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Sustainable Economic Growth in Nigeria: Implications for Public Health Financing and Inflation Rate

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Abstract: **Public health financing in developing countries most especially in Nigeria often hindered by inadequate budgetary allocation and high out-of-pocket expenses incurred by citizens, leading to high inflation rates of medical expenses surging instantaneously, thus, erodes the purchasing power of households and public health budgets which in turn affecting sustainable economic growth. Given the above, the broad objective of this study is to examine the impact of public health financing and inflation rate on sustainable economic growth in Nigeria, while specific objectives are to investigate the nature of relationship among public health financing, inflation rate and sustainable economic growth in Nigeria. The data for the study were analyzed using unit root test, co-integration test, Auto-regressive distributed lag (ARDL) approach as estimation techniques. Result from the study showed that high sustained inflation exhibit a negative impact on GDPgr in the long run by reducing purchasing power and investment. Again, in the short and long runs, high poverty rate consistently correlate with lower GDP growth rate. In addition, In the long run analysis, public health expenditure exhibit a positive and significant effect on economic development, but in the short run, an inverse insignificant relationship exist as government expenditures take time to translate into productivity gains. Population growth rate showed a positive impact on economic progress in the short run but as population increases, it leads to a long-term decline in the annual GDP growth rate as a result slow grow of economy. Finally, result further indicates that domestic general government health expenditure have a positive long run relationship with GDP growth rate by enhancing workers' productivity in the country. Based on the findings, the study therefore recommends that government needs to raise health sector spending beyond current levels to meet, or exceed the 2001 Abuja Declaration standards. In a bid to control rising inflation of medical facilities, aggressive and pragmatic monetary policies are necessary to manage and reduce its adverse impact on economic growth. Government should also strengthen the health sector management and monitoring of health expenditure to ensure that funds translate to better health outcomes, rather than being lost to funds mismanagement or inefficiency.**

Keywords: **Sustainable economic growth, Public health financing, Inflation rate, ARDL.**

I. INTRODUCTION

According to the United Nations (UN, 2019) and its agencies including World Health Organization (WHO), United Nations Development Programme (UNDP) and others, thus, they consistently advocates that developing countries most especially Nigeria should increase her public health financing to at least 15% of its annual budget (Abuja Declaration) to enhance human capital and ensure sustainable economic growth. That is, to achieve Sustainable Development Goals (SDGs), as high inflation and devaluation of the Naira erodes purchasing power, hinders investment, and worsens health outcomes by increasing the costs of medicines and reducing access to healthcare. This creates a vicious cycle where inflation increases

out-of-pocket expenditures, reducing citizens' ability to afford healthcare and contributing to a significant portion of citizens falling into poverty. Thus, capital investment in health is seen as critical for sustainable economic growth, while high inflation acts as a drag on development (UNDP, 2015). Hence, the United Nations Country Team aims to support Nigeria in building a resilient health system so as to achieve the SDGs, highlighting that a healthy workforce is necessary for economic stability.

However, in recent time, public health financing in Nigeria often hindered by inadequate budgetary allocation, inefficient public spending and high out-of-pocket expenses incurred by citizens (UN, 2022). This implies that public health financing in Nigeria is characterized by a mix of approaches, heavily dominated by out-of-pocket expenditures, which account for over 70% of total health spending in recent years (WHO, 2018). This among others led to high inflation rates of medical expenses surging instantaneously, that is, having cost-push effects on healthcare infrastructure across all levels of our healthcare centers. Thereby erodes the purchasing power of households and public health budgets, making healthcare to be less affordable and afterwards, sustainable economic growth became elusive to achieve (Ofuonye, Emeka-Nwokeji & Ezebuilo, 2025). To further affirm the foregoing, a recent study from Danladi (2022) showed that a percentage point increase in inflation rate reduces economic growth by approximately 0.035%. This further juxtapose that high inflation increases the cost of medical equipment, drugs, and services, often limiting the ability of public healthcare firms to maintain operational capacity.

Given the above, public health financing and inflation are critical determinants of sustainable economic growth of any country as evidenced in Nigeria, acting as opposing forces that either bolster or erode human capital and purchasing power according to *Ofuonye et al.,2025*. While sustained investment in health is necessary to enhance labor productivity (Allahoki & Dugule, 2024). But, high inflation rates act as a major deterrent to growth by increasing the cost of healthcare services and reducing the real value of government expenditures, and further hinder growth and deepen poverty. World health organization (WHO, 2019) also gesticulate that high inflation exhibits significant impediment to both economic growth and sustainability of health systems in developing countries (Nigeria inclusive).

