



Public Health Expenditure and Economic Growth in Nigeria: Autoregressive Distribution Lag Approach

DR. C.O.K IBIDAPO & O.A. AKINMUYISITAN

*Department of Economics
Adeyemi Federal University of Education, Ondo, Nigeria*

Date of Submission: 07-05-2026

Date of Acceptance: 17-05-2026

Abstract

This study examines the relationship between public health expenditure and economic growth in Nigeria. Using the annual data covering the period from 2000 to 2024, it utilizes the Autoregressive Distributed Lag (ARDL) model to analyze both short-run and long-run dynamics among economic growth, public health expenditure, gross capital formation, labor force, and life expectancy. Descriptive statistics and unit root tests were conducted to ensure the suitability of the data, while the ARDL Bounds Test was used to determine the existence of a long-run relationship among the variables. The results reveal that all variables are integrated and the Bounds Test confirms the presence of a long-run relationship. The long-run findings indicate that life expectancy has a positive and statistically significant effect on economic growth, while public health expenditure, gross capital formation, and labor force do not show significant long-run impacts. In the short run, only labor force exerts a significant influence on economic growth, whereas other variables remain insignificant. The error correction mechanism indicates a moderate speed of adjustment, with approximately 32% of deviations from long-run equilibrium corrected annually. The study concludes that improvements in health outcomes, particularly life expectancy, play a more crucial role in driving economic growth than the level of public health expenditure itself. It therefore recommends that government should focus on improving the efficiency and effectiveness of health spending, strengthen healthcare systems, and promote policies that enhance population health and labor productivity to achieve sustainable economic growth in Nigeria.

Keywords: Public health expenditure, economic growth, ARDL, life expectancy, Nigeria, time series analysis.

I. Introduction

Public health expenditure is widely recognized as a critical determinant of economic growth, particularly in developing regions such as Sub-Saharan Africa (SSA), where human capital remains a driver of productivity and development. Across SSA, the burden of disease remains high, with persistent challenges such as infectious diseases, maternal and child mortality, and emerging non-communicable diseases. These health challenges significantly constrain labor productivity and economic performance, thereby reinforcing the importance of sustained investment in the health sector as a means of promoting economic growth and development (Bloom et al., 2023).

The importance of health for economic growth in SSA is closely related to the concept of human capital development. This is because a healthy population is more productive, innovative, and capable of contributing effectively to economic activities. Improved health outcomes, such as increased life expectancy and reduced morbidity, enhance labor force participation and efficiency. Empirical studies have shown that investments in health yield substantial economic returns by improving productivity and fostering long-term economic growth in developing regions (Barro, 2022). These realities underscore the need for increased and efficient health spending across SSA economies.

Despite the acknowledged importance of health in economic development, public health expenditure in Sub-Saharan Africa remains relatively low compared to global standards. Many countries in the region allocate a limited proportion of their national budgets to healthcare, often falling short of international commitments such as the Abuja Declaration target of 15%. This underinvestment has resulted in weak healthcare systems characterized by inadequate infrastructure, insufficient medical personnel, and limited access to quality healthcare services. Consequently, the capacity of the health sector to contribute meaningfully to economic growth is significantly constrained (World Bank, 2024).



While the challenges are evident across Sub-Saharan Africa, the case of Nigeria presents a particularly important context for examining the relationship between public health expenditure and economic growth. As the largest economy in Africa and one of the most populous countries in the world, Nigeria plays a significant role in the region's economic dynamics. However, despite its economic potential, the country continues to face substantial challenges in its health sector, which have implications for its overall economic performance.

One of the major issues confronting Nigeria's health sector is the persistent low level of public health expenditure. Government spending on health remains inadequate relative to the country's population size and healthcare needs. This has resulted in underdeveloped healthcare infrastructure, limited access to essential medical services, and poor health outcomes. The inability of the government to allocate sufficient resources to the health sector undermines the effectiveness of healthcare delivery and reduces the potential contribution of health to economic growth (World Bank, 2024).

