



Impact of Health Expenditure on Economic Growth in Nigeria

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Abstract

Health spending is a key factor of economic growth, but Nigeria has been faced with repeated challenges in financing of health care, hence constraining its role in the country's national development. This study examine the role of health expenditure in economic growth in Nigeria, covering the period 1981-2023, is evaluated using the Nonlinear Autoregressive Distributed Lag (NARDL) to control for the presence of asymmetry. The research relies on secondary sources of data. Gross domestic product growth (GDPG), inflation (INF), and foreign direct investment (FDI) data were all obtained from the World Bank Development Indicators (2024), and total government expenditure (TGEXP) was obtained from the Statistical Bulletin of the Central Bank of Nigeria (CBN) 2024. The long run results indicate that an increase in government spending on health have a significant impact on economic growth, on the other hand, decrease in government spending has a negative and significant impact on economic growth. Increase in inflation rate reduces economic growth while a decrease in inflation rate contributes positively and significantly to economic growth. The role of Foreign Direct Investment (FDI) in economic growth is primarily insignificant, indicating that FDI inflows in Nigeria may not be translating into meaningful economic benefits. The study recommends that government should ensure sustained healthcare spending, inflation control, and sound investment policies which are critical to achieving economic stability and long-term economic growth.

Keywords: Health Expenditure; Economic Growth; Inflation; Foreign Direct Investment; NARDL

JEL Classification: I15, H51, O40, C32

Contribution to/Originality Knowledge :

1.0 Introduction

Health expenditure is one of the key drivers of economic growth among developed and developing economies. Health expenditure comprises of government healthcare expenditure, private healthcare expenditure, and out-of-pocket healthcare expenditure. A measure of an economy's level of expenditure in the healthcare system is a pointer to the level of commitment public and private bodies have towards the capital development of individuals, which drives long-term growth in the economy. Health spending encourages productivity, reduces mortality, and improves the quality of life, thus encouraging economic performance. There has been a broad analysis of the interdependence of economic growth and expenditure on health across the literature. Existing studies have empirically proved that health expenditure has positive effect on economic performance (Manenge, 2025; Ismail et al., 2024; Ayaga et al., 2024).

However, there is a manifestation of inefficiencies in health spending that discourages its impact on economic growth. (Danlami et al., 2024; Awogbemi, 2022; Admane & Slimani, 2021; Mustafa & Ansari, 2021; Olayiwola & Olusanya, 2021; Bazrafkan et al., 2019). All argue that, health expenditure will not have any impact on the economic growth if policies regarding healthcare expenditure are not effectively implemented.

In Nigeria, although there has been an effort to improve the funding of health however, health spending is comparatively low. For example, In 1990, Nigeria's public health spending was extremely low around 0.2 % of GDP, making it one of the lowest globally. By the year 2000, this had risen modestly to approximately 0.59 % of GDP. However, the figure declined to around 0.45 % by 2010, reflecting persistent underinvestment in the sector. According to the National Bureau of Statistics (NBS), Nigeria's Gross Domestic Product (GDP) increased by 3.46% in real terms year-on-year during the fourth quarter of 2023, with the Services sector contributing 56.55% to the total GDP. In 2024, while total health expenditure (public and private) reached about 5.03 % of GDP, the federal government's direct contribution remained low roughly 1.5 % of GDP (CBN 2025).

However, the sector's contribution remains below its potential due to inadequate funding and mismanagement. Government spending on health has never exceeded the 15% level recommended by the Abuja Declaration, casting uncertainty on the sector's ability to drive sustainable economic growth. For instance, in 2017, government health spending was approximately 0.72% of GDP, well short of the target.

Keeping these in mind, the current research seeks to evaluate the impact of healthcare expenditure on economic growth in Nigeria between 1981-2023. The study is structured as follows; section one consist of introduction, section two, reviews of existing literatures, section three, methodology and section four, results and discussion of findings.

2.0 Literature Review

2.1 Conceptual Review

2.1.1 Economic Growth

Economic growth is defined by Manenge (2025), as a long-term rise in a country's productive capacity as reflected by its indicators in terms of Gross Domestic Product (GDP). It can account for increase in employment opportunities, improvement in infrastructures and the improvement of living standards. Increased investment, advancements in technology, and the development of human capital are the main drivers of economic growth, which is measure as a percentage increase in GDP.

Productivity growth is the most crucial stimulator of per capita output growth in any economy, whether developed or developing. Economic growth is also defined by Ayaga et al. (2024) as an increase in per capita GDP over time. Economic growth is initiated by various determinants including financial growth, investment in infrastructure, and expenditures on health, which together improve the productivity of labour and the country's output.