Flowing from the above, the broad objective of this study is to examine the impact of public health financing and inflation rate on sustainable economic growth in Nigeria using annual time series data between 1980 and 2025 while the nature of relationship among public health financing, inflation rate and sustainable economic growth became the subject of specific objective and research question respectively.

Further, the novelty in this study is the inclusion of inflation rate embedded with public health financing to determine the sustainability of economy for the country which other studies could not addressed (e.g. see the work of Allahoki & Dugule, 2024; Olayiwola & Olusanya, 2021; Chukwudi, 2025; Akintunde, Aribatise, & Njoku, 2025; and Ogunbunmi (2023) that only focus on health investment, public / government healthcare financing and economic growth while some authors carried out studies on only inflation and public healthcare expenditure (e.g. Ofuonye, Emeka-Nwokeji & Ezebuilo, 2025; and Danladi, 2022. However, study on the current theme in Nigeria could intent not to be found during the literature reviewed process. However, adding inflation rate to other two existing theme, hereby represent the major void intend to fill for the study, considering the present influence of inflation on the economy and insignificant budgetary allocation to health sector of Nigeria today, where growth hinders and poverty deepens.

Following the introductory part, the rest of the paper is divided into four sections. Section two is preoccupied with the review of the literature on the impact of public health financing, inflation rate on sustainable economic growth while section three deals with methodology. Section four focused on the results and discussions and section five discussed the concluding remarks and recommendations.

II. REVIEW OF LITERATURE

Theoretical Underpinning

Theoretical underpinnings connecting public health financing, inflation rate, and economic growth are grounded in human capital theory, endogenous growth models, and theories of public expenditure such as Wagner's Law, Wiseman-Peacock hypotheses and amongst others. These frameworks explored a reciprocal relationship where health financing acts as an investment in labor productivity, which in turn drives economic growth, while inflation can act as a barrier to health access and efficient resource allocation. The theoretical frameworks are discussed thus;

Human Capital Theory: Health is viewed as a critical component of human capital alongside education. Increased health expenditure improves health outcomes such as increased life expectancy and reduced mortality rates, thereby leading to higher labor force productivity and increased economic output.

Endogenous Growth Theory: This theory posits that long-term economic growth is driven by internal processes, specifically investments in human capital and technological innovation. However, public health spending is considered an investment that yields economic returns rather than mere consumption.

Wagner's Law of Increasing State Activity: This law suggests that as an economy grows, government activities and public expenditures inevitably expand or increased. If we applied it to health, this implies that economic development leads to greater demand for government-funded healthcare services.

Baumol's Cost Disease: This theory suggests that the cost of public services like healthcare rises faster than the rest of the economy because productivity improvements in labor-intensive services are lower than in the manufacturing sector.

The ''Crowding-Out'' Effect: A critical theoretical concern of public health financing if it is increase, it might "crowd out" other potentially more productive public investments, such as infrastructure or research and development, which could restrain overall economic growth in certain contexts.

Further, there are other links between health financing and economic growth that is often dynamic and reciprocal, leading to several hypotheses, which includes:

Health-Led Growth Hypothesis (HLGH): Proposes that investments in health positively impact economic growth through increased productivity and innovation.

Wealth Hypothesis: Suggests that economic growth enables higher health expenditures, as wealthier nations have more resources to invest in healthcare.

Empirical Evidences

There are lots of related and unrelated empirical evidences from developing countries most especially Nigeria on the impact of public health financing and inflation rate on sustainable economic growth. However, some of these reviewed are presented thus;

Allahoki and Dugule (2024) examined the impact of public health investment on economic growth in Nigeria spinning from 1981 to 2020. The study used Autoregressive Distributive Lagged (ARDL) model as estimation technique. Results from the study indicate that recurrent health investment, capital health investment, domestic health spending and external health investment exhibits positive impacts on economic growth in Nigeria during the period under study. The study therefore recommends that monetary authority should maintain and sustain a deliberate fiscal and monetary policy measures that could encourage external health financing by external donors agencies to the health sector for promoting and sustaining economic growth in Nigeria. Again, government should increase its health investment that would provide more health infrastructure in health facilities and diseases control through increase in domestic health financing in the health sector as the effects shall be transferred to the economic growth. In addition, Government should continue to provide policy that would ensure macroeconomic stability especially foreign exchange rate and interest rate stability that would encourage increase investment in human capital by individuals and the private sector in Nigeria.

