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AN EMPIRICAL ANALYSIS OF GLOBALIZATION, OIL RECEIPTS AND HEALTH EXPENDITURE IN NIGERIA

This study examined the effect of globalisation and oil revenue on health expenditure in Nigeria. The study used annual time series data spanning from 1980 to 2018. Unit root test was used to check the stationary level of the variables and Unrestricted Error Correction Model (UECM) and Dynamic Ordinary Least Square (DOLS) were used to estimate the model. The dependent variable was health expenditure while the explanatory variables were globalisation, oil revenue, health care price, per capita income, life expectancy, mortality rate urbanization and corruption. The result showed that oil receipt had a long run and positive impact on health expenditure in Nigeria. However, globalisation had a negative and significant impact in the long-run though not significant in the short run. The implication is that both oil revenue and globalisation are still very important variables influencing health expenditure in Nigeria. It is recommended that government should increase allocation to the health sector from oil fiscal revenue so as to improve access to health care services in Nigeria. Also, the government should work on how the country can benefit from globalisation through more export and less of import.

Key words: Globalisation, Oil revenue, Health expenditure.

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Нигериядағы жаһандану, мұнайдан түсетін кірістер мен денсаулық сақтау шығындарын эмпирикалық талдау

Бұл зерттеу жаһандану мен мұнайдан түсетін кірістердің Нигериядағы денсаулық сақтау шығындарына әсерін зерттейді. Зерттеу барысында 1980 жылдан 2018 жылға дейінгі жылдық мәліметтер қолданылды. Айнымалылардың стационарлық деңгейін тексеру үшін бірлік түбірлік тест, ал модельді бағалау үшін қателерді түзетудің шектеусіз моделі (UECM) және динамикалық қарапайым кіші квадраттар әдісі (DOLS) қолданылды. Тәуелді айнымалы ретінде денсаулық сақтау шығындары болды, ал түсіндіруші айнымалылар – жаһандану, мұнайдан түсетін кірістер, денсаулық сақтау бағалары, жан басына шаққандағы табыс, өмір сүру ұзақтығы, өлім, урбанизация және сыбайлас жемқорлық. Нәтиже мұнайдан түсетін кірістер Нигериядағы денсаулық сақтау шығындарына ұзақ мерзімді және оң әсер еткендігін көрсетті. Алайда жаһандану ұзақ мерзімді кезеңде кері және маңызды әсерін тигізді, ал қысқа мерзімде маңызды емес. Бұдан шығатын қорытынды – мұнайдан түсетін кірістер де, жаһандану да Нигериядағы денсаулық сақтау шығындарына әсер ететін өте маңызды айнымалылар болып табылады. Үкіметке Нигериядағы медициналық қызметтерге қол жетімділікті жақсарту үшін денсаулық сақтау саласына мұнайдан түсетін түсімді ұлғайту ұсынылады. Сонымен қатар, үкімет экспортты ұлғайту және импортты азайту арқылы елдің жаһандануынан қалай пайда көретіндігімен жұмыс жасауы керек.

Түйін сөздер: жаһандану, мұнайдан түсетін кірістер, денсаулық сақтау шығындары.

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Эмпирический анализ глобализации, нефтяных доходов и расходов на здравоохранение в Нигерии

В данном исследовании изучено влияние глобализации и доходов от нефти на расходы на здравоохранение в Нигерии. В исследовании использовались годовые данные за период с 1980 по 2018 год. Тест на единичный корень использовался для проверки стационарного уровня переменных, а для оценки модели использовались модель неограниченной коррекции

