Impact of Public Spending on Poverty Reduction in Nigeria

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Abstract. This study examined the impact of public spending on poverty reduction in Nigeria, focusing on Education and health. Using time-series data from 1985 to 2016, the Autoregressive Distributed Lag (ARDL) model assessed short- and long-term effects. Descriptive statistics showed an average poverty rate of 55.50%, with government spending on Education and health averaging ₦113.43 billion and ₦65.97 billion, respectively. Despite increased expenditure, poverty remained high. The unit root test confirmed stationarity at the first difference, and cointegration analysis indicated a long-run relationship. ARDL results showed a 1% increase in health spending reduced poverty by 0.09%, while education spending had a positive short-run impact but turned negative long-term. Economic growth significantly reduced poverty, with a coefficient of -0.69, while unemployment (0.052) increased it. The model was statistically significant (F-statistic=101.2872, R^2 = 0.9956), explaining 99.56% of poverty variations — findings aligned with Wagner's Law and endogenous growth theories, emphasising strategic resource allocation. Policy recommendations included improved transparency, efficient budgeting, and stronger social programs. The study concluded that while public spending is crucial for economic progress, its effectiveness depends on implementation, governance, and long-term strategies.

Keywords: Public Spending; Poverty Reduction; Economic Growth; Education and Health Expenditure; ARDL Model.

INTRODUCTION

Government expenditure refers to the annual financial outlay by a nation's federal government to fulfil macroeconomic goals such as poverty alleviation, enhancing national productivity, and ensuring economic stability.

Since the late 1980s, Nigeria has increasingly relied on public spending as a key economic tool. Several factors have contributed to this trend. One of the primary reasons is the dominant involvement of the public sector in Nigeria's major economic activities. This dominance can be traced to multiple historical and economic events, including the oil boom of the early 1970s, the necessity of rebuilding war-torn regions after the Nigerian Civil War in 1970, and the government's industrialisation agenda, which centred around an import substitution strategy aimed at boosting the nation's GDP.

However, the economic downturn of the 1980s, exacerbated by the sharp decline in global oil prices and poor economic management, brought poverty eradication to the forefront of Nigeria's policy priorities. Natural disasters, such as severe flooding, further underscored the urgency of addressing poverty. By the mid-1980s, the private sector was experiencing a significant downturn, as reflected in declining aggregate output, industrial production, and non-oil exports. Despite increased public spending, the fiscal deficit widened, and widespread poverty persisted.

By 1986, key socio-economic indicators had deteriorated, leading to rising unemployment and reduced purchasing power. Lower-income groups bore the brunt of these economic hardships, and national economic growth was downward. Poverty in Nigeria did not become a major national concern until the post-oil boom period when a global economic slump, combined with plummeting oil prices, worsened economic conditions. Heavy reliance on oil revenue and insufficient efforts to generate income from alternative sources substantially dropped government earnings. This decline in revenue also resulted in the depletion of foreign reserves and an accumulation of trade arrears, severely limiting the government's ability to provide essential services and infrastructure.

Over the past few decades, poverty levels in Nigeria have continued to rise. According to [1], Nigeria, Africa's most populous nation, had a significant portion of its impoverished citizens. Recognising the devastating effects of poverty, the federal government introduced the Structural Adjustment Program (SAP) to reduce oil dependency and ensure food security. This was later supplemented by other initiatives such as the National FADAMA Programs.

The federal government also prioritised poverty alleviation in its annual budget, implementing various policies to enhance the welfare of the populace. Poverty has become a global issue, with countries striving to mitigate or eliminate it. Due to its complexity and far-reaching effects, international organisations and governments have intensified efforts to implement policies aimed at poverty reduction.

Some authors noted that Nigeria's poverty rate has consistently followed an upward trajectory. Data presented by the authors indicate that poverty levels surged from 27% in 1980 to 46% in 1985, reaching 67% in 1996 and exceeding 70% by 1999. The 2013 Human Development Index highlighted that the most impoverished states in Nigeria were concentrated in the northeastern and northwestern regions, including Yobe, Borno, Kebbi, Katsina, Bauchi, Jigawa, Gombe, Taraba, Kano, Niger, and Adamawa.