2.1.2 Health Expenditure

Government health expenditure, as understood by Ismail et al. (2024), is public expenditure on health programs services and infrastructure aimed at improving the health of the population. It comprises expenditure on hospitals, medical research, immunization activities, and health insurance schemes. Government expenditure on health is a key factor in the construction of human capital because it offers universal coverage of high-quality health care. Along similar lines, Danlami et al. (2024) note that government-planned health spending facilitates sustainable economic stability in the long term by raising the workforce's productivity and lowering the burden of diseases. Governmental spending on healthcare is key towards raising life expectancy and reducing differences in health.

2.1.3 Private health expenditure

Private health expenditure, as explained by Olayiwola and Olusanya (2021), is out-of-pocket expenditure, private health insurance spending, and non-governmental organization (NGO) spending on health care services. Private health expenditure complements public health expenditure, in the sense that it provides supplementary resources to the health sector, primarily increasing the supply of services and access to medical care.

2.2 Theoretical Review

2.2.1 Human Capital Theory

Human Capital Theory, as developed by Gary S. Becker (1975) and later developed by Grossman (1972), argues that spending on education, training and health, increases the productivity of an individual, and thus there are long-term economic benefits. The theory argues that health is a vital human capital because the healthier population is not only productive but also efficient and can contribute to economic growth. In Nigeria, where below-average health markers such as infant mortality, life expectancy, and disease burdens put a lid on productivity, an increase in health expenditure should translate into more human capital and push economic growth higher.

Also, Human Capital Theory describes that public and private health expenditure cannot be viewed as pure consumption but as an investment in human capital. For example, government spending on healthcare services, vaccination, and disease control enhances the overall health of the population, reducing absenteeism and increasing labour force participation. Similarly, private and non- governmental organizations spending through healthcare offered by employers and personal out-of-pocket expenses increases the productivity of workers to maintain economic production in the long run. In light of this theory, this study aims to investigate whether better health expenditure in Nigeria in the long term have impact on economic growth.

2.3 Empirical Review

Manenge (2025) analyzes the correlation between economic growth and health expenditure in Zimbabwe, a country that failed to fulfill the Abuja Declaration's commitment to allocate 15% of its national budget from 1980 to 2020, using the autoregressive distributed lag model

approach. The study confirmed the existence of cointegration among the variables of health expenditure, economic growth, trade openness, economic crises, and fiscal position. The primary finding is that, health expenditure affects economic growth and, reciprocally, economic growth has an impact on health expenditure. The evidence identifies that determinant such as health expenditure, fiscal position, life expectancy, and economic crises have an impact when determining the direction of economic growth. Conversely, economic growth impacts health expenditure, budgetary position, trade liberalization, life expectancy at birth, and domestic economic crises. The results indicate that there exists a bidirectional relationship between economic growth and health expenditure in the long run. Economic growth, openness to trade, economic crisis, and fiscal policy are the determinants of health expenditure in the short run.

Ismail et al. (2024) examine the effect of government public health expenditure on economic growth in Nigeria from 1992 to 2021 utilized the ordinary least squares (OLS) technique.

Secondary data obtained from the National Bureau of Statistics (NBS) and the Central Bank of Nigeria (CBN) were used in the study. The research determines that government current and capital spending on health has a substantial effect on economic growth. Furthermore, the research emphasizes that low-quality equipment, underfunded health programs, and unprofessional behaviours yield poor health results and a deterioration in the quality of healthcare and the general well-being of the citizens.

Ayaga et al. (2024) investigates the inter-linkages among health expenditure, labour productivity, and economic growth in Nigeria. To do this, they employ secondary data spanning 1986-2022 and implement the structural vector autoregressive (SVAR) model, which identifies long-run interlinkages among health expenditure, labour productivity, and economic growth in Nigeria. The research indicates that in the short term, health spending is positively but statistically insignificantly related to labour productivity. Similarly, labour productivity is positive and has an insignificant relationship with economic growth. It is found that Nigerian health expenditure can help boost labour productivity; however, the effect is marginal because healthcare is under-financed.