ошибок (UECM) и динамический обыкновенный метод наименьших квадратов (DOLS). Зависимой переменной были расходы на здравоохранение, а объясняющими переменными были глобализация, доходы от нефти, цена на здравоохранение, доход на душу населения, ожидаемая продолжительность жизни, уровень смертности, урбанизация и коррупция. Результат показал, что доходы от нефти имели долгосрочное и положительное влияние на расходы на здравоохранение в Нигерии. Однако глобализация оказала негативное и значительное влияние в долгосрочном плане, в то же время незначительно в краткосрочной перспективе. Подразумевается, что и доходы от нефти, и глобализация по-прежнему являются очень важными переменными, влияющими на расходы на здравоохранение в Нигерии. Рекомендуется, чтобы правительство увеличило ассигнования в сектор здравоохранения из доходов бюджета от нефти, чтобы улучшить доступ к услугам здравоохранения в Нигерии. Кроме того, правительство должно работать над тем, как страна может получить выгоду от глобализации за счет увеличения экспорта и уменьшения импорта.

Ключевые слова: глобализация, доходы от нефти, расходы на здравоохранение.

Introduction

Globalisation has come to stay because no one can live in isolation, so also no nation can live in isolation. And more importantly, integration has been proven to have to benefits over the years. This has become the foundation on which the sustainable development goals stand. This is because the goals will work if there is partnership (#goal 17) and if people work together. Globalisation has been defined as the process of intensification of economic, political, social and cultural relations across international boundaries (Orga, 2012). However, globalization has become a challenge to health and well-being worldwide given the rapid proliferation of advances in technology, communication, means of production and transportation. (Azevedo and Johnson, 2011). Smith and Blouin (2015) stated that trade liberalization could affect overall government expenditures by giving room for governments to buy less expensive foreign goods and services, this could then affect the amount of fund available for the public health care. In addition to this, Fervers, Oser and Picot (2015) in their own view stated that the impacts of globalization on the health expenditure have not been well established.

Oil revenue is a major factor in the economies of oil exporting countries, Nigeria inclusive and these countries use a major share of this revenue to finance their expenditures (Anfofum and Olure-Bank, 2018; Aregbeyen and Kolawole, 2015). The oil sector plays a key role in the aspect of globalization. This is because the oil sector accounts for about 95% of Nigeria's foreign exchange earnings (Abula and Ben, 2016). With the advent of crude oil, and Nigeria being the highest producer and exporter of crude oil in Africa (Onwachukwu et al., 2018), there supposed to be a great improvement in the standard of living and better quality of life. Yet, the human development indicators especially in the area of health have not improved significantly (Calain, 2008). Ross (2004) cited in Calain (2008) believed that oil and mineral dependent countries tend to suffer from exceptionally high rates of child mortality, low life expectancy. He also maintained that oil dependence is associated with high rates of child malnutrition, low health care spending and low school enrolment.

The health sector is faced with its own challenge especially in the area of financing. However, in order to achieve the goal no. 3 of the Sustainable Development goals of Good Health and Well-being, financing the health sector is very important. Elovainnio and Evans (2013) opined that there have been insufficient funding for health in most of the developing countries and Nigeria is not left out. (Hafez 2018) stated that the success story of Nigeria in the future is largely dependent on the ability of the government to positively change its non-renewable natural resources (crude oil) into productive wealth by investing more in the health of its people. There has been the incidence of low government on health over the years with respect to the GDP. For instance, in 2017, the government expenditure on health was 3.76% of GDP which was even lower than the average of 181 countries which was 6.55% (The Global Economy). Even though, there have been private spending on the health yet it cannot be compared to the government spending on health. This is because public spending on health ensures equity in accessing medical care (Boachie et al., 2018).

The problems of the Nigerian economy have been traced to the failure of successive governments to use oil revenue effectively and efficiently in order to develop the sectors in the country (Abula and Ben, 2016). However, Azevedo and Johnson (2011) opined that if globalization is properly managed, it can improve the state of the health system. Can the health sector be given priority when sharing government revenue which is mostly from the oil sector?

Does globalisation has positive or negative effect on government spending on health? The purpose of this paper is to examine the effect of globalization and oil revenue on government spending on health in Nigeria from 1980 to 2018.