As a result, Nigeria's fiscal policies, particularly those geared towards expenditure in areas that directly impact the well-being of impoverished communities, have steadily increased over time. Ultimately, this study seeks to examine the extent to which government spending has influenced the living standards of the Nigerian people.

Statement of The Problem. Poverty in Nigeria is a complex issue with multiple dimensions, as reflected in key human development indicators such as Education and healthcare, particularly the nation's Gross Domestic Product (GDP). Analysing poverty trends in Nigeria reveals significant disparities in educational and health standards, which vary across geopolitical zones, states, urban and rural areas, and gender. The North-East and North-West regions contribute the most to national poverty, whereas the Southeast region has the lowest poverty rates. Additionally, health outcomes are highly unequal across different income levels, improving progressively as households move from lower to higher economic quintiles. Geographically, rural areas account for 65% of the country's poverty burden, whereas urban areas contribute 35%, emphasising that poverty is more prevalent in rural Nigeria.

Primary and Secondary Education enrollment rates also differ across regions, highlighting gender disparities. In most regions, male enrollment surpasses female enrollment, except in the Southeast, where female participation in secondary Education exceeds that of males. The Southeast also records the lowest infant and under-five mortality rates but has the highest number of female-headed households.

Health indicators further expose these disparities. In 2007, the rural infant mortality rate stood at 121 per 1,000 live births, compared to 81 per 1,000 in urban areas. Similarly, the under-five mortality rate was significantly higher in rural areas at 243 per 1,000 live births, compared to 153 per 1,000 in urban centres. These trends suggest that poverty in Nigeria is becoming generational, as children born into poor households are likely to remain impoverished due to persistent inequalities in access to quality education and healthcare.

Despite numerous studies on poverty reduction in Nigeria, relatively few have focused on the role of government expenditure in alleviating poverty. Among those that do, hardly any have specifically examined the impact of public spending on the health and education sectors. For instance, the author [2] analysed government spending on poverty reduction, focusing on agriculture. Similarly, studies [3] primarily explored the link between economic growth and poverty reduction.

This research diverges from previous studies by investigating the impact of public spending on poverty alleviation, with particular emphasis on the health and education sectors. Given their crucial role in improving overall welfare, this study aims to bridge the gap in existing research and contribute valuable insights into the effectiveness of public expenditure in addressing poverty in Nigeria.

Research Question. The broad question of this study is whether public spending impacts poverty reduction in Nigeria.

The specific questions for this study include:

1. Does public spending on health have an impact on poverty reduction?

2. Does public spending on Education have an impact on poverty reduction?

3. Does a long-run relationship exist between public spending on health and Education and poverty in Nigeria?

Hypothesis

H01: Public spending on Education has no significant impact on poverty reduction in Nigeria.

H02: Public spending on health has no significant impact on poverty reduction in Nigeria.

Theoretical Framework

Economic theory suggests that government spending can positively and negatively affect economic growth. According to traditional Keynesian macroeconomics, various forms of public expenditure, including recurrent spending, can boost economic growth through their multiplier effects on aggregate demand. However, excessive government spending can also crowd out private investment, reducing economic stimulation in the short term and limiting capital accumulation in the long run. This crowding-out effect is primarily driven by fiscal deficits and their influence on interest rates [4].

Studies based on endogenous growth models differentiate between distortionary and non-distortionary taxation and productive and unproductive expenditures. Expenditures are considered productive if they contribute directly to private sector production, while unproductive expenditures have little to no direct effect on economic growth [5]. However, defining which expenditures fall into each category remains debatable.

Government spending has long been a significant area of interest among researchers. Over the past century, scholars have examined various factors influencing public expenditure, including institutional elements such as party fragmentation [6], levels of political representation [7], and electoral competition [8]. Additionally, a growing focus has been on classifying government spending into two main categories: public goods and services and transfers and subsidies [9]. The expansion of the public sector has intrigued researchers for over a hundred years, with Wagner's early work in the late 19th century laying the foundation for modern discussions on government expenditure [10]. A wealth of diverse research has since emerged, incorporating various theoretical perspectives, methodologies, and data analyses [11].