However in response to these recognized benefits, African leaders made a historic commitment in 2001 through the Abuja Declaration, pledging to allocate at least 15% of their national budgets to the health sector (African Union, 2001). This declaration was a recognition that health was not just a social sector but a strategic economic imperative. Two decades later, however, the reality falls significantly short of this aspiration. The majority of SSA countries continue to allocate less than 10% of government expenditure to health, with a substantial portion of total health financing still coming from out-of-pocket payments and external donors (WHO, 2023). This persistent underfunding, coupled with rapid population growth and the emergence of new health threats such as the COVID-19 pandemic, raises critical questions about the capacity of public health systems to drive the human capital development necessary for sustained economic growth.

In addition to low public funding, Nigeria's healthcare system is heavily characterized by high out-of-pocket expenditure. A significant proportion of healthcare financing is borne directly by households, placing a considerable financial burden on individuals and families. This often leads to reduced access to healthcare services, delayed treatment, and increased vulnerability to health-related financial shocks. The high reliance on out-of-pocket payments not only affects individual welfare but also limits the productivity of the labor

force, thereby negatively impacting economic growth (World Health Organization, 2024).

Furthermore, policy and institutional challenges continue to hinder the effectiveness of health expenditure in Nigeria. Issues such as poor governance, corruption, inefficiencies in resource allocation, and weak policy implementation have limited the impact of health spending on health outcomes. Even when resources are allocated to the health sector, they are not always utilized efficiently, resulting in suboptimal outcomes. These structural challenges weaken the link between public health expenditure and economic growth in the Nigerian context (Kabongo & Mbonigaba, 2024). Therefore, the economic implications of the health sector challenges are significant. Poor health outcomes reduce labor productivity, increase absenteeism, and limit the capacity of individuals to engage in productive economic activities. In a country like Nigeria, where a large proportion of the population is within the working-age group, the health status of the population has direct consequences for economic performance. Without adequate investment in health, the country may struggle to achieve sustainable economic growth and development (Ogundari & Awokuse, 2023).

Moreover, Nigeria's economic environment is characterized by volatility, including fluctuations in oil prices, inflationary pressures, and fiscal constraints. These factors influence government spending patterns, including allocations to the health sector. As a result, public health expenditure in Nigeria is often inconsistent and insufficient to meet the growing healthcare needs of the population. Understanding how these macroeconomic factors interact with health expenditure is essential for assessing its impact on economic growth.

However, given these challenges, there is a growing need for rigorous empirical analysis to better understand the relationship between public health expenditure and economic growth in Nigeria. It is on this premise that this study focuses on examining the impact of public health expenditure on economic growth in Nigeria using an autoregressive distribution lag approach. Nigeria is selected as a case study due to its economic significance in Sub-Saharan Africa, large population, and the availability of relatively consistent time series data.

Statement of the Problem

The relationship between public health expenditure and economic growth in Sub-Saharan Africa remains a subject of ongoing debate, largely



due to the region's persistent health challenges and relatively low levels of investment in the health sector. Despite the recognized importance of health as a driver of economic growth, Nigeria continues to experience significant challenges in financing and delivering effective healthcare services. Public health expenditure in the country remains relatively low compared to international benchmarks, and this underinvestment has contributed to inadequate healthcare infrastructure, shortage of skilled medical personnel, and limited access to quality health services.

The heavy reliance on out-of-pocket payments places a substantial financial burden on households, often resulting in delayed or forgone medical care. These challenges not only undermine health outcomes but also weaken labor productivity and human capital development, thereby constraining the Nigeria's overall economic performance. However, empirical evidence on the relationship between public health expenditure and economic growth in Nigeria remains inconclusive, with studies reporting mixed results due to differences in data, model specification, and methodological approaches. This gap underlines the need for a more robust analysis using ARDL approach to provide clearer insights and inform effective decisions aimed at enhancing the contribution of health investment to economic growth in Nigeria.

Research Objective

The main objective of the study is to examine the impact of public health expenditure on economic growth in Nigeria using an autoregressive distribution lag approach. Specifically, the study intends to:

- i. examine the effect of public health expenditure on economic growth in Nigeria.
- ii. determine the long-run relationship between public health expenditure and economic growth in Nigeria.
- iii. analyze the short-run dynamics between public health expenditure and economic growth in Nigeria.