Literature Review

There have been some theoretical propositions in the literature as touching globalisation. For instance, Orga (2012) mentioned that the social theory viewed globalization as involving flows of commodities, capital, technology, ideas, skills, forms of culture and people across national boundaries through a global networked society. From the efficiency hypothesis, globalization could lead to reduction in the social welfare of people. This could be through a direct political mechanism, such that businesses and investors can use capital flight threat to force the government to pursue efficieny-oriented reforms which are often times not in favour of provision of public goods (Fervers et al., 2015). In a contrasting view, the compensation hypothesis believed that globalization could lead to increase in government spending and hence, strengthens the social safety net of a country. This is because people push policy makers to compensate the people for greater external risk and its social consequences (Heimberger, 2020). Furthermore the endogenous growth theory is one of the theories that saw openness as an ingredient of growth through innovations, research and development. For oil exporting countries, globalization should be a major spur to innovation by increasing the extent of the market. This is because innovation raises national income, which eventually stimulates further innovation in a positive feedback mechanism (Romer, 1986; Lucas, 1988 and Looney, 2002).

Some studies have examined how oil receipt can contribute to public spending. For instance, Aregbeyen and Kolawole (2015) investigated the relationship between oil revenue, public expenditure and growth from 1980 to 2012. The time series data were analysed using Ordinary Least Squares, Cointegration, Granger Causality and Vector Error Correction Model. They found out that oil revenue granger caused government spending and economic growth in Nigeria and that increase in revenue would lead to increase in government spending. Similarly, Abula and Ben (2016) investigated on the relationship between oil revenue, government expenditure and economic growth in Nigeria from 1981 to 2014. They employed a Vector Autoregression Model (VAR) to analyse the data. Their study indicated a long run

positive relationship between oil revenue, government expenditure and growth in Nigeria. Fasanya and Ogundare (2018) also concluded in their study that government financed its expenditures majorly form the oil receipts. In another related view, Anfofum and Olure-Bank (2018) investigated on how oil revenue has contributed to the level of corruption in Nigeria. The study made of use time's series data which covered about 39 year period. They found a positive relationship between oil revenue and corruption in Nigeria, using the Granger causality test and the regression method.

In another vein, some studies have looked at the relationship between government health expenditure on growth. Akintunde and Satope (2013) investigated on the effect of government spending on health on economic growth in Nigeria from 1977 to 2010. They employed the Vector Error Correction Model (VECM) to analyse the times series data. Their study revealed a positive and significant long run effect of health expenditure and growth. Fazaeli et al. (2016) examined the impact of health expenditure on growth using a panel data of 12 member countries of OPEC from 1995 to 2012. They employed panel data unit root tests, cointegration, and ECM model to analyse the data. They found out that oil receipts account for most of the government spending on health in the oil exporting countries. Boachie et al. (2018) examined how government spending on health affects health outcomes in Ghana from 1980 to 2014. Using the OLS and the two-stage least squares (2SLS) to estimate the variables their study revealed that income and health expenditure contribute to health outcomes in Ghana positively. Similarly, Rahman et al. (2018) investigated on the relationship between health expenditure and health outcomes. They used private, public and total health expenditure to measure health expenditure. They also used life expectancy at birth, crude death rate and infant mortality rates to measure the health outcomes. Using a panel data analysis for 15 countries from 1995 to 2014, their study revealed that total health expenditure significantly reduced the infant mortality rates.

Studies have also explored the link between globalization and health care spending. Coming from the background of a resource curse theory, Calain (2008) studied the effects of the resource curse on the health sector in oil rich countries in sub-Saharan Africa, namely; Nigeria, Angola, Chad and South Sudan. He used a qualitative method to examine the effect of resource curse environment on the health care delivery. He stated that the health sector in these countries were funded by the government,