Wagner's Law of Increasing State Activity. Wagner's theory establishes a link between industrialisation, urbanisation, and Education, suggesting that these factors drive the expansion of government spending. He argued that increased demand for public goods arises from organised industrial workers, reducing private sector growth [12]. However, Bureau Voting Theory challenges this notion, asserting that government expansion results from self-serving public officials artificially creating demand for government services [13]. Similarly, Fiscal Illusion Theory proposes that complex tax structures obscure the true cost of public goods, encouraging further government expansion [14].

The impact of government spending on economic growth depends on the relative productivity of the public and private sectors. Public expenditure can promote growth by enhancing private sector productivity through externalities. In such cases, higher public spending can lead to greater economic expansion.

Peacock and Wiseman's Theory of Public Expenditure. Authors [15] provided key insights into the nature of public expenditure growth by analysing government spending patterns in England. They argued that public expenditure does not increase linearly, as Wagner suggested, but is instead influenced by political factors. They noted that while governments seek to increase spending, the public resists higher taxation, even as they demand expanded social services.

Large-scale crises like wars can temporarily alter public attitudes toward taxation and spending. Peacock and Wiseman described this as the "displacement effect," where government revenue and expenditure shift to new levels during periods of national emergency. Initially, citizens resist higher taxes, but over time, they accept them, establishing a new baseline for taxation known as "tax tolerance." Additionally, major crises lead the public to expect government intervention to stabilise the economy, contributing to the "inspection effect."

The researchers further observed that such periods of crisis tend to erode local autonomy, centralising government power over public expenditure. Over time, this process leads to an increase in government activity. In the modern era, public expenditure growth has become almost inevitable, with crises playing a diminished role in driving spending increases.

Classical vs. Keynesian Views on Public Expenditure. Classical economists argue that government intervention often does more harm than good, advocating for minimal economic state involvement. Adam Smith (1776), in his work “The Wealth of Nations”, championed a laissez-faire approach, emphasising the profit motive as the key driver of economic growth. According to the classical perspective, an increase in the money supply leads to proportional price increases without affecting real GDP – a concept known as money neutrality. Classical economists assumed the economy naturally operates at full employment, with wages and interest rates adjusting automatically. As a result, they did not prioritise economic growth as a policy goal.

Following the Great Depression of 1929-30, classical economists blamed rigid labour markets and strong trade unions for high unemployment. In contrast, Keynesians advocated for government intervention to address market failures. In The General Theory of Employment, Interest, and Money (1936), John Maynard Keynes (1883-1946) criticised classical economists for focusing too much on the long run, famously stating, "In the long run, we are all dead."

Keynes believed that economic downturns required immediate government intervention. He argued that increased savings during recessions would not stimulate the economy, whereas higher government spending would boost demand, prompting producers to expand output and create jobs. This process, known as the multiplier effect, illustrates how public spending can drive national income growth.

Unlike classical economists, Keynes viewed public expenditure as an external factor that could actively stimulate economic growth. He argued that governments could counter economic downturns by increasing aggregate demand, thereby jumpstarting the economy. However, he also cautioned that excessive public spending could lead to inflation, while insufficient spending could result in high unemployment. Thus, Keynesian economics emphasises the need for a balanced approach to government intervention.

METHODOLOGY

Model specification. This study uses an econometric approach, employing the Time Series Data method. However, the specification of the poverty reduction model adopted in this study follows the previous empirical study on poverty reduction [5], and the model will be structured to follow the pattern of the model used [2]. The model employed [2] will be revised by introducing government spending on health, Education and Unemployment.

Thus, the model is expressed in the functional form as:

$$POVRt = f(EDUt, HETt, UNEMt, EGt, GEAt), \quad (1)$$

Transformation into a linear equation then becomes:

$$POVRt = \beta 0 + \beta 1EDUt + \beta 2HETt + \\ + \beta 3UNEMt + +\beta 4EGt + \beta 5GEAt + \mu t \quad (1)$$

where POVR – National Poverty Index in Nigeria; EDU – Government Spending on Education in Nigeria; HET – Government Spending on Health in Nigeria; UNEM – Unemployment rate in Nigeria; EG – Economic Growth in Nigeria proxied by

changes in per capita income; GEA – Government Expenditure on Agriculture; μt – Error term; β0 – intercept; βi – Slopes/elasticities (i=1,2,3,4,5).

