2092
D(LOPE (-1))	0.002863	0.079649	0.035947	0.9721
ECM 2 (-1))	-0.956873	0.289742	-3.302494	0.0092

R-squared .0.624448, F-statistics 2.494126*, DW = 2.857591

Note: * indicates significant at 1%.

The result of the table shows that for a percentage increases in LHIV/AIDS occurrence, improved sanitation facilities (LISF), Mortality Rate under 5 (LMTu$_5$) and Out-of –Pocket expenditure, Secondary school enrollment increases or decreases by (4.5%, 21.5%, -0.6% and 0.002%). The table also showed that mortality rate under 5 negatively affects secondary school enrollment. This means that increase in Mortality Rate under 5 decrease school enrollments by 0.58%. The F-statistics result showed that the variables of the LHIV and LISF is altogether significant at 5% level, while the adjusted R-squared result showed that 62% of the total variation in school enrollment is accounted for by changes in LHIV/AIDS, LISF, LMtu$_5$ and Lope. The ECM result of -0.95 is correctly and significantly signed. This implies that the discrepancies between the short run and long-run equilibrium conditions are adjusted at the speed of 95%.

Table 3C: Estimation Result with Associated ARDL (1, 1, 1, 1, 1)
Dependent Variable D (LLE)

Variable	Coefficient	Std. Error	t-statistics	Prob.
C	-0.018806	0.036491	-0.515363	0.6187
D (LLE (-1))	0.971344	0.053571	18.13185	0.0000
D(LHIV (-1))	0.211359*	0.057691	3.663654	0.0052
D(LISF (-1))	0.158728*	0.107788	1.472594	0.1749
D(LMTU$_5$ (-1))	-0.020029	0.00558	-3.588870	0.0058
D(LOPE (-1))	0.000481	0.000562	0.855044	0.4147
ECM (-1))	-0.307440	0.068215	-4.506949	0.0015

R-squared .0.9976, F-statistics 641.7559*, DW = 2.61

Note: * indicates 1% level of significance.

The result of Table 3C, shows that for a percentage increase in HIV/AIDS, ISF, MTU$_5$ and OPE, life expectancy at birth increases or decreases by (0.21%, 0.16%, - 0.02% and 0.004%). The table also showed that mortality Rate under 5 also negatively influence life expectancy at birth. This means that increase in MTu$_5$ decreases life expectancy at birth by 0.02%. The F-statistics result showed that the variables of HIV/AIDS and ISF is also altogether significant at 5% level, while the adjusted R-squared results showed that 99% of the total variation in life expectancy at birth is accounted by changes in HIV/AIDS, ISF, MTU$_5$ and OPE. The ECM result of -0.31% is correctly and significantly signed. The result reveals that there is a 31% speed of adjustment between the dependent and the independent variables from the short-run to the long-run.

5   Conclusion and Policy Recommendation

The study set to examines the impact of health sector reforms on economic growth in Nigeria, adopting the autoregressive distributed lag model approach (ARDL). The study used annual time series data from 1970-2013. The unit root result shows that all the variables are integrated at levels. The result also shows that there is a long –run relationship between GDP per capita and improved sanitation facilities, mortality rate under 5 years and out-of- pocket expenditure. It also shows that 58% of the total variation in GDP per capita is accounted by changes in LHIV, LISF, LMTU5 and LOPE. The study recommends that the government should put in place appropriate measures and policies that will ensure universal healthcare system, one that will promote accessibility to healthcare services. Again, there is every need to reduce the out-of-pocket expenses of healthcare beneficiaries in Nigeria.

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