In relation to the work of Allahoki and Dugule (2024), Chukwudi (2025) also examined the relationship between healthcare financing and economic performance from 1986 to 2023 in Nigeria. The study focused on the role of government capital and recurrent expenditure in health on gross domestic product, using two theoretical concepts, namely, the Human Capital Theory and the Keynesian Theory of Public Expenditure. Parsimonious ECM result of the study showed that Government recurrent spending in health have a statistically insignificant and negative effect on gross domestic product while government capital spending in health have positive and statistical significance influence on gross domestic product. The study concluded that government capital expenditure in health is the significant aspect of healthcare financing that, promotes the gross domestic product of Nigeria. The study recommended that the Federal government of Nigeria should implement performance-based budgeting in the healthcare sector as well as to conduct health workforce audit in a bid to reduce wastage in the country.

In the same vain, Olayiwola and Olusanya (2021) examined the impact of the health financing on economic growth in Nigeria using Auto-regressive Distributed Lag Model (ARDL) estimation technique. The study used time series data spanning between 1990 and 2020. The results showed that the previous year productive activities have a growth effect on economic growth both in the short-run and the long-run. The current domestic government general health expenditure has a negative growth effect on economic growth while the previous year domestic general government expenditure on health improves economic growth. Other results also indicate that current out-of-pocket health expenditure negatively affects economic growth while previous year out-of-pocket health expenditure improves economic growth. The domestic private health expenditure has a significant positive growth effect on the economic growth. Findings from the results strengthen the importance of private health spending than government health expenditure in improving economic growth. The study therefore, concluded that health financing is necessary for sustainable economic growth. While government should enhance individual health spending ability, increase health sector budgetary allocation and ensure prudent and effective budgetary implementation for the heath sector.

Akintunde, Aribatise, and Njoku (2025) examined the impact of macro-fiscal determinants on health financing in Nigeria using annual time series data between 1980 and 2022 and were sourced from the World Development Indicator (WDI) and the Central Bank of Nigeria (CBN) Statistical Bulletin. Descriptive and econometrics techniques of Block Exogeneity Wald / VEC granger causality tests and Vector error correction model (VECM) were employed in the analysis of the study. In the short run, the study revealed the existence of a bidirectional causal relationship between health financing and economic growth, that is, (HEF↔ECG). The study found no long-term causal relationship between variables, but positive effects of economic growth and tax revenue on health financing, and negative effects of inflation and debt services. The study concluded that fiscal balance has greater potential to explain variations in health financing in the long run than the other variables. This study therefore recommends the generation of health-specific revenues and effective usage of health budget which would probably accelerate the progress towards the achievement of health financing in health sector in Nigeria.

Ogunbunmi (2023) investigated the impact of government current health expenditure on economic growth in Nigeria from 2000 to 2020. Using the Fully Modified Ordinary Least Squares (FMOLS) regression technique and the Granger causality test, the study assessed the effect of health expenditure on economic growth and the direction of causality between the two. The results showed that current health expenditure had a positive and significant impact on economic growth. Other results indicate that a unidirectional causality flow from health expenditure to economic growth, with no feedback effect. Regarding the control variables, per capita income and credit to the private sector were found to significantly enhance economic growth, while the exchange rate and inflation rate had a deterring effect, though the exchange rate was not significant. Based on the findings, the study recommended that the government increase health expenditure to improve health outcomes, which would in turn boost productivity and spur growth.

Ofuonye, Emeka-Nwokeji and Ezebuilo (2025) investigates how inflation affects public healthcare companies' financial performance and sustainability in Nigeria and suggests measures to make them more resilient in an inflationary climate. A quantitative research design was adopted. Data for the corporate performance were extracted from the annual accounts of the sampled firms. In contrast, the data for independent variables were extracted from the Central Bank of Nigerian Statistical Bulletin from 2012 to 2022. The Cost-push inflation theory was adopted. The Pearson Moment of correlation and regression analysis coefficient was employed to test the hypotheses. The result revealed that inflation rate had an adverse insignificant effect on financial performance. In contrast, the exchange rate and money supply exhibits negative and positive statistical significance on healthcare firms' economic performance in Nigeria. The overall result showed that macroeconomics significantly affects the financial performance of public healthcare firms in Nigeria, indicating that inflation rate conditions substantially decrease and increase the effect on the performance of firms in Nigeria. Based on the findings, the study concluded that the inflation rate was not significant and therefore recommended that government should ensure that inflation has a pleasing effect on the public healthcare organization's operations and outcomes, as preventing inflation positively affects individuals, agencies and the country's financial system.