Expressing equation (1) in its explicit log-linear form, it becomes:

$$LogPOVR_t = \beta 0 + \beta 1 LogEDU_t + \beta 2\ LogHET_t + \beta 3 LogUNEM_t + \beta 4 LogEG_t + \beta 5 LogGEA_t, \quad (2)$$

where Log – Natural Logarithm of the variables used to smoothen possible scholastic effect from variables at level; β_0 is the constant; β1–β6 are the coefficients of the relationships between the independent and dependent variables; μ – the stochastic error term for the period covered by the study.

A-Priori Expectations

β1< 0: An increase in Quality education, i.e. EDU, will lead to increased opportunity for the poor to get good jobs, and thus, the poverty level will decline

β2< 0: The expectation is that when Government spending on Healthcare facilities increases, there will be willing and non-disabled men and women to work, hence the reduction in poverty level. The co-efficient is therefore expected to be negative.

β3>0: An increase in the Unemployment rate (UNEM) will increase poverty in Nigeria. The coefficient is expected to be positive

β4> 0: The coefficient is expected to be negative as the increase in Economic growth of a nation means an increase in the welfare of the people and a decrease in the poverty level.

B5< 0: An increase in Government expenditure on the Agricultural sector will allow for more participation of youths in Farming activities. This is expected to reduce the poverty level.

Data Requirements. The necessary data required in this analysis include the poverty Index (POVR) as the dependent variable and Government Expenditure on Education (EDU), Government Expenditure on Health (HET), Unemployment rate (UNEM), Economic growth (EG) and Government Expenditure on Agriculture (GEA) as the independent variables. The needed data are time series data from 1985-2016 (30 years).

Data Sources. The study employs secondary data. Data will be obtained from the Central Bank of Nigeria (CBN), NBS and the World Bank.

Estimations Methods. The estimation will start by ensuring that the variables in their behaviours conform to the assumptions of the classical regression model. As a result, the data's time series properties will be examined to avoid spurious results emanating from the non-stationarity of the data series.

The estimation will begin with a unit root test to confirm the stationary state of the variables that entered the model. The AugmentedDickey fuller (ADF) test will be used to measure the stationarity of the data used in this study. The essence of this test is that one main feature of time series data is the Time Trend, which normally leads to Non-Stationarity.

If the variables are non-stationary, the next step is to differentiate and test for the stationarity of differenced variables. If the variables become stationary after the first difference, then it is concluded that they are integrated into order one, i.e. 1(1). The Engle-Granger Cointegration test would then be adopted to test if a long-run relationship exists among the I(1) series. If the variables are not stationary after the first difference, the First Difference Autoregressive Distributive Lag (ARDL) regression analysis will be carried out; however, if the series are cointegrated, a short-run Error correction model will be estimated.

However, if the ADF unit root test result shows a combination of I (0) and I(1) series, the ARDL bound testing procedure would be adopted to determine if a long-run relationship exists among the variables. If the bound test result reveals that a long-run relationship exists, then the ARDL cointegrating and long-run form, a short-run Error Correction technique that combines the short-run and long-run characteristics of the series, would be adopted. However, if the bound test result reveals no long-run relationship exists, then the I(1) series would enter the ARDL model at first difference. In contrast, the I (0) series will enter the model at its level.

After that, we shall employ the Ordinary Least Square (OLS) method in estimating the equations, being the best linear, unbiased estimator.

Statistical software package E-views (9.0) will be used to analyse data in this research.

RESULTS AND DISCUSSION

Descriptive statistics. The summary statistics of the data employed in the study are presented in the table below. This is to check for some characteristics in the data, which can give us a rough prediction of how the variables will likely behave. The summary statistics include mean, median, maximum, minimum, standard deviation skewness and kurtosis. The mean is the average value of the data. It gives us the approximate amount we expect any observation to hover around.