Danlami et al. (2024) examined the relationship between health expenditure and economic growth in Nigeria from 1990 to 2023. The study used secondary data from the Central Bank of Nigeria's Statistical Bulletin (CBN) (2023) and the World Development Index (2023). The Error Correction Model (ECM) approach and the autoregressive distributed lag (ARDL) model were used to test for cointegration. The study finds a long-run relationship between health expenditure instruments and economic growth. The findings reveal that domestic general health expenditure, inflation, and exchange rate has a negative impact on economic growth in Nigeria. Domestic private health spending, out-of-pocket, healthcare budget expenditure to GDP ratio, and immunization intervention rates positively affect economic growth. The diagnostic checks, such as the Breusch-Pagan-Godfrey test for heteroskedasticity and the Breusch-Godfrey serial correlation LM test, indicate no evidence of heteroskedasticity or serial correlation issues.

Azike et al. (2022) examine the impact of health and educational expenditure by the government on economic growth in Nigeria. The study adopts an ex-post-facto research design and utilizes the autoregressive distributed lag (ARDL) technique to analyze data. The findings show that government health expenditure (GHE) positively but statistically insignificantly affects Nigeria's economic growth by 26%, as supported by a t-statistic of 1.104568 being less than the critical value of 1.694. GEE also affects economic growth positively but insignificantly by 10%, and primary school enrolment rate (PSER) has a positive but insignificant effect on economic growth by 11%. The research shows that an increase in enrollment in primary school is related to a slight betterment in economic growth.

Awogbemi (2022) investigates the contribution of health expenditure to the economic growth of Nigeria from 2000 to 2021. The research uses the Error Correction Model Estimates (ECME) in estimating the effects of the independent variables on economic growth. Descriptive analysis indicates a greater focus on recurrent expenditure than capital expenditure. Empirical findings attest that increases in health expenditure are exerting a negative effect on the economic growth of Nigeria, both in the short and long run.

Admane and Slimani (2021) examined the impact of health expenditures on economic growth in Algeria from 1960 to 2016. Using data from the World Bank database, the study employs the Autoregressive Vector model and Granger causality tests. The findings show that health expenditures positively affect economic growth in the short term, confirming the study's hypothesis. The findings highlight the increasing importance of investing in the health sector to help improve Algeria's economic growth indicators.

Olayiwola and Olusanya (2021) employ the autoregressive distributed lag (ARDL) model using time series data from 1990 to 2020 to investigate the impact of health financing on Nigeria's economic growth. The results indicate that previous productive activities has a positive effects on economic growth in both the short and long run. However, present domestic government general health expenditure has a negative impact on economic growth, while previous-year government health expenditure increases economic growth. Similarly, current out-of-pocket health expenditure has a negative influence on economic growth. Whereas out-of-pocket health expenditure from the previous year improves economic growth. Domestic private health expenditure significantly enhance economic growth, emphasizing the role of private healthcare spending over government health expenditure in promoting economic growth.

Mustafa and Ansari (2021) employ time series data spanning 1971 - 2016 to assess the contribution of health expenditure in Pakistan's economic growth. Applying the ARDL co-integration technique, the study finds out that, health indicators significantly influence economic growth in the short run and the long run. Additionally, education spending enhances economic activities by improving the quality of human capital. Inflation has also been proven to correlate positively with Pakistan's economic growth.

From the review, most of the studies did not account for asymmetric short-run and long-run effects of health expenditure. The studies, Danlami et al.,2024, Ismail et al., 2024; Ayaga et

al., 2024) used ARDL, OLS and SVAR approaches consecutively, which are limited in showing the nonlinear dynamics and adjustment paths of macroeconomic variables over time. This has created a gap in understanding the real dynamic link between health expenditure and economic growth in Nigeria.

3.0 Methodology

3.1 Model Specification

$$GDPG = f(TGExp^+, TGExp^-, FDI^+, FDI^-, INF^+, INF^-) \quad (1)$$

Where:

- GDPG = Gross Domestic Product Growth (Economic Growth)
- $TGExp^+$ = Positive increase in total government expenditure (Public & Private)
- $TGExp^-$ = Negative decrease in total government expenditure (Public & Private)
- FDI^+ = Positive increase in foreign direct investment
- FDI^- = Negative decrease in foreign direct investment
- INF^+ = Positive increase in inflation rate
- INF^- = Negative decrease in inflation rate.

3.2 Data Sources:

Data on Gross domestic product growth (GDPG), inflation (INF), and foreign direct investment (FDI) were obtained from the World Bank Development Indicators (2024). Data on total government expenditure (TGEXP) was obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin (2024).

Variables	Unit of measurement
Gross domestic product	U.S Dollars (\$)
Government health expenditure	Percentage (%) Of GDP
Foreign direct investment	U.S Dollars (\$)
Inflation	Consumer price index (CPI)

3.2. Estimation technique:

3.2.1 Unit Root Test

The unit root test is used to check for the stationarity of time series data. This is because spurious regression results may be given by non-stationary variables, which will render statistical inferences futile. Therefore, it is necessary to verify the order of integration of every variable before model estimation.