Danladi (2022) investigates the impact of inflation on economic growth in Nigeria. The study employs the Autoregressive Distributed Lag (ARDL) model on the selected variables that are GDP, inflation, interest rate, money supply and government consumption expenditure from 1990 to 2020 (31 years). The findings from ARDL model reveal that inflation, interest rate and money supply exert significant negative impact on economic growth while government consumption expenditure exerts significant positive impact on the economic growth. Based on the findings, a more aggressive effort is

needed by the government and monetary authorities to tackle the inflation and interest rate fluctuations to forestall the negative impact on the economic growth by ensuring their appropriate rates that will stimulate economic growth. Also the study recommends that government should ensure an appropriate level of money supply that will keep appropriate level of interest rate to avoid plunging the economy into liquidity trap to achieve an intrusive economic growth.

Yusuf (2018) examined the relationship between government health expenditure and economic growth in Nigeria. The study employed the OLS regression analysis to estimate the model and the R2 showed a 94% significant relationship between government health expenditure and economic growth. The regression analysis results showed that the dependent variable (GDP) has a positive and significant relationship with all the independent variables. That is, every 1% unit increase in CAPEXP and RECEXP will increase economic growth by 140.1217 units and 190.7144 units respectively. The study therefore recommends that there is need for the Nigerian government to double its budgetary allocation to the health sector through setting up of a good administrative/monitoring team, the utilization of disbursed funds meant for capital projects can be closely monitored, especially in the area of procurement. In addition, adequate and equitable distribution of healthcare facilities should also involve the interests of all citizens especially those in the rural centers.

Babatunde (2014) analyzed the impact of health expenditure on economic growth in Nigeria from 1970 to 2010. The study applied multiple regression analysis and find out that gross capital formation, total health expenditures and the labour force productivity are important determinants of economic growth in Nigeria whereas life expectancy rate has negative impact on economic growth.

Akintunde and Satope (2013) investigated the effect of health investment on economic growth in Nigeria from 1977 to 2010. Applying the VECM as method of analysis and found that there was a long run relationship between health expenditure and economic growth. The results also revealed a positive relationship between health expenditure and economic growth in Nigeria.

Bakare and Olubokun (2011) investigated the relationship between health care expenditures and economic growth in Nigeria. The study used ordinary least square (OLS) multiple regression analytical method on the relationship between health care expenditures and economic growth. The result showed a significant and positive relationship between health care expenditures and economic growth in Nigeria.

Oladosu, Chanimbe, and Anaduaka, (2022) examined the effect of public health expenditure on health outcomes in Nigeria and Ghana. The study used Malaria and HIV/AIDS mortality as the key indicators of health outcomes. Using health expenditure commitment at the 1999 United Nations General Assembly and the Abuja Declaration of 2000, we also assessed public policy's role in this relationship via linear regression analysis. With hindsight, our findings showed that a low public health expenditure in both countries despite the Ghanaian case revealing a negative relationship, which was primarily insignificant whilst Nigeria indicated a positive one. These empirical evidences accentuate the need to augment public health expenditure in both countries to boost health outcomes whilst bringing to bear the significant influence of GDP, school enrolment and residing in urban areas on health outcomes.

III. METHODOLOGY

Model Specification

Following the works of Akintunde, Aribatise, and Njoku (2025), Allahoki and Dugule (2024) in the work Nwodo & Asogwa (2017) and Grossman (1972) from extant literature as regards the interactions among macroeconomic variables like economic growth, inflation rate and public health financing towards improvement of government's allocation of more budget to healthcare financing and the betterment of the society at large Wagner's Law as opined, proposed by German economist Adolph Wagner in 1883, in the 19th century, thereby suggests that as a nation's economy grows, government spending tends to increase as a percentage of GDP. This leads to increased demand for public goods and services as well as welfare like education, healthcare, and infrastructure.