From the result given in Table 1, we observe that the mean value of the poverty rate (POVR) is 55.50 % while the average government expenditure on Education (EDU) is N113.432 billion over the period, the average government expenditure on health (HET) over the period is N65.97 billion, the average value of unemployment rate over the period is 10.80 %, the average of economic growth (proxy by per capita income) is $1769.15 and the average of government expenditure on agriculture (GEA) over the period is N17.22 billion.

Table 1 – Summary of Descriptive Statistics

Variable	POVR	EDU	HET	UNEM	EG	GEA
Mean	55.5073	113.432	65.9751	10.8091	1769.15	17.2279
Median	54.9	57.9566	24.5223	12.2	1514.1	7.53736
Maximum	66.9	394.9	257.72	21.1	2563.09	65.399
Minimum	45.3	0.22501	0.04132	1.9	1332	0.02037
Std. Dev.	5.50758	137.102	84.7005	6.34372	446.519	19.3475
Skewness	0.27984	1.01725	1.09664	-0.0439	0.608	0.88178
Kurtosis	2.54646	2.4838	2.6987	1.42406	1.75431	2.61758
Jarque-Bera	0.71354	6.05773	6.73925	3.42552	4.16682	4.47754
Probability	0.69993	0.04837	0.0344	0.18037	0.12451	0.10659
Sum	1831.74	3743.24	2177.18	356.7	58381.9	568.522
Sum Sq. Dev.	970.67	601506	229574	1287.77	6380143	11978.4
Observations	33	33	33	33	33	33

Notes: POVR = Poverty rate, EDU = Govt. Exp on Education, HET = Govt. exp. On health, UNEM = Unemployment rate, EG = Economic growth, GEA = Govt. exp. On agriculture.

Another use of the mean is enabling us to detect outliers data points. The standard deviation measures the dispersion around the mean. A high standard deviation shows high variation around the mean and vice versa. From the result, EG has the highest variation, while POVR has the lowest dispersion around the mean value. The skewness measures the symmetry of the distribution of the variable. A skewness value of zero means that the variable follows a normal distribution, while a skewness greater than (less than) zero means that the variable has a thick tail to the right/left. From the result, we see that all our variables are not normally distributed since they have a very small value.

Skewness and kurtosis, which measure the degree of peakedness, are combined to give us the Jarque-bera statistics, which is the accurate measure of the normality of our variables. The Jarque-Bera statistics are based on a null hypothesis of normality.

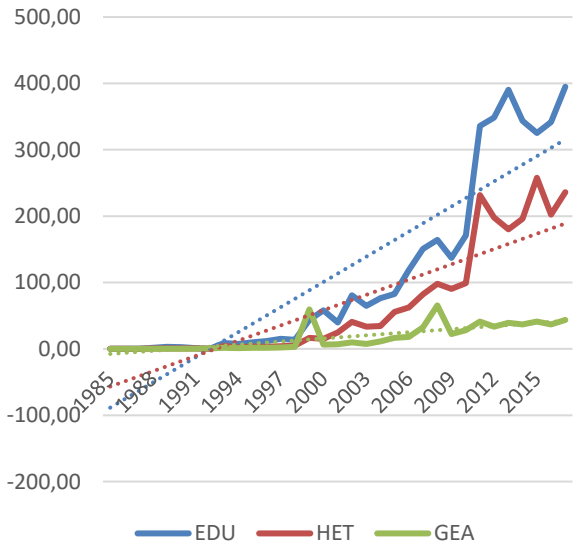

Figure 1 – Trend of Public expenditure on Education, health and agriculture in Nigeria

The result shows that all our variables are normally distributed with corresponding probability values greater than 0.05.

Correlation Matrix. The correlation matrix shows the nature and degree of correlation between the model's dependent and explanatory variables. It is also a quick way to test for multicollinearity among the variables.

Table 2, considering the first column of the table, which shows the relationship between poverty rate and other variables with other variables, shows no evidence of high or exact multicollinearity as all correlation coefficients are less than the 0.8 benchmark.

Table 2 – Results of Correlation Matrix

Variables	POVR	EDU	HET	UNEM	EG	GEA
POVR	1					
EDU	0.124421	1				
HET	0.098679	0.980433	1			
UNEM	0.237398	0.739939	0.720466	1		
EG	0.00143	0.948496	0.947017	0.760238	1	
GEA	0.178733	0.760758	0.753085	0.764172	0.744638	1

Put differently, the result indicates the absence of multicollinearity. The result also shows a weak positive relationship between the poverty rate and all other variables.