3.2.2 Co-integration Test

Co-integration is carried out to know the existence of a long-run equilibrium relationship between the dependent and independent variables.

Nonlinear Autoregressive Distributed Lag (NARDL) Model

The NARDL model was developed by Shin, Yu, and Greenwood-Nimmo (2014) and incorporates an improvement over the conventional ARDL model with the capability to determine asymmetric short-run and long-run effects among the dependent and independent variables.

The Nonlinear Autoregressive Distributed Lag (NARDL) model specification account for asymmetric effects of health expenditure on economic growth.

$$GDPG_t = \alpha + \sum_{i=1}^p \left(\theta_j^+ \log TGE_{t-j}^+ + \theta_j^- \log TGE_{t-j}^- \right) + \sum_{k=1}^q \left(\delta_k^+ FDI_{t-k}^+ + \delta_k^- FDI_{t-k}^- \right) + \sum_{m=1}^p \left(\gamma_m^+ INF_{t-m}^+ + \gamma_m^- INF_{t-m}^- \right) + \varepsilon_t \quad (2)$$

Where:

θ_j^+ = Impact of increases in Total Government Expenditure on GDP growth.

θ_j^- = Impact of decreases in Total Government Expenditure on GDP growth.

δ_k^+ = Impact of Foreign Direct Investment increase on GDP growth.

δ_k^- = Impact of Foreign Direct Investment decrease on GDP growth.

γ_m^+ = Impact of Inflation increase on GDP growth.

γ_m^- = Impact of Inflation decrease on GDP growth.

α = Intercept.

β_i = Coefficients of lagged GDP growth.

ε_t = Error term.

This allows us to measure how positive versus negative changes in FDI, Inflation, and Total Government Expenditure affect economic growth differently.

3.2.3 Decomposing FDI, Inflation, and Health Expenditure

To apply the NARDL model, we need to split FDI, INF, and LogTGExp into their positive and negative changes:

Total Government Expenditure Decomposition

$$\log TGE_{t-j}^+ = \sum_{j=1}^t \max(\Delta \log TGE_j, 0) \quad (3)$$

$$\log TGE_{t-j}^- = \sum_{j=1}^t \min(\Delta \log TGE_j, 0) \quad (4)$$

Foreign Direct Investment (FDI) Decomposition

$$FDI_t^+ = \sum_{j=1}^t \max(\Delta FDI_j^+, 0) \quad (5)$$

$$FDI_t^- = \sum_{j=1}^t \max(\Delta FDI_j^-, 0) \quad (6)$$

Inflation (INF) Decomposition

$$INF_t^+ = \sum_{j=1}^t \max(\Delta INF_j^+, 0) \quad (7)$$

$$INF_t^- = \sum_{j=1}^t \max(\Delta INF_j^-, 0) \quad (8)$$

This decomposition ensures that the model captures asymmetries, allowing us to analyze whether increases and decreases in these variables have different effects on economic growth.

4.0 Results and Discussion of Findings

4.1 Result of the Descriptive Statistics

Table 1

Result of the Descriptive Statistics

	GDPG	LOGTGEXP	INF	FDI
Mean	3.042141	2.798455	20.95366	1.221217
Median	3.251681	3.007824	11.11892	1.069539
Maximum	15.32916	4.296850	219.0028	4.282088
Minimum	-13.12788	0.983919	0.686099	-0.039127
Std. Dev.	5.255826	1.040758	33.94017	0.945836
Skewness	-0.839215	-0.450060	4.870144	0.946879
Kurtosis	4.845801	1.859637	28.45741	3.760779
Jarque-Bera	11.15153	3.781571	1331.124	7.462483
Probability	0.003789	0.150953	0.000000	0.023963
Observations	43	43	43	43

Source: Authors owns work

The descriptive statistics provide an overview of the key characteristics of the variables used in the study. The mean GDP growth rate (GDPG) is 3.04%, indicating moderate economic growth over the period, but the large gap between its maximum (15.33%) and minimum (-13.13%) values suggests high fluctuations. The standard deviation (5.25) further confirms the volatility in economic growth. Total Government Expenditure (LOGTGEXP) has a mean of 2.79, reflecting moderate spending levels. In contrast, Inflation (INF) has a mean of 20.95%, suggesting that inflation has been generally high, with extreme values (maximum of 219%). The high standard deviation (33.94) shows that inflation is highly volatile, which may

negatively affect economic stability. Foreign Direct Investment (FDI) has a mean of 1.22%, indicating that Nigeria has attracted only a modest amount of foreign investment.