Here we present *Akintunde et al., (2025)* and Allahoki and Dugule (2024) models in equation (i) and (ii) for modification as the case maybe of this present study.

$$HEF_t = \beta_0 + \beta_1 ECG_t + \beta_2 INR_t + \beta_3 TAR_t + \beta_4 DBS_t + \beta_5 FIB_t + \mu_t \quad (1)$$

Where; HEF is health financing, ECG is economic growth, INR is inflation rate, TAR comprise tax revenue, DBS is the debt services and FIB represent fiscal balance. $\beta 0$, $\beta 1$, $\beta 2$, $\beta 3$, $\beta 4$, and $\beta 5$ are the parameters to be estimated and μt is the stochastic error term

While;

$$GDG = b_0 + b_1 RHI + b_2 CHI + b_3 DHS + b_4 EHI + \mu_t \quad (2)$$

GDP = growth domestic product which proxies by economic growth; RHI = recurrent health investment; CHI = capital health investment; DHS = domestic health spending; EHI = external health investment. µt = error term, bo is the intercept of the equation, b1 …. b4 are the coefficients of the explanatory variables to be estimated.

Given two models adapted above, (1) and (2), we deduced the baseline model for this study as specified implicitly;

$$SECG = GDPgr = f(PHEF, INFR, MAVA) \quad (3)$$

Where; SECG = sustainable economic growth, PHEF = public health financing, INFR = inflation rate; and MAVA = macroeconomic variables intervening.

From (3), the functional model for this study becomes:

$$SECG = GDPgr = f(INFR_t, PHEF_t, POVR_t, POPgr_t, DGGHE, GTHE) \quad (4)$$

Explicitly; (iv) transformed into (v):

$$GDPgr = \psi_0 + \psi_1 INFR_t + \psi_2 PHEF_t + \psi_3 POVR_t + \psi_4 POPgr + \psi_5 DGGHE \psi_6 GTHE + \pi_t \quad (5)$$

Where; GDP Growth rate; Inflation rate (INFR); Public health financing (PHUF); Poverty rate (POVR); Population growth rate (POPgr); Domestic general government health expenditure (DGGHE); government's contribution to the total health spending (GTHE).

A-priori, variables are expected to be; $\psi_1, < 0; \psi_2 > 0; \psi_3 < 0; \psi_4 > 0; \psi_5 > 0; \psi_6 > 0$

Estimation Techniques

Unit Root Test

A co-integrating relationship exists between non-stationary series, if there is a stationary linear combination between them. Therefore, we need to test the stationarity of the time series first. Augmented-Dickey-Fuller (ADF) is used to determine whether or not the series are stationary. The unit root test can be carried out under the null hypothesis $y = 0$ against the alternative hypothesis of $y < 0.$using time series data. However, based on the unit root conducted, the study considered Autoregressive Distributed Lag (ARDL) approach as estimation technique to achieve the objective of the study as discussed below:

Autoregressive Distributed Lag Model (ARDL) Approach to Co-integration Testing

When one co-integrating vector exists, Johansen and Juselius (1990) co-integration procedure cannot be applied. Hence, it become imperative to explore Pesaran and Shin (1995) and Pesaran*et al* (1996b) proposed Autoregressive Distributed Lag (ARDL) approach to co-integration or bound procedure for a long0run relationship, irrespective of whether the underlying variables are I(0), I(1) or a combination of both. In such situation, the application of ARDL approach to co-integration will give realistic and efficient estimates. Unlike the Johansen and Juselius (1990) co-integration procedure, Autoregressive Distributed Lag (ARDL) approach to co-integration helps in identifying the co-integrating vector(s). That is, each of the underlying variables stands as a single long run relationship equation. If one co-integrating vector (That is, the underlying equation) is identified, the ARDL model of the co-integrating vector is re-parameterized into ECM. The re-parameterized result gives short-run dynamics (i.e. traditional ARDL) and long run relationship of the variables of a single model. The re-

parameterization is possible because the ARDL is a dynamic single model equation and of the same form with the ECM. Distributed lag Model simply means the inclusion of unrestricted lag of the regressors in a regression function. This co-integration testing procedure specifically helps us to know whether the underlying variables in the model are co-integrated or not, given the endogenous variable. However, when there are multiple co-integrating vectors ARDL Approach to co-integration cannot be applied. Hence, Johansen and Juselius (1990) approach becomes the alternative. Thus, here are basic requirement for using this approach and its applicability. For this study, this equation is informed:

$$\Delta(GDPgr_t) = \psi_0 + \psi_1 INFR_{t-1} + \psi_2 PHEF_{t-1} + \psi_3 POVR_{t-1} + \psi_4 POPgr_{t-1}$$
$$+ \psi_5 DGGHE_{t-1} + \psi_6 GTHE_{t-1} + \sum_{t=0}^{n} \Delta(GDPgr_{t-1}) + \sum_{t=0}^{n} \gamma_1 \Delta(INFR_{t-1}) + \sum_{t=0}^{n} \gamma_2 \Delta(PHEF_{t-1}) \quad (6)$$
$$+ \sum_{t=0}^{n} \gamma_3 \Delta(POVR_{t-1}) + \sum_{t=0}^{n} \gamma_4 \Delta(POPgr_{t-1}) + \sum_{t=0}^{n} \gamma_5 \Delta(DGGHE_{t-1}) + \sum_{t=0}^{n} \gamma_6 \Delta(GTHE_{t-1}) + \Im_t$$

Δ represents the first difference operator, ψ is the drift parameter and $\Im_t$ is the disturbance error term. The above equation indicates that sustainable economic growth proxy by gross domestic product growth rate (GDPgr) is influenced by its past values. The first part of equation (7) with $\psi_1, \psi_2, \psi_3, \psi_4, \psi_5$ represents the short-run dynamics of the model, while the second part with $\gamma_1, \gamma_2, \gamma_3, \gamma_4, \gamma_5$ signifies the long-run relationship of the autoregressive distributed lag specification (ARDL). However, the null hypothesis that there is no co-integration relationship among the variables in the model, that is H_0: = $\Phi_1 \ldots \Phi_5 = 0$ is tested against the alternative hypothesis that is; $H_1 = \Phi_{1 \ldots} \Phi_5 \neq 0$ using bounds test (F-statistic). If the values of F-statistic are greater than the upper bound critical value, we reject the null hypothesis of no co-integration among the variables in the model. If the value of the F-statistic is lower than the lower bound critical value, we accept the null hypothesis of no co-integrating vector among the variables in the model. If the value of the F-statistic lies within the two critical values, the results will be inconclusive or uncertain. The above (4) can be re-specified as unrestricted (or unconstrained conditional) error correction model (UECM) and presented as equation (5) below:

$$\Delta(GDPgr)_t = \varphi_0 + \sum_{t=0}^{n} \varphi_1 \Delta INFR_{t-1} + \sum_{t=0}^{n} \varphi_2 \Delta PHEF_{t-1} + \sum_{t=0}^{n} \varphi_3 \Delta POVR_{t-1}$$
$$+ \sum_{t=0}^{n} \varphi_4 \Delta POPgr_{t-1} + \sum_{t=0}^{n} \varphi_4 \Delta DGGHE_{t-1} + \sum_{t=0}^{n} \varphi_5 \Delta GTHE_{t-1} + \Omega ect_{t-1} + \gamma_t \ldots\ldots\ldots\ldots\ldots\ldots (7)$$

Here, all variables remain as earlier defined with the exception of (ect_t) that stands for coefficient of error correction term from the long-run co-integration regression and also depicts the speed of adjustment in the model; γ_t is disturbance error term. Its coefficient (Ω) is expected to have negative signs given in (8).

$$ect_{t-1} = (GDPgr_{t-1} - \nu_0 - \nu_1 INFR_{t-1} - \nu_2 PHEF_{t-1} - \nu_3 POVR_{t-1} - \nu_4 POPgr_{t-1}$$
$$- \nu_5 DGGHE_{t-1} - \nu_5 GTHE_{t-1}) \quad \ldots\ldots\ldots\ldots (8)$$

Data Description, Sources and Period:

Descriptions of the data are: GDP Growth rate (GDPgr % change y-o-y); Inflation rate (INFR % change CPI); Public health financing (PHEF % of GDP/% of budget); Poverty rate (POVR % of population); Population growth rate (POPgr % annual growth); Domestic general government health expenditure (DGGHE):government's contribution to the total health spending (GTHE). The study will use annual time series data spanning between 1980 and 2025 and sourced from International Monetary Fund (IMF), National Bureau of Statistics (NBS), World Bank, World Development Indicator of 2025 database edition.