Unit Root Test. The augmented dickey fuller test for unit root is presented in the table below. The reason for conducting unit root is that most economic time series data exhibit stochastic trends that, if untreated, can generate spurious results. The test developed to detect such a behaviour is the unit root test. The null hypothesis of unit root is tested against the alternative of no unit root at a 5% significance level. If we reject the null hypothesis, we conclude that our variable is stationary at levels else, we differentiate the variable and repeat the test. The result of the unit root test is presented below.

Table 2a Unit Root Test (ADF) Result at Levels (Trend and Intercept)

Series	ADF test statistic	5% critical values	Order	Remarks
LPOVR	-1.984493	-3.557759	I(0)	Non-Stationary
LEDU	-3.253682	-3.557759	1(0)	Non-Stationary
LHET	0.925733	-3.587527	I(0)	Non-Stationary
LUNEM	-2.356771	-3.557759	I(0)	Non-Stationary
LEG	-1.547488	-3.562882	I(0)	Non-Stationary
LGEA	-2.538371	-3.557759	I(0)	Non-Stationary

Table 2b – Unit Root Test (ADF) at 1st Difference (Trend and Intercept)

Series	ADF test statistic	5% critical values	Order	Remarks
LPOVR	-5.656069	-3.562882	I(1)	Stationary
LEDU	-4.865552	-3.587527	1(1)	Stationary
LHET	-4.480497	-3.587527	I(1)	Stationary
LUNEM	-5.431073	-3.562882	I(1)	Stationary
LEG	-3.644958	-3.562882	I(1)	Stationary
LGEA	-8.348515	-3.562882	I(1)	Stationary

Notes: LPOVR = log of poverty rate, LEDU = log of Govt. Exp on Education, LHET = log of Govt. exp. on health, LUNEM = log of Unemployment rate, LEG = log of Economic growth, LGEA = log of Govt. exp, on agriculture

The augmented dickey fuller test result presented above shows that for all our variables, we cannot reject the null hypothesis of unit root; therefore, we differentiate the variables and reapply the unit root test, which shows that our variables are stationary at first difference. Hence, the unit root test revealed that our variables are in the same order. That is, they are integrated

into order one. This then led us to test for the existence of cointegration among our variables. We employed the ARDL bound test for cointegration to confirm the long-run relationship.

The relationship between exchange rate and inflation is determined by estimating an ARDL model. The first step in estimating the model is determining the optimal lag length, i.e. the number of lags of both dependent and independent variables to be included in the equation.

Table 2C shows the estimates of the various lags using various information criteria.

Table 2c – Optimal Lag Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	102.3875	NA	6.52e-11	-6.425835	-6.145595	-6.336184
1	227.3251	191.5710	1.83e-13	-12.35501	-10.39333	-11.72745
2	300.2095	82.60224	2.14e-14	-14.81397	-11.17085	-13.64850
3	394.7991	69.36570*	1.17e-15*	-18.71994*	-13.39539*	-17.01657*

Notes: LR – sequential modified LR test statistic (each test at 5% level); FPE – Final prediction error; AIC – Akaike information criterion; SC – Schwarz information criterion; HQ – Hannan-Quinn information criterion.

A maximum lag of three was estimated, and this choice was made because yearly data were used in this study. The result in the table shows that the Schwarz information criterion is the best information criterion with the lowest values, which picked the three lags length as the optimal lag. Therefore, 3 lag3 will used to estimate the model.

Long Run Analysis: Cointegration Test. The result from the cointegration test is presented in Table 3.

Based on the results, the null hypothesis of no cointegration or long run is rejected as the compound F-statistics is greater than the upper critical values at all significance levels. Hence, we conclude that there is a long-run relationship between POVR, EDU, HET, UNEM, EG and GEA. Thus, we proceed to long-run ARDL estimation.