non-governmental organizations (NGOs) and the corporate extractive sector (mostly multinational oil companies). He noted that community health care has suffered in this type of settings and that even the corporate sectors are selective in their funding of the health sector at the expense of the poor masses in the country. Fervers et al. (2015) in a panel study examined the impact of globalization on the healthcare expenditure among 22 OECD countries from 1980 to 2009. They found a negative relationship between economic openness and government healthcare spending growth. In a related development, Heimberger (2020) examined the impact of economic globalization on government spending. Using the meta-analysis and meta-regression methods to a dataset of about 1182 observations, their study rejected the prediction of a strong unidirectional effect of globalization on government spending. Their study also rejected the compensation hypothesis but accepted the efficiency hypothesis. Dreher et al. (2006) examined the influence of globalization on the composition of government expenditures whether it followed the efficiency or compensation hypothesis among 108 countries from 1970 to 2001. Using the panel data analysis, they found out that globalization did not affect the composition of government expenditures. Most of the studies have not examined the contributions of both globalization and oil revenue on health expenditure especially in a developing country like Nigeria hence, this study.

Methodology

Health expenditure per person is functionally related to market forces of demand and supply for health services which is not in isolation with development in global health market. Conceptually, rising health expenditure can be considered in detail as two components. Rising costs of health services and an increasing demand for health services can explain this increasing trend. In view of this theoretical and empirical link, this study will adopt Unrestricted Error Correction Model (UECM) to examine dynamic relationship between Globalisation, Oil receipts and health expenditure in Nigeria. The model can be expressed as:

$$HEXP_t = f(GLS_t, ORV_t) \quad (1)$$

As previously reviewed in the literature, health expenditure per person (HEXP) is based on Purchasing Power Parity and in constant prices to represent the real expenditure on health to render their incomes internationally comparable. It depends negatively on health care price (HCP) and positively on per capita income (PCI) and Oil revenue (ORV). Health care prices are not available. A proxy variable was calculated by dividing health expenditure per person measured in current prices by health expenditure per person measured in constant 2011 prices (Paitoon, 2017). Globalisation may increase access to global health services thereby reduces health spending. Contrary to this postulation is that globalisation may increase health spending through exposure to health hazard. The effect of globalisation (GLS) on health status is mixed and controversial. Equation (1) becomes:

$$HEXP_t = f(GLS_t, ORV_t, HCP_t, PCI_t) \quad (2)$$

Where HCP is the health care prices and PCI is the GDP per capita. Health expenditure per person also depends on four other exogenous factors namely urban population (URB), mortality rate (MORT), life expectancy rate (LEXP) and institutional quality proxies with corruption (CORR). Urbanization (URB) is expected to be a proxy of the scale effect or economies/diseconomies of scale. A high urbanization rate may raise health expenditure because of overcrowded health care facilities or excessive demand for health care services or vice versa. Mortality rate (MOR) and life expectancy at birth (LEXP) are two important health outcome variables that can be related to health expenditure. While a high mortality rate may increase the health expenditure, a longer life expectancy may also cause people to end up spending more on their health care. Nevertheless, a longer life expectancy could indicate a healthier life and therefore smaller health care spending per person. Institutional quality proxies by corruption is also identified as a determinant of health care expenditure (Kee, 2001; Paitoon 2017). In other to factor in other factors influencing health care expenditure, equation (1) can be re-specified as:

$$HEXP_t = f(GLS_t, ORV_t, HCP_t, PCI_t, URB_t, MOR_t,$$
$$LEXP_t CORR_t) \quad (3)$$

Equation (3) expressed in ARDL-VECM Model to examine the long and short run effects, the model is specified as:

$$\Delta HEXP_t = \alpha_o + \sum_{i=1}^{k} \alpha_{1i} \Delta GLS_{t-i} + \sum_{i=1}^{k} \alpha_{2i} \Delta HCP_{t-i} + \sum_{i=1}^{k} \alpha_{3i} \Delta ORV_{t-i} +$$
$$\sum_{i=1}^{k} \alpha_{4i} \Delta PCI_{t-i} + \sum_{i=1}^{k} \alpha_{5i} \Delta URB_{t-i} + \sum_{i=1}^{k} \alpha_{6i} \Delta CORR_{t-i} + \sum_{i=1}^{k} \alpha_{7i} \Delta LEXP_{t-i} +$$
$$\sum_{i=1}^{k} \alpha_{8i} \Delta MOR_{t-i} + \beta_1 (\gamma_0 GLS_{t-1} + \gamma_1 HCP_{t-1} + \gamma_2 ORV_{t-1} + \gamma_3 PCI_{t-1} + \gamma_4 URB_{t-1} +$$
$$\gamma_5 CORR_{t-1} + \gamma_6 LEXP_{t-1} + \gamma_7 MOR_{t-1}) + e_{it}$$

(4)

The objective of this estimation is to examine the long-run relationship and short –run dynamics between health care expenditure, globalization and oil revenue. Although economic theory provides some guidance on the formulation of long-run steady-state relationship, it is not helpful in explaining dynamic adjustments, which are critical in any time-series investigation (Ang, 2010). In the light of this, this study adopts the Error Correction Model (ECM) within the VECM framework to estimate the long-run equilibrium relationship among oil revenue, globalization. Two alternative ECM estimators are considered: the Unrestricted Error-Correction Model (UECM) and Dynamic Ordinary Least Squares (DOLS) estimator. The UECM estimator involves estimating the long-run parameters by incorporating adequate dynamics into the specification to avoid omitted variables bias (Inder, 1993).

DOLS estimator is asymptotically efficient. Based on Monte Carlo simulation, this estimator is found to perform well in finite samples compared to other asymptotically efficient estimators. The estimation involves adding leads and lags of the first-differenced regressors to the specification. This procedure also corrects for potential endogeneity problems and provides estimates of the cointegrating vector which are asymptotically efficient (Stock and Watson, 1993). This work used annual time series data from 1980 to 2018 obtained from Statistical Bulletin, Annual Report and Statement of Accounts of the Central Bank of Nigeria, World Development Indicator (WDI) as well as International Country Risk Guild (ICRG)

Table 1 – The measurements of variables and sources of data

Variables	Measurements	Sources
Oil Revenue(ORV)	Oil revenue as a percentage of GDP	World Development Indicator(WDI)
Globalisation(GLS)	Globalisation index includes cross border investments, capital and labour flows, and low trade restrictions. It is an index which ranges from 0 to 100	KOF index of globalisation approach
Health Expenditure (HEXP)	Government budget on health as percentage of total budget	WDI
Health care prices(HCP)	A proxy variable was calculated by dividing health expenditure per person measured in current prices by health expenditure per person measured in constant 2011 prices	WDI
Life Expectancy(LEXP)	Life Expectancy at birth	WDI
Mortality Rate(MOR)	Estimated average of infant and maternal mortality rate	WDI
Per Capita Income (PCI)	GDP divided by population	WDI
Corruption (CORR)	Corruption Perspective Index	International Country Risk Guild (ICRG)
Urbanisation	Estimated ratio of urban population to rural population.	WDI
Note – compiled by authors		

Results and Discussions

Summary Statistics
The results of descriptive statistics and correlation matrix are reported in Table 2. The descriptive statistics showed that the mean values

for oil revenue as percentage of GDP and health expenditure are greater than their median since these variables are skewed to the right. However, globalization is negatively skewed. Furthermore, this study reported the kurtosis values which were positive in all cases. However, the value of kurtosis

for health expenditure was greater than 3, which indicates a presence of nonlinearity in the dataset. The kurtosis values for oil receipts and globalisation were platykurtic since these series have values for kurtosis less than 3, which therefore indicates a higher than normal distribution. It was also observed that the kurtosis value for health expenditure was greater than 3, which implies that a kurtosis value for this variable was leptokurtic.