The skewness and kurtosis values show that GDPG and INF are not normally distributed. GDPG shows a negative skew and INF is highly positively skewed, meaning there are extreme inflationary pressure. The Jarque-Bera probability values for GDPG, INF and FDI are below 0.05, meaning these variables deviate significantly from normality, which justifies using nonlinear econometric techniques like NARDL.

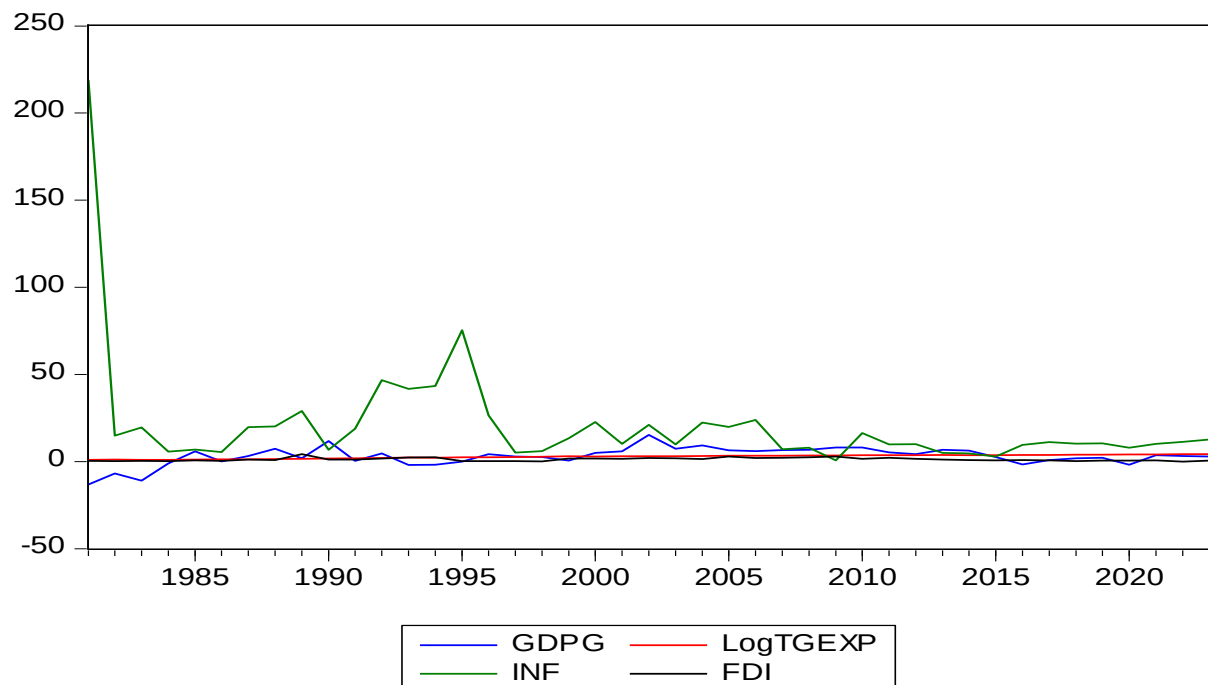


Figure 1: Trend analysis of the variables of the study

Source: Eviews 9 output

4.2 Trend analysis of the variables of the study

Trend analysis indicates that inflation (INF) was very volatile, especially during the 1980s and mid-1990s, with an increases beyond 200%, possibly because of macroeconomic instability, exchange rate devaluations, and mismanagement of fiscal policy. Nevertheless, after the year 2000, inflation stabilized, reflecting better monetary policy and economic reform. GDP growth (GDPG) fluctuated but was relatively stable, reflecting the robustness of the Nigerian economy. Total government expenditure (LogTGEXP) had a steadily increasing trend, reflecting consistent fiscal planning and spending behaviour. Foreign Direct Investment (FDI) was comparatively low and stable, reflecting that while there was growth in the economy, Nigeria could not attract significant foreign investment, possibly due to policy uncertainty, security concerns, and infrastructure issues. Overall, while the economy showed signs of stability and better inflation control post-2000, the low FDI inflows highlight the need for improved investment policies and economic diversification.