Table 3 – Engle Granger Cointegration Test

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
LPOVR	-3.2046	0.6727	-17.396	0.5797
LEDU	-4.7462	0.1163	-25.866	0.1381
LHET	-5.7813	0.0188	-31.845	0.0260
LUNEM	-2.6928	0.8615	-11.791	0.8841
LEG	-1.5226	0.9949	-6.2283	0.9924
LGEA	-4.6642	0.1321	-26.046	0.1325

The results of the estimated model based on the ARDL technique were analysed to show the relationship between public expenditure and poverty level (Table 4).

Table 4 – Short Run ARDL Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LPOVR(-1)	0.438114	0.048446	9.043402	0.0000
LEDU	0.060069	0.023724	2.532025	0.0321
LEDU(-1)	0.102745	0.02929	3.507851	0.0066
LEDU(-2)	0.085726	0.010142	8.452847	0.0000
LEDU(-3)	0.024365	0.005754	4.23423	0.0022
LHET	-0.095342	0.032899	-2.898015	0.0177
LHET(-1)	-0.161992	0.043267	-3.743989	0.0046
LHET(-2)	-0.112472	0.016114	-6.979953	0.0001
LUNEM	-0.01548	0.015094	-1.025517	0.3319
LUNEM(-1)	-0.001004	0.016499	-0.060875	0.9528
LUNEM(-2)	0.052394	0.019493	2.687824	0.0249
LUNEM(-3)	0.056948	0.027234	2.091071	0.0661
LEG	-0.695862	0.203375	-3.421567	0.0076
LEG(-1)	-0.586963	0.217327	-2.700831	0.0244
LEG(-2)	1.363295	0.2164	6.299883	0.0001
LEG(-3)	-0.144207	0.16468	-0.875681	0.404

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LGEA	0.018542	0.00973	1.905686	0.0891
LGEA(-1)	0.034404	0.012196	2.820795	0.02
LGEA(-2)	0.03977	0.011642	3.416105	0.0077
LGEA(-3)	0.037905	0.008009	4.732962	0.0011
C	1.057266	0.197897	5.342519	0.0005
R^2	0.995577		F-statistic	101.2872
Adjusted R^2	0.985748		Prob(F-statistic)	0.00000

The coefficient of determination (R^2) is 0.99, indicating that about 99% of poverty-level changes are explained by EDU, HET, UNEMP, EG and GEA. The F-statistics explains the overall significance of the variables EDU, HET, UNEMP, EG, and GEA regarding poverty level. The F-value is 101.2872 and significant at 5% level. Since the F probability is less than 5% significance, we conclude that taxation variables in the model significantly affect the poverty level in Nigeria. This implies that the public expenditure variable and per capita income (EG) in the model could have a 99% effect on the poverty level in Nigeria.

In furtherance, the short-run model result revealed that the coefficient of lag one of POVR is about 0.43, implying that a one percentage increase in the poverty rate in the immediate past period will lead to a 0.43 % increase in the poverty rate in Nigeria. This relationship is statistically significant at a 5% level of significance.

The coefficient of public Expenditure on Education (EDU) at lag one to three revealed a positive relationship between public spending on Education and the poverty rate in Nigeria. This relationship is significant ($t > 2$, prob.< 0.05). In addition, this relationship does not conform with the expectations of this study.

The coefficient of public expenditure on health (HET) -0.09 indicates a negative and significant relationship between HET and the poverty rate in Nigeria. This implies that a unit increase in public expenditure on health will lead to about a 0.09 reduction in the poverty rate in Nigeria. Also, it was observed that public expenditure on health at lag one and two revealed a negative and significant relationship with the poverty rate in Nigeria. This result is in line with apriori expectation.

Furthermore, the Unemployment rate (UNEM) coefficient has a positive and insignificant relationship with the poverty rate in Nigeria. Also, the unemployment rate at lag one has a negative and insignificant relationship with the poverty rate. In contrast, unemployment at lag two and three has a positive and insignificant relationship with the poverty rate in Nigeria.

The coefficient of economic growth (EG) -0.69 indicates a negative and significant relationship between EG and the poverty rate in Nigeria. This implies that a unit increase in economic growth will lead to about a 0.69 reduction in the poverty rate in Nigeria. Also, economic growth (EG) at lags one and three revealed a negative and significant relationship with the poverty rate in Nigeria. This result aligns with the apriori expectation, which depicted that a unit increase in economic growth would lead to a reduction in Nigeria.