The important property of the series is the normality distribution provided by the values of the Jaque-Bera. The Jacque-Bera statistic is a goodness-of-fit to check whether the sample data have the skewness and kurtosis matching a normal distribution. The Jarque-Bera test statistics reveal that the series of oil revenue (ORV) and globalisation (GLS) have normal distributions. However, the

hypothesis of non- normality cannot be rejected at 5 percent level of significance for health expenditure (HEXP). Since the assumption of normality has been violated, Ordinary Least Square (OLS) technique can not applied on these series. This is one of the justifications for using VECM and DOLS techniques of estimation. Our empirical evidence finds that correlations between the variables are positive though not strong. For instance, a positive correlation is found between oil revenue and globalisation. Health expenditure and oil revenue are positively correlated and globalisation and health expenditure also have positive correlation. However, correlation is different from causation and correlation analysis will not provide degree of relation between these variables. This leads us to proceed for further empirical investigations.

Table 2 – Descriptive Statistics and Correlation Matrix

Variable	Mean	Max	Min	Skew	Kurt	J.Bera	Prob	ORV	GLS	HEXP
ORV	12.3	26.53	6.51	0.17	2.36	6.817	0.1441	1.000	-------	-------
GLS	0.36	0.52	0.22	-0.12	1.82	5.803	0.5921	0.397	1.000	-------
HEXP	6.87	9.65	5.21	0.32	4.21	22.601	0.0027	0.468	0.611	1.000
Note – compiled by authors										

Unit Root Test

The empirical analysis in this study starts with the test for a unit root in order to examine the nature of stationarity of the series. This is very important because using a non-stationary series to explain another non-stationary series may generate spurious regressions, thereby yielding biased and inconsistent estimates (Engle & Granger, 1987). Kwiatkowski-Phillips-Schmidt-Shin (KPSS) and Dickey-Fuller test statistic using a generalized least squares unit root tests (DF GLS) are performed on the series to determine their order of integration. Results from unit root tests would determine the procedure to be employed to estimate. For instance, if all series are integrated of order 0, then ordinary least squares procedure (OLS) may be used; in contrast, if series are unit root non-stationary, then OLS would result in a spurious regression.

Although common practice in time series modeling has involved the application of (augmented) Dickey-Fuller and Phillips-Perron tests to determine whether a series possesses a unit root, improved and efficient tests with much better statistical properties are now Dickey-Fuller test statistic using a generalized least squares (DF GLS).

This modified test not only has the best overall performance in terms of small-sample size and power, but also has substantially improved power when an unknown mean or trend is present (Stock, 1994; Elliott et al., 1996). The test unit root result in Table 3 shows that the null hypothesis of a unit root cannot be rejected for the level series of some variables using KPSS and DF GLS techniques. However, the null hypothesis of a unit root can be rejected for the first difference of all the series at a 5 per cent level of significance.

Co integration Result

The Trace statistics in Table 4 shows that the null hypothesis of at most one cointegrating equation is accepted in favour of the alternative hypothesis at 0.05 levels. The values as indicated in the table 4 are greater than the critical values at 0.05 levels. This means that there exists long run relationship among the variables. Both the Trace test and Max-Eigen test indicates one cointegrating equations among the nine variables at 5% per cent significance level. Since the result of the Johansen cointegration test based on both tests indicated that the variables are integrated, the Vector Error Correction model is then employed.