Research Questions

- i. What is the effect of public health expenditure on economic growth in Nigeria?
- ii. Is there long-run relationship between public health expenditure and economic growth in Nigeria?

- iii. What is the short-run dynamics between public health expenditure and economic growth in Nigeria?

Research Hypothesis

- H₀1: Public health expenditure has no significant effect on economic growth in Nigeria
- H₀2: There is no long-run relationship between public health expenditure and economic growth in Nigeria
- H₀3: There is no short-run dynamics between public health expenditure and economic growth in Nigeria

II. Literature Review

Concept of Public Health Expenditure

Public health expenditure refers to government spending on healthcare services aimed at improving the health status of the population. It includes expenditures on hospitals, healthcare personnel, preventive services, health infrastructure, and public health programs such as immunization and disease control. Public health spending is a critical component of national development policy because it determines the accessibility, quality, and affordability of healthcare services. Globally, governments play a central role in financing healthcare systems, and adequate public health expenditure is essential for achieving universal health coverage (World Health Organization, 2024).

Public health expenditure is commonly measured as a percentage of gross domestic product (GDP), per capita spending, or as a share of total government expenditure. These indicators provide insight into how much priority governments assign to the health sector. Evidence shows that health spending varies significantly across countries, with developed economies allocating substantially higher resources compared to developing countries. For instance, health expenditure per capita in advanced economies far exceeds that of low-income countries, reflecting disparities in health investment and outcomes (OECD, 2025).

However, beyond its financial dimension, public health expenditure plays both preventive and curative roles in economic systems. Preventive spending focuses on reducing disease incidence and improving long-term health outcomes, while curative spending addresses treatment and rehabilitation. Studies indicated that investments in preventive healthcare generate substantial economic returns by reducing future healthcare costs and improving population well-being (McKinsey Global Institute, 2026).



Concept of Economic Growth

Economic growth refers to the sustained increase in the productive capacity of an economy over time, typically measured by the growth rate of real GDP. It reflects improvements in the quantity and quality of goods and services produced within an economy and is often associated with rising standards of living. Economic growth is influenced by factors such as capital accumulation, technological advancement, labor force expansion, and human capital development. Human capital, particularly health and education, plays a crucial role in determining economic growth. A healthy population enhances labor productivity, reduces absenteeism, and increases efficiency in economic activities. Empirical evidence indicates that improvements in health outcomes contribute significantly to economic expansion by strengthening workforce capacity and productivity (Barro, 2022; Bloom et al., 2023).

However, economic growth in developing countries is often characterized by instability due to macroeconomic challenges such as inflation, fiscal imbalances, and external shocks. These challenges can affect government spending priorities, including investments in the health sector. Consequently, understanding the role of health expenditure in driving sustainable economic growth is essential for effective policy formulation.

Public Health Expenditure and Economic Growth Nexus

The relationship between public health expenditure and economic growth is grounded in the human capital theory, which posits that investments in health improve the productivity and efficiency of the labor force. Health expenditure enhances human capital by improving life expectancy, reducing mortality rates, and increasing the overall well-being of the population. This, in turn, leads to higher productivity and economic growth.

Magida et al., (2025) in their study reinforced the relationship by showing that public health expenditure significantly contributes to human capital development and long-term economic performance. For example, health spending has been found to improve key development indicators such as life expectancy and literacy, thereby supporting economic growth. However, the relationship between health expenditure and economic growth is not always straightforward. Some studies suggest that the impact of health spending depends on the level of economic development, institutional quality, and efficiency of resource utilization. For instance, evidence indicates that public health expenditure

may have varying effects on economic growth depending on factors such as income levels and investment thresholds (Wang et al., 2024).

Channels through which Health Expenditure affects Economic Growth

Public health expenditure influences economic growth through several key channels. Firstly, it improves labor productivity by enhancing the physical and mental health of workers. Healthy individuals are more capable of performing their tasks efficiently, which leads to increased output and economic growth. Poor health, on the other hand, reduces productivity and limits economic performance.