Lastly, the coefficient of government expenditure on agriculture (LGEA) has a positive and significant relationship with the poverty rate at lag one, two, and three. This implies that a unit increase in the poverty rate at lags one, two, and three will lead to an increase in the poverty rate in Nigeria.

Based on the results in Table 5, the F-test probability for the model is 0.33.

Table 5 - Residual diagnostics test result for ARDL models

Residual Diagnostics	Statistic	Probability
Heteroskedasticity Test ($\chi 2$)	0.33	0.98
Jarques-Bera	1.27	0.52
Serial Correlation LM Test ($\chi 2$)	0.32	0.73

Since this value exceeds the 0.05 threshold, we fail to reject the null hypothesis at a 5% significance level. This suggests no evidence of heteroskedasticity in the error term's variance, confirming that the variance remains constant (homoskedastic).

A normality test was performed using the Jarque-Bera criterion, which follows a chi-square (X2) distribution with two degrees of freedom, to assess whether the model's residuals follow a nor-

mal distribution. The test produced a Jarque-Bera statistic of 1.27 with a p-value of 0.52. Given this result, we reject the null hypothesis, indicating that the residuals deviate from a normal distribution.

Additionally, the Breusch-Godfrey LM test was applied to detect serial correlation. The F-test value for this test is 0.32, with a probability of 0.73 – both exceeding the 0.05 threshold. Consequently, we accept the null hypothesis at the 5% significance level, which states no serial autocorrelation in the random variables. However, this finding confirms the presence of serial correlation in the model.

The present study's findings underscore the intricate relationship between government expenditure and economic growth, aligning with the foundational theories posited [5]. Our analysis reveals that increased public spending, particularly in infrastructure and Education, correlates positively with GDP growth rates. This observation is consistent with the endogenous growth model, which emphasises the role of public investment in fostering economic development.

However, the efficiency of such expenditures remains a critical determinant. The author [4] highlighted that merely increasing government spending does not guarantee growth; the allocation and management of these funds are pivotal. Our data corroborate this, indicating that countries with strategic investment plans experience more substantial growth than those with ad-hoc spending approaches.

In examining the applicability of Wagner's Law in developing economies, our results resonate with [12] findings. As national income rises, there is a disproportionate increase in public sector activities, suggesting that economic expansion naturally escalates the demand for public services. This trend is evident in several emerging markets where burgeoning middle classes advocate for enhanced public goods and services.

Conversely, the author [14] discussed, the concept of fiscal illusion offers insight into taxpayer perceptions regarding government spending. Our study observed that there is a diminished public outcry against increased government expenditures in regions where tax systems are convoluted. This phenomenon suggests that transparency in taxation could influence public support for fiscal policies.

Further, the relationship between political structures and public spending patterns cannot be overlooked. The author [6] posited that governments with left-leaning ideologies tend to have larger public sectors. Our findings align with this assertion, demonstrating that administrations with socialist orientations allocate more resources to social welfare programs, expanding the government's role in economic activities.

Additionally, the study highlights the significance of electoral systems in shaping fiscal policies. Authors [7] argued that proportional representation systems often lead to higher public spending due to coalition governments catering to diverse constituencies. Our analysis supports this, showing a positive correlation between proportional representation and elevated government expenditures.

The implications of these findings are multifaceted. Policymakers must recognise that while increasing public expenditure can stimulate economic growth, the effectiveness of such spending hinges on strategic allocation and transparency. Moreover, understanding the political and electoral contexts can provide deeper insights into fiscal policy decisions, enabling more informed and effective governance.

CONCLUSIONS

This study highlights the crucial role of public spending in economic growth and poverty reduction, emphasising that while increased expenditure in sectors like Education and health can drive development, its effectiveness depends on strategic allocation, transparency, and governance. The findings align with existing economic theories, such as Wagner's Law and the endogenous growth model, while also acknowledging the impact of political and fiscal dynamics. For government expenditure to yield sustainable economic benefits, policymakers must adopt evidence-based strategies prioritising efficiency, equity, and long-term economic stability.

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