Table 2

Result of ADF Unit Root Stationarity Test

Variables	ADF at Level	ADF at 1 st difference	Order of Integration
GDPG	-4.3832	-----	I(0)
LogTGEXP	-1.3598	-7.8547	I(1)
INF	-14.3036	-----	I(0)
FDI	-3.8214	-----	I(0)
ADF Critical value (%) = -2.9332			

Source: Authors own work

The Augmented Dickey-Fuller (ADF) test examines whether the variables are stationary. The results show that GDPG, INF, and FDI are stationary at level [I(0)], meaning they do not contain unit roots and are stable over time. However, LOGTGEXP is non-stationary at level but becomes stationary after first differencing [I(1)], indicating that government expenditure follows a long-term trend.

Table 3: Result of ARDL Bounds Test of Cointegration

Test Statistic	Value	K
F-statistic	7.369600	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Source: Authors own work

The F-statistic (7.37) is greater than the upper bound critical values at 1%, 5%, and 10% levels of significance, indicating a high long-run association between economic growth, health expenditure, FDI, and inflation. This confirms that macroeconomic variables and health expenditure changes impact Nigeria's economic growth in the long run.

Table 4: Result of Nonlinear ARDL Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDPG(-1)	-0.822402	0.414661	-1.983312	0.1041
GDPG(-2)	-0.760083	0.371333	-2.046906	0.0960
GDPG(-3)	0.292788	0.245220	1.193983	0.2860
GDPG(-4)	0.358974	0.232264	1.545541	0.1829
LOGTGEXP_POS	-8.188551	24.99931	-0.327551	0.7565
LOGTGEXP_POS(-1)	22.35022	29.56497	0.755970	0.4837
LOGTGEXP_POS(-2)	29.38426	20.30683	1.447014	0.2075
LOGTGEXP_POS(-3)	68.87670	28.01920	2.458197	0.0574

LOGTGEXP_POS(4)	-43.26916	20.61782	-2.098629	0.0899
LOGTGEXP_NEG	-178.8841	78.62640	-2.275115	0.0720
LOGTGEXP_NEG(-1)	-132.7917	80.18499	-1.656066	0.1586
LOGTGEXP_NEG(-2)	94.37166	73.92244	1.276631	0.2578
LOGTGEXP_NEG(-3)	-73.54536	48.74109	-1.508899	0.1917
INF_POS	-0.462855	0.291579	-1.587406	0.1733
INF_POS(-1)	-0.389048	0.356853	-1.090220	0.3253
INF_POS(-2)	-0.323652	0.397064	-0.815114	0.4521
INF_POS(-3)	0.229231	0.318570	0.719563	0.5040
INF_POS(-4)	-0.912547	0.317592	-2.873334	0.0349
INF_NEG	-0.444550	0.170613	-2.605609	0.0479
INF_NEG(-1)	-0.223469	0.218824	-1.021228	0.3540
INF_NEG(-2)	0.173770	0.214010	0.811973	0.4537
INF_NEG(-3)	-0.513059	0.290800	-1.764302	0.1380
INF_NEG(-4)	0.667331	0.289542	2.304783	0.0694
FDI_POS	1.533914	1.747069	0.877993	0.4201
FDI_POS(-1)	-0.927210	3.185192	-0.291100	0.7827
FDI_POS(-2)	-2.820072	4.281219	-0.658708	0.5392
FDI_POS(-3)	4.918480	3.656126	1.345271	0.2363
FDI_POS(-4)	4.462991	4.209831	1.060135	0.3376
FDI_NEG	2.993912	2.825502	1.059604	0.3378
FDI_NEG(-1)	-2.156806	3.886531	-0.554944	0.6028
FDI_NEG(-2)	2.507073	3.753222	0.667979	0.5337
FDI_NEG(-3)	8.069382	5.185144	1.556250	0.1804
C	-89.83589	34.34756	-2.615496	0.0474
R-squared	0.963152	Mean dependent var		4.128159
Adjusted R-squared	0.727325	S.D. dependent var		3.807491

Source: Authors owns work

The NARDL results in Table 4 indicate that positive increase in government spending on health (LOGTGEXP_POS) have a significant impact with GDP growth at lags 3 and 4. Negative shocks (LOGTGEXP_NEG), on the other hand, has a negative significant impact on GDP growth. This suggests that decelerations in government health spending slow economic expansion more rapidly than accelerations in spending stimulate expansion, pointing toward ongoing healthcare spending. This conforms with Manenge (2025), who shows causality between Zimbabwean health expenditure and economic expansion, confirming the assertion that investment in health leads to economic growth. Likewise, Ismail et al. (2024) reported that government spending on health has a profound influence on the economic growth of Nigeria but its influence by corruption and poor infrastructure. The current study also suggests that inefficiencies in resource allocation may explain the delayed positive effects of increased health spending. However, Danlami et al. (2024) found that domestic general health expenditure negatively affects economic growth, contradicting the present study's results. Their argument that private health expenditure plays a greater role in economic expansion suggests that focusing on public healthcare alone may not be sufficient for long-term growth.