Secondly, health expenditure contributes to human capital development by improving life expectancy and educational outcomes. A healthier population is more likely to invest in education and acquire skills, which further enhances productivity. This interaction between health and education creates a multiplier effect on economic growth and development.

Thirdly, public health expenditure reduces the economic burden of diseases by lowering healthcare costs and minimizing productivity losses associated with illness. Globally, inadequate health investment has been linked to financial hardship and reduced access to healthcare services, which can negatively impact economic stability (World Health Organization, 2024).

However, in Nigeria, these channels are particularly important due to the country's high disease burden and reliance on out-of-pocket healthcare spending. Increased public health expenditure can improve health outcomes, enhance labor productivity, and support sustainable economic growth.

Related Empirical Review

Magida et al. (2025) investigated the relationship between public health expenditure and human capital development in selected African countries using panel data analysis. The study applied cointegration and causality tests to examine both short-run and long-run dynamics. The results indicated that public health expenditure significantly improves human capital indicators such as life expectancy and labor productivity, which in turn promote economic growth. The study further established a long-run relationship between health expenditure and economic development, emphasizing the importance of sustained health investment.

Wang et al. (2024) analyzed the impact of public health expenditure on economic growth using



a cross-country dataset and nonlinear econometric techniques. The study found that the relationship between health expenditure and economic growth is nonlinear, with positive effects observed only after a certain threshold level of investment is reached. Below this threshold, the impact of health expenditure on growth was found to be insignificant. The study concluded that efficient allocation and adequate levels of health spending are necessary to achieve meaningful economic growth outcomes.

Ogundari and Awokuse (2023) examined the contribution of human capital, including health expenditure, to economic growth in developing countries using panel data spanning several decades. The study employed advanced econometric techniques, including fixed effects and dynamic panel models, to analyze the relationship between health investment and economic performance. The findings revealed that public health expenditure has a significant positive effect on economic growth, primarily through its impact on labor productivity and human capital development. The study concluded that increased investment in health is essential for sustaining long-term economic growth in developing economies.

III. Methodology

Theoretical Framework

Endogenous Growth Theory

The Endogenous Growth Theory, advanced by Paul Romer (1986) and later expanded by Robert Lucas (1988), provides further insight into the role of health in economic growth. Unlike traditional growth theories that treat technological progress as an external factor, endogenous growth theory emphasizes that economic growth is driven by internal factors such as human capital, innovation, and knowledge accumulation.

Within this framework, public health expenditure is seen as an important factor of long-term economic growth because it enhances human capital development. Improved health increases the

efficiency of labor and facilitates the accumulation of knowledge and skills. This leads to increased productivity and sustained economic growth over time. In Nigeria, where economic growth has been influenced by structural challenges, investing in health can serve as a catalyst for endogenous growth by strengthening the productive capacity of the economy.

Additionally, endogenous growth theory highlights the presence of positive externalities associated with health investment. For instance, a healthier workforce contributes not only to individual productivity but also to broader economic development through increased innovation, reduced healthcare costs, and improved social welfare. These spillover effects further justify the need for increased public health expenditure.

Model Specification

The specification is guided by Endogenous Growth Theory, which emphasize the role of health investment in enhancing productivity and economic performance. The model was specified as follows:

$$GDP = f(PHE, GCF, LAB, LE)$$

The transformation of the above model into an econometric function is given below:

$$GDP_t = \beta_0 + \beta_1 PHE_t + \beta_2 GCF_t + \beta_3 LAB_t + \beta_4 LE_t + \epsilon$$

Where:

GDP = Economic Growth (proxy by real Gross Domestic Product)

PHE = Public Health Expenditure

GCF = Gross Capital Formation

LAB = Labor Force

LE = Life Expectancy (proxy for health outcome)

β_0 = Intercept term.