Table 3 – Unit Root Test

Variable	KPSS			DF-GLS		
	T-Stat	Prob.	Order	T. Stat	Prob.	Order
HEXP D(HEXP)	-0.9873 -8.5968	0.4236 0.0000	I(1)	-1.5920 -5.0427	0.4219 0.0512	1(1)
ORV D(ORV)	-1.2274 -6.0590	0.6010 0.0000	I(1)	-2.9779 -5.8042	0.0891 0.0372	1(1)
GLS D(GLS)	-0.8447 -7.6349	0.7932 0.0000	I(1)	-1.9620 -7.0438	0.9511 0.0000	1(1)
HCP D(HCP)	-1.3426 -4.8735	0.2699 0.0000	I(1)	-2.9959 -5.8117	0.0682 0.0019	1(1)
PCI D(PCI)	1.6328 -3.9990	0.0329 0.0041	I(1)	-1.8921 -3.0821	0.0471 0.0032	1(1)
MOR D(MOR)	-2.1820 -8.9302	0.0732 0.0000	1(1)	-2.0049 -8.0418	0.0910 0.0000	1(1)
LEXP D(LEXP)	-4.0721	0.0042	1(0)	-1.7900 -4.5591	0.4911 0.0382	1(1)
URB D(URB)	-1.0753 -4.7321	0.6921 0.0109	1(1)	-1.8021 5.9819	0.0877 0.0000	1(1)
CORR D(CORR)	-4.8901	0.0431	1(0)	-2.9822 -7.9319	0.0927 0.0000	1(1)
Note – compiled by authors						

Table 4 - Johansen Multivariate Cointegration Results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.921849	96.44190	69.81889	0.0000	51.0312	39.04184	0.0000
At most 1*	0.819421	63.20215	47.85613	0.0253	38.0173	21.02274	0.0023
At most 2	0.301790	20.17950	27.79707	0.3466	18.68375	24.13162	0.4818
At most 3	0.149312	10.495755	15.49471	0.4140	8.246507	14.26460	0.7105
At most 4	0.052519	2.979248	3.841466	0.0715	3.089248	3.771466	0.0715

Note – compiled by authors
Max-Eigen test indicating 2 cointegrating equation at the 0.05 level. * denotes rejection of hypothesis at the 0.05 level. **
MacKinnon-Haug-Michelis(1999) p-values

Short Run Dynamics

This study having established the presence of a long relationship among oil revenue, globalization and health expenditure in Nigeria, the short dynamics was tested using the Error Correction Model (ECM) and the result shown in Table 5. The error correction term (ECT) is well signed and statistically significant at 5 percent, which implies that a deviation from long run equilibrium is restored by approximately 62 percent each year. The coefficient of globalization shows negative but insignificant effect on health expenditure. This implies the impact of globalization on health care expenditure is not significant in the short-run.

Oil revenue shows positive and significant impact on health expenditure though the impact is mild. A percentage change in oil revenue improves allocation to health sector by just 0.08 percent. This result indicated that oil revenue has little impact on health expenditure in the short-run. A critical analysis of the results shows that with the exception of globalization (GLS) and health care price (HCP) which negatively affect health expenditure, all the other variables exert positive effect on Nigeria's health expenditure. The overall impact of the variables on health expenditure in the short-run indicates 81 percent variation in government expenditure is explained by the model.

Table 5 – ECM Parsimonious Model

Variables	Coefficient	t-Statistics	Prob.
D(GLS(-1))	-0.0118	-1.7021	0.6190
D(ORV(-1))	0.0821	3.8012	0.0000
D(ORV(-2))	0.0691	1.7032	0.1571
D(HCP(-1))	-0.4190	-2.1201	0.0941
D(PCI(-1))	0.8862	2.9170	0.0189
D(MOR(-1))	0.0113	2.2104	0.0413
D(LEXP(-1))	0.1351	4.7120	0.0000
D(URB(-1))	0.4991	2.6510	0.0171
D(CORR(-1))	0.3190	2.0210	0.0810
Constant	-1.0015	-1.0153	0.0081
ECM(-1)	-0.6210	-2.1045	0.0531
R^2 = 0.81 Adj. R^2 = 0.67 F. stat = 67.09 Prob. of F. stat. = 0.0000			
Note – compiled by authors			