The results further show that inflation has asymmetric effects on economic growth. Increasing inflation (INF_POS) reduces GDP growth in lag 4 while declining inflation (INF_NEG) contributes positively and significantly to GDP. This supports the inflation-growth trade-off that higher inflation dissipates purchasing power and disturbs economic stability, while controlled inflation promotes economic growth. This is consistent with the classical theory on inflation which argue that inflation distorts price signals, reduces investment due to uncertainty, and erodes purchasing power. They advocate for a stable price level to promote long-term growth. This findings is also in agreement with that of Olayiwola and Olusanya (2021), who established that recent inflation depresses economic growth, but earlier inflation patterns exert mixed impacts. Furthermore, Azike et al. (2022) indicated that public sector expenditure's growth impact is suppressed by inflation volatility, something also clears from this research where inflation interacts with health expenditure to have a negative impact on GDP growth. Also, Mustafa and Ansari (2021) in their study in Pakistan found that inflation is positively correlated with economic growth in the short run but has negative effects in the long run, as evidenced by the current findings that inflation must be managed to sustain economic performance.

The role of Foreign Direct Investment (FDI) in GDP growth is primarily insignificant, indicating that FDI inflows in Nigeria may not be translating into meaningful economic benefits. This is contrary to the endogenous growth theory which argue that FDI can permanently boost economic growth by enhancing productivity and innovation. However, the outcome is similar to Ayaga et al. (2024), whose finding was that economic growth is raised by FDI only if the productivity of labour is high. This means that Nigerian FDI inefficiency may be caused by inefficient labour markets and second-rate support infrastructure. This is unlike Admane and Slimani (2021), whose finding was that FDI contributes to economic growth in Algeria positively. This discrepancy may be attributed to differences in investment policies, the economic structure, and the governance of the two nations. Manenge (2025) also observed that openness to trade (which in turn influences the movement of FDI) guides economic performance and, hence, non-functional trade policy on Nigeria's part may be the reason for the lack of responsiveness between FDI and GDP growth in this case.

In conclusion, the NARDL results confirm that there exists a long-run relationship between health spending, inflation, FDI, and economic growth, as stipulated by the ARDL bounds test for cointegration. The results emphasize the need for sustained government spending on health, good control of inflation, and improved investment policies to foster economic growth in Nigeria.

Table 5: Result of Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.135521	Prob. F(2,24)	0.8739
Obs*R-squared	0.435525	Prob. Chi-Square(2)	0.8043

Source: Authors owns work

The test confirms that there is no serial correlation, as the p-value (0.8739) is greater than 0.05. This means that the error terms are not correlated, and the model's estimates are unbiased.

Table 6: Result of Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.643217	Prob. F(12,26)	0.7866
Obs*R-squared	8.927586	Prob. Chi-Square(12)	0.7091
Scaled explained SS	3.044127	Prob. Chi-Square(12)	0.9952

Source: Authors owns work

The test shows that there is no heteroskedasticity, as the p-value (0.7866) is greater than 0.05. This means that the variance of the error terms is constant, ensuring the reliability of the coefficient estimates.