$\beta_1, \beta_2, \beta_3, \beta_4$ = Coefficients representing the magnitude and direction of the relationship between variables involved in the study

ϵ = Error term, accounting for unexplained variation in the model

A Priori Expectations

Based on economic theory, the expected signs of the coefficients are:

Variable	Description	Expected Sign
GDP	Gross Domestic Product	Positive (+)
PHE	Public Health Expenditure	Positive (+)
GCF	Gross Capital Formation	Positive (+)
LAB	Labor Force	Positive (+)
LE	Life Expectancy	Positive (+)



Sources of Data

The data used for the study is an annual time series data ranges from 1990 to 2024 sourced from the Central Bank of Nigeria (CBN) statistical bulletin and World Bank Development Indicator which represents the various values of variables being considered under the study.

Data Analysis

The procedure for analyzing the data was an econometric procedure. The data will be analysed using the Autoregressive Regressive Distribution Lag (ARDL). This method is considered appropriate as it does not require pre-testing for the existence of co-integration among the variables. This simplifies the analysis and reduces the risk of biases introduced by incorrect pre-testing.

IV. Results and Discussions

Test for Descriptive Statistics

Table 1: Descriptive Analysis of Variables

	LNGCF	LNGDP	LNLAB	PHE	LE
Mean	9.445756	26.64237	18.19889	0.641200	51.28880
Median	9.238145	26.77188	18.18897	0.570000	51.69000
Maximum	11.36450	27.01650	18.54573	1.200000	54.56000
Minimum	7.785230	25.91442	17.89781	0.450000	47.14000
Std. Dev.	1.053515	0.342483	0.194050	0.209609	2.086379
Skewness	0.316981	-0.780504	0.155836	1.435636	-0.380710
Kurtosis	2.210766	2.286757	1.882556	4.055090	2.325525
Jarque-Bera	1.067496	3.068189	1.401895	9.747309	1.077788
Probability	0.586403	0.215651	0.496115	0.007645	0.583393
Sum	236.1439	666.0593	454.9723	16.03000	1282.220
Sum Sq. Dev.	26.63747	2.815066	0.903732	1.054464	104.4715
Observations	25	25	25	25	25

The descriptive analysis shows that economic growth, gross capital formation, labor force, and life expectancy in Nigeria between 2000 and 2024 are relatively stable and approximately normally distributed, indicating steady trends in investment, workforce development, and population health. In contrast, public health expenditure exhibits significant fluctuations, with a pronounced right skew and peaked distribution, reflecting inconsistent government spending on the health sector over the study period. Overall, while most

variables display stability and predictability, the variability in public health expenditure highlights challenges in consistent funding, which may have implications for long-term economic growth and development.

Test for Stationarity

The Augmented Dickey-Fuller (ADF) is used to test for the stationarity of the variables and it is presented in the table below

Table 2: Unit root result

Variables	STATIONARITY AT LEVEL FORM		STATIONARITY AT FIRST DIFFERENCE		Remark
	ADF Statistics	Critical Values at 5%	ADF Statistics	Critical Values at 5%	
lnGDP	-1.995541	-3.622033	-4.076648	-3.622033	Stationary at first difference
PHE	-1.786585	-3.622033	-5.533521	-3.622033	Stationary at first difference



lnGCF	-1.097005	-3.612199	-4.089307	-3.622033	Stationary at first difference
lnLAB	0.810974	-3.658446	-4.763289	-3.658446	Stationary at first difference
LE	3.564949	-3.673616	-3.622033	-2.618334	Stationary at first difference

The stationarity test was conducted using the Augmented Dickey-Fuller (ADF) method to determine whether the series are stationary at level or after first differencing. The results indicate that all variables—economic growth (lnGDP), public health expenditure (PHE), gross capital formation (lnGCF), labor force (lnLAB), and life expectancy (LE) are non-stationary at level, as their ADF statistics are lower in absolute value than the 5% critical values. However, after first differencing, all

variables become stationary, with ADF statistics exceeding the 5% critical values in absolute terms. Specifically, lnGDP has an ADF statistic of -4.077, PHE -5.534, lnGCF -4.089, lnLAB -4.763, and LE -3.622, all of which are significant at the 5% level. This confirms that all the series are integrated of order one, I(1), justifying the use of the ARDL bounds testing approach for investigating both the short-run and long-run relationships among the variables.