Long Run Estimates

Having established long run relationship among these variables, it is necessary to estimate long run model. Table 6 provides the results of the long-run estimations of the impact of oil revenue and globalization on health expenditure. The estimated results using the UECM and DOLS models reveal similar outcome in terms of significance of the variables and their direction of the impact on the measurements of health expenditure though magnitudes and level of significance are different. Globalization has negative and significant impact on health care expenditure. The results are in line with the pervious study of Fervers et al. (2015). This result rejected the compensation hypothesis but accepted the efficiency hypothesis. Oil revenue has positive and significant impact on health expenditure. The results are not surprising since a large amount of health care expenditure in Nigeria has emanated from oil revenue. The result conforms to the study of Abula and Ben (2016) and Fasanya and Ogundare (2018). Also, per capita real income enters the long-run health care expenditure function significantly at the 1% and 10 % levels with the expected positive signs in Model A and Model B respectively. Specifically, the long-run elasticities of per capita real health care expenditure with respect to per capita real income are found to be in the range of 1.048–1.190. The results imply that health care is luxury good in Nigeria. Such a finding corroborates the empirical evidence to a number of prior studies, including Hitiris and Posnett (1992), Parkin et al. (1987), and Herwartz and Theilen (2003).

Urbanization has positive and significant impact on health expenditure. This result disagrees with the finding of Paiton (2007) which revealed that urbanization is not significant in explaining health expenditure. Also, corruption has positive and significant impact on health expenditure. This is in line with a priori expectation that there is direct relationship between corruption and government spending. The ability of the government to curb corruption and mismanagement of funds improve fiscal performance in the long run. Life expectancy is also conforming to theoretical framework that increase in life expectancy increases government allocation to health sector to cater for aged related disease. This result conforms to the finding of Hosoya (2014) which revealed direct relationship between aged population and health expenditure. Mortality rate shows positive and significant impact on heath care spending. Thus, a one per cent increase in maternal and infant mortality rate brings about 0.90 and 0.69 percentage point rise in health care expenditure in model A and Model B respectively. All other variables have positive and significant impact on health expenditure except health care price. The negative coefficient of health care price is consistence with theoretical postulation. This result supports the finding of Lorenzoni et al. (2014) which revealed inverse relationship between health expenditure and health care price.

Table 6 – Long run estimates for Health Expenditures (HEXP)

Variables	Model A: UECM			Model B: DOLS		
	Coefficient	t-statistics	Prob.	Coefficient	t-statistics	Prob.
Constant	-0.7312***	-2.1032	0.0817	-0.5180***	-2.4918	0.0619
GLS	-0.0321***	-2.0178	0.0821	0.8021***	-2.2902	0.0617
ORV	0.1331**	3.0626	0.0409	0.1049*	5.0189	0.0000
HCP	-0.1812**	2.7116	0.0519	-0.0809**	2.8710	0.0491
PCI	1.0482*	4.6015	0.0000	1.1903***	2.0189	0.0821
MOR	0.9027**	3.0189	0.0488	0.6952*	3.9186	0.0273
LEXP	1.0539***	2.0923	0.0891	0.9172**	2.9011	0.0319
URB	0.2012***	2.0131	0.0911	0.4430*	5.0219	0.0000
CORR	0.1180*	5.9015	0.0000	0.5782**	2.791	0.0318

Note – compiled by authors
*, **, *** denote significance at 1% , 5% and 10% respectively

Conclusion

Globalisation has always remained a topical issue among academia and researchers due to lack of consensus on this subject. A potential unresolved issue is the effect of globalisation and oil receipts on health expenditure. In resolving the issue, the study explored interlinks between these variables using various econometrics techniques including Unrestricted Error Correction Model (UECM) and Dynamic Ordinary Least Square (DOLS) approach on annual time series data spanning from 1980 to 2018.

The long run and the short run results show that globalisation had a negative and statistically significant effect on health expenditure, supporting the efficiency hypothesis as against the compensation hypothesis. Also, the study revealed a positive and significant effect of oil revenue on government spending on health. Income per capita, life expectancy also had a positive and significant effect on the health expenditure. This study recommends that there is need for government to increase oil fiscal allocation to health sector of the economy. There should be export promotion and import substitution, so as to harness the gains of globalisation for the country especially as regards government spending on health.

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