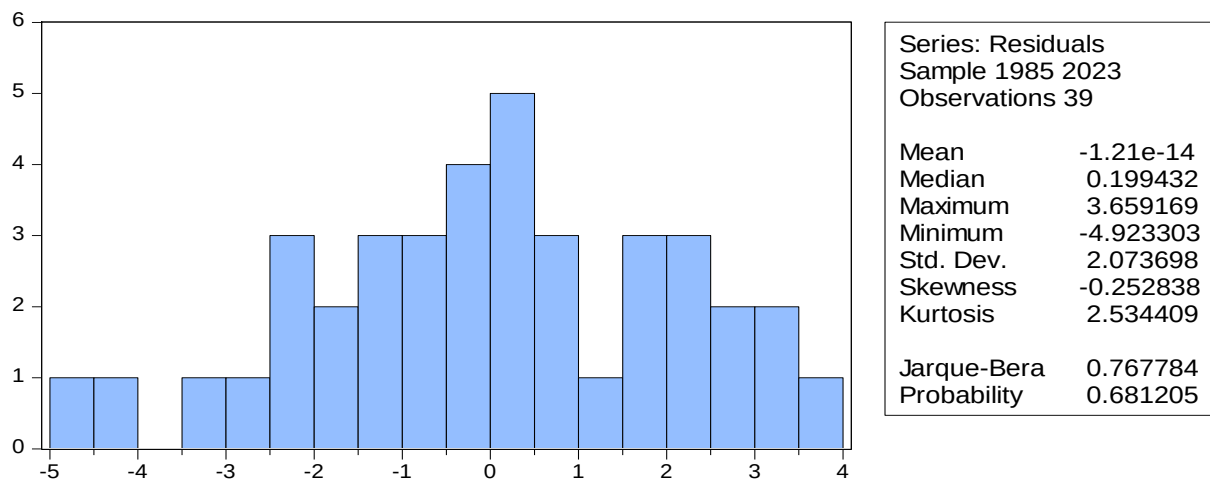


Figure 2: Normality Test

Source: Eviews 9 output

In this study, the normality test reveals that the residuals are normally distributed, which means the model errors are randomly dispersed around zero. This suggests that there are no enormous breaches of the assumption that regression errors would be random and bell-shaped.

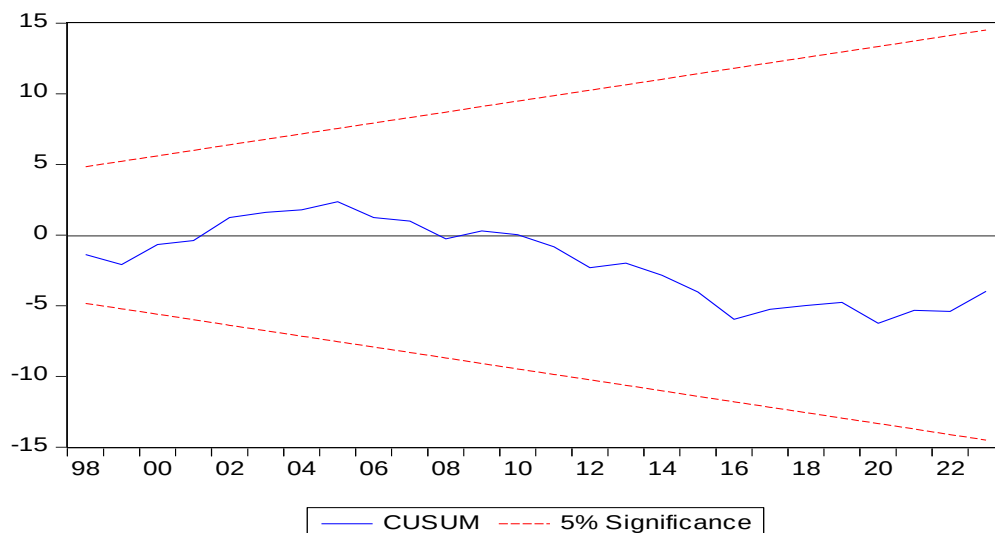


Figure 3: Stability Test

Source: Eviews 9 output

The stability test ensures that the model is structurally stable, i.e., the estimated connections among GDP growth, FDI, inflation, and health expenditure do not change with time. In other words, there are no policy shocks or large external shocks that have altered the connection among the variables considerably. Since the model is structurally stable under different circumstances, the outcomes can be utilized with certainty in determining long-run economic policies for healthcare financing and macroeconomic stability.

5.0 Conclusion and Policy Recommendation

The effect of healthcare expenditure on economic growth in Nigeria was examined using the Nonlinear Autoregressive Distributed Lag (NARDL) model in this study. The research confirms that FDI, inflation, and health spending all influence Nigeria economically, so much that the government is being pushed to embrace sustainable healthcare financing policies, management of inflation, and investment to enhance growth.

Based on the study's findings, the study recommended that;

- i. The Nigerian government should give adequate and systematic budgets for healthcare so that it will be able to support economic growth since government spending on health have a significant impact on economic growth
- ii. Beyond increasing healthcare spending, the government should enhance transparency and efficiency in the allocation and utilization of health funds.
- iii. Since inflation negatively affects economic growth, the government should adopt monetary and fiscal policies to stabilize inflation. The Central Bank of Nigeria (CBN) should ensure price stability through effective interest rate policies, while the government should reduce inflationary pressures through prudent fiscal management.
- iv. Given that FDI does not significantly impact economic growth, the government should strengthen investment policies, reduce bureaucratic barriers, and improve infrastructure to attract and retain productive foreign investments.
- v. Encouraging private sector participation in healthcare financing can supplement government efforts and improve service delivery. Policies should promote investment in healthcare infrastructure, medical technology, and workforce development to enhance the sector's contribution to economic growth.

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