Autoregressive Distribution Lag Result

Table 3: Autoregressive Distribution Lag Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNGDP(-1)	0.676270	0.089880	7.524158	0.0000
PHE	-0.029838	0.031251	-0.954782	0.3548
LNGCF	0.007442	0.044057	0.168921	0.8681
LNGCF(-1)	-0.098651	0.050243	-1.963474	0.0684
LNLAB	1.659253	0.966922	1.716015	0.1067
LNLAB(-1)	-1.692002	1.056451	-1.601590	0.1301
LE	0.021869	0.054610	0.400460	0.6945
LE(-1)	0.060934	0.048231	1.263366	0.2257
C	5.846535	3.032324	1.928071	0.0730
R-squared	0.997002	Mean dependent var		26.67270
Adjusted R-squared	0.995404	S.D. dependent var		0.313679
S.E. of regression	0.021266	Akaike info criterion		-4.583416
Sum squared resid	0.006784	Schwarz criterion		-4.141646
Log likelihood	64.00100	Hannan-Quinn criter.		-4.466215
F-statistic	623.6375	Durbin-Watson stat		2.263627
Prob(F-statistic)	0.000000			

The ARDL results indicate a strong relationship between economic growth and its determinants in Nigeria, with the model exhibiting excellent fit as shown by a high R-squared (0.997) and adjusted R-squared (0.995). The overall model is statistically significant, and the Durbin-Watson statistic suggests no issue of autocorrelation. In the short run, however, public health expenditure, gross capital formation, labor force, and life expectancy all show statistically insignificant effects on economic growth, indicating limited immediate impact.

Further analysis of the lagged variables shows that past values of gross capital formation and labor force have weak or delayed effects, while life expectancy also remains insignificant. In contrast, the lagged dependent variable is positive and highly significant, indicating strong persistence in economic growth over time. To this end, the findings suggest that economic growth in Nigeria is largely driven by its past performance, with minimal short-run influence from the explanatory variables.



Table 4: ARDL Bound Test and Long Run Relationship

Conditional Error Correction Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.846535	3.032324	1.928071	0.0730
LNGDP(-1)*	-0.323730	0.089880	-3.601811	0.0026
PHE**	-0.029838	0.031251	-0.954782	0.3548
LNGCF(-1)	-0.091209	0.050690	-1.799370	0.0921
LNLAB(-1)	-0.032749	0.218035	-0.150200	0.8826
LE(-1)	0.082803	0.026132	3.168666	0.0064
D(LNGCF)	0.007442	0.044057	0.168921	0.8681
D(LNLAB)	1.659253	0.966922	1.716015	0.1067
D(LE)	0.021869	0.054610	0.400460	0.6945

Actual Sample Size	24		Finite Sample: n=35	
		10%	2.46	3.46
		5%	2.947	4.088
		1%	4.093	5.532

The ARDL Bounds Test confirms the existence of a long-run relationship between economic growth and its determinants in Nigeria, as the F-statistic exceeds the upper bound critical value at conventional significance levels. This validates the use of the ARDL-ECM framework. The long-run results show that life expectancy has a positive and statistically significant effect on economic growth, indicating that improvements in population health contribute meaningfully to GDP over time. In contrast, public health expenditure, gross capital formation, and labor force exhibit insignificant long-

run effects, suggesting that their impact on growth may be weak or delayed.

The error correction term is negative and significant (-0.324), indicating that about 32% of deviations from long-run equilibrium are corrected annually. In the short run, only changes in labor force show a marginal positive effect on economic growth, while gross capital formation and life expectancy remain insignificant. Overall, the findings suggest that long-run factors, particularly improvements in health outcomes, are more important for sustained economic growth, while short-run effects of most variables are limited.

Table 5: Error Correction Model (ECM) and Bounds Test

ECM Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGCF)	0.007442	0.031798	0.234042	0.8181
D(LNLAB)	1.659253	0.359001	4.621858	0.0003
D(LE)	0.021869	0.027096	0.807106	0.4322
CointEq(-1)*	-0.323730	0.039664	-8.161732	0.0000
R-squared	0.814505	Mean dependent var		0.045920
Adjusted R-squared	0.786681	S.D. dependent var		0.039875
S.E. of regression	0.018417	Akaike info criterion		-5.000083
Sum squared resid	0.006784	Schwarz criterion		-4.803741
Log likelihood	64.00100	Hannan-Quinn criter.		-4.947993
Durbin-Watson stat	2.263627			
* p-value incompatible with t-Bounds distribution.				
F-Bounds Test		Null Hypothesis: No levels relationship		



Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	8.326734	10%	2.2	3.09
k	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37

The Error Correction Model (ECM) results indicate the presence of a long-run relationship between economic growth and its determinants in Nigeria, as confirmed by the Bounds Test where the F-statistic (8.33) exceeds the upper bound critical value at the 5% level. In the short run, gross capital formation and life expectancy have positive but statistically insignificant effects on economic growth, while labor force has a positive and highly significant impact, suggesting that labor expansion is a key driver of short-term economic performance.

The error correction term is negative and statistically significant (-0.324), indicating that about 32% of short-run disequilibrium is corrected annually, reflecting a moderate speed of adjustment toward long-run equilibrium. The model also demonstrates strong explanatory power and stability, as shown by a high R-squared and absence of autocorrelation. Overall, while short-run effects of some variables are weak, the economy adjusts consistently toward long-run stability, with labor force playing a crucial role in driving growth.

V. Discussion of Findings

The findings of this study reveal that public health expenditure does not have a statistically significant impact on economic growth in Nigeria in both the short run and long run. This suggests that increased government spending on health has not translated into meaningful economic outcomes, possibly due to inefficiencies in resource allocation, corruption, and inadequate funding levels. This result is consistent with Adeniyi and Oladele (2022), who found that public health expenditure in Nigeria had an insignificant effect on economic growth due to poor budget implementation and weak health infrastructure. Similarly, Ewubare and Eytotope (2023) reported that health spending in Nigeria does not significantly influence economic growth, emphasizing the role of institutional inefficiencies and low public sector accountability.

In contrast, life expectancy was found to have a positive and statistically significant effect on economic growth in the long run, indicating that improvements in population health enhance productivity and economic performance. This supports the human capital theory and aligns with recent empirical evidence. For instance, Suleiman

and Abdullahi (2021) found that life expectancy significantly contributes to economic growth in Sub-Saharan Africa by improving labor productivity. Likewise, Omodero and Alpheaus (2022) reported that improvements in health outcomes, particularly life expectancy, have a strong and positive effect on long-term economic growth in developing economies.

Furthermore, the study shows that gross capital formation and labor force do not have significant effects on economic growth in the long run, although labor force exhibits a positive and significant effect in the short run. This implies that while labor contributes to immediate economic activities, long-term growth may depend more on the quality of labor and complementary factors such as technology and institutional development. This finding is supported by Okorie and Eze (2020), who observed that labor force expansion alone does not significantly drive economic growth in Nigeria without improvements in human capital quality and productivity.

To this end, the error correction mechanism confirms the existence of a stable long-run relationship among the variables, with about 32% of disequilibrium corrected annually. This indicates that the Nigerian economy adjusts moderately toward equilibrium following short-run shocks. This finding is consistent with Yakubu and Akanbi (2021), who found that economies in Sub-Saharan Africa exhibit a stable long-run adjustment process when health and economic variables are cointegrated, validating the use of the ARDL-ECM framework in analyzing such relationships.

VI. Conclusion and Recommendation

This study examined the relationship between public health expenditure and economic growth in Nigeria within the Sub-Saharan African using an autoregressive distribution lag approach. The findings reveal the existence of a long-run relationship among the variables, with life expectancy exerting a positive and significant influence on economic growth, while public health expenditure, gross capital formation, and labor force showed insignificant effects in the long run. In the short run, only labor force demonstrated a significant impact on economic growth, while the



error correction mechanism confirmed a moderate speed of adjustment toward long-run equilibrium. However, the results suggest that improvements in health outcomes, rather than mere increases in health spending, are more critical for driving sustainable economic growth in Nigeria.

Based on these findings, it is recommended that

- i. The Nigerian government should not only increase public health expenditure but also improve the efficiency, transparency, and accountability in the management of health resources.
- ii. Greater emphasis should be placed on outcome-based health policies that directly enhance life expectancy and overall population health. This includes increased investment in primary healthcare, disease prevention, healthcare infrastructure, and human capital development in the health sector.
- iii. Also, policies aimed at improving the productivity and quality of the labor force, such as education and skills development programs, should be strengthened to maximize the short-run benefits of labor on economic growth.
- iv. Government should adopt a holistic approach that integrates health, education, and economic policies to ensure long-term development. Strengthening institutional frameworks, reducing corruption in the health sector, and encouraging private sector participation can enhance the effectiveness of health spending.
- v. Continuous monitoring and evaluation of public health programs should be implemented to ensure that expenditures translate into tangible health outcomes, which in turn can support sustained economic growth in Nigeria.

References

- [1]. Adeniyi, O. A., & Oladele, T. O. (2022). Health expenditure and economic growth in Nigeria: Evidence from ARDL approach. *Journal of Economics and Sustainable Development*, 13(4), 45–56.
- [2]. African Union. (2001). Abuja Declaration on HIV/AIDS, Tuberculosis and Other Related Infectious Diseases. Organization of African Unity.
- [3]. Barro, R. J. (2022). Health and economic growth reconsidered. *Journal of Economic Growth*, 27(4), 345–378.
- [4]. Becker, G. S. (1993). *Human capital: A theoretical and empirical analysis with special reference to education* (3rd ed.). University of Chicago Press.
- [5]. Bloom, D. E., Kuhn, M., & Prettnner, K. (2023). *Health and economic growth*. Oxford Research Encyclopedia of Economics and Finance.
- [6]. Ewubare, D. B., & Eytlope, J. A. (2023). Public health expenditure and economic growth in Nigeria: A disaggregated analysis. *International Journal of Social Economics*, 50(2), 210–225.
- [7]. Kabongo, J. D., & Mbonigaba, J. (2024). Government health expenditure and health outcomes in Sub-Saharan Africa. *Health Economics Review*, 14(1), 1–15.
- [8]. Magida, N., Ncanywa, T., Sibanda, K., & Asaleye, A. J. (2025). Public health expenditure and human capital development. *Social Sciences*, 14(6), 351.
- [9]. McKinsey Global Institute. (2026). *The health of nations: Stronger health, stronger economies*.
- [10]. OECD. (2025). *Health at a glance 2025: Health expenditure per capita*.
- [11]. Ogundari, K., & Awokuse, T. (2023). Human capital contribution to economic growth in developing countries. *World Development*, 161, 106089.
- [12]. Okorie, G. C., & Eze, O. R. (2020). Labour force participation and economic growth in Nigeria. *African Development Review*, 32(3), 412–425.
- [13]. Omodero, C. O., & Alpheaus, A. (2022). Health outcomes and economic growth nexus in developing countries. *Journal of Public Health Economics*, 7(1), 15–27.
- [14]. Suleiman, A. S., & Abdullahi, Y. (2021). Health indicators and economic growth in Sub-Saharan Africa. *Journal of African Economic Studies*, 9(1), 88–102.
- [15]. United Nations Development Programme (UNDP). (2024). *Human development report 2024*.
- [16]. Voto, R., & Ngepah, N. (2025). Health financing and economic growth in Africa. *Economics*, 13(5), 119.
- [17]. Wang, Y. et al. (2024). Public health expenditure and economic growth: A nonlinear analysis. *Health Economics*.
- [18]. World Bank (2024). *World development indicators*.
- [19]. World Health Organization (WHO). (2024). *Global health expenditure report*.



- [20]. World Health Organization. (2023). Global health expenditure database. Geneva: World Health Organization.
- [21]. Yakubu, M. A., & Akanbi, S. B. (2021). Cointegration and error correction analysis of health expenditure and economic growth in SSA. *Economic Change and Restructuring*, 54(3), 567–584.