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IV. RESULTS AND DISCUSSIONS

Table 1: Unit Root Test Result

Variables	ADF statistics	1% critical value	5% critical value	Order of Integration
GDPgr	-3.218384 (0.0000)1%	-3.596616	-2.825158	I(0)
INFR	-4.390745 (0.0001)1%	-3.596616	-2.825158	I(1)
PHEF	-3.56138 (0.0001)1%	-3.596616	-2.825158	I(1)
POVR	2.041345 (0.0001)1%	-3.596616	-2.825158	I(1)
POPgr	-4.186693 (0.0000)1%	-3.596616	-2.825158	I(0)
DGGHE	-1.405214 (0.0061)5%	-3.596616	-2.723867	I(1)
GTHE	-4.644223 (0.0000)1%	-3.596616	-2.825158	I(0)

Note:*(**) connote significance at 1%, (5%) significant levels respectively

Source: Author's Computation (2026)

Table 1, revealed that GDPgr, POPgr and GTHE are stationary at level I(0) while other variables including INFR, PHEF, POVR and DGGHE exhibit their stationarity at second difference I(1). Hence, the unit root test conducted in the study showed that series in the model are integrated of mixed order. That is, I(0) and I(1). Hence, the use of Auto-regressive distributed lag (ARDL) approach as estimation technique is informed for the study.

Table 2: ARDL Co-Integration Bound Test

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	5.1653	6
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.45
5%	2.25	4.43
1%	3.41	4.68

Note: critical values are values at 5% significant level

Source: ***Author's Computation (2026)***

Table 2, reported ARDL co-integration bound test in terms of lower and upper bound critical values, as well as the F-statistics for the Wald test carried out to test the joint null hypothesis that the coefficients of the lagged level variables are zero. The result showed that F-statistics value of 5.1653 and bound critical values of 2.25 and 4.43 for lower and upper bounds respectively. Comparing the F-statistic to critical values, it was observed that F-statistics is greater than the upper bound critical value (5.1653>4.43). The study therefore, rejects the null hypothesis at either 1%, 5% or 10% significance level. Hence, there is a co-integration relationship among the variables in the model.

The confirmation of long run relationship among the variables in the model is followed by the estimation of both long and short runs parameters in equations (6) and (7) through the application of ARDL model.

Table 3: Long Run Coefficients ARDL Estimates

Dependent Variable: D(GDPgr)			
Regressor	**Coefficient**	**t-Value**	**P-Value**
C	68.153819	2.542355	0.0159**
INFR	-2.673209	-4.129496	0.0002*
PHEF	2.553102	3.130235	0.0224**
POVR	-7.423590	-4.815805	0.0000*
POPgr	0.062586	0.368528	0.7148
DGGHE	3.559185	2.319188	0.0267***
GTHE	-0.012184	-1.701880	0.0982***

Source: Extracted from Regression Output

Notes: *, (**),*** indicates statistically significant level at 1%, 5% and 10%

A careful look at the long run result in Table 3, indicate that the coefficients of the variables such as inflation rate (INFR), public health financing (PHEF), poverty rate (POVR), population growth rate (POPgr) and domestic general government health expenditure (DGGHE) conform with theoretical hypothesized signs while only government total health expenditure variable (GTHE) bears contrary relationship.

From the long run estimation results, PHEF, POPgr and DGGHE showed that in the long-run gross domestic product growth rate is mostly influenced with the estimates of 2.55310, 0.06256 and 3.559185 respectively, indicating that GDPgr will increase by 2.553, 0.063 and 3.559 percent respectively in response to a 1 percent change in GDPgr in line with a-priori expectation. This result was in concordance with the work of Bakare & Olubokun (2011); Akintunde & Satope (2013) where public expenditure exhibit positive influence on economic growth.

The negative influence observed in all the estimates of INFR, POVR, and GTHE coefficients, suggesting that whenever INFR and POVR in line with theoretical view, while GTHE contrary to theoretical view, were decreased, economic growth will be reduced. This implies that in the long run INFR, POVR, and GTHE will decrease economic growth in the country by -2.673, -7.42 and -0.01 percent respectively in response to 1 percent change each in GDPgr. This further accentuate that inflation and poverty act as major drags on economic growth while government total health expenditure shown low, weak and inefficient spending, thereby fails to significantly drive development in the country. These analyses conform to the empirical work of Okolie and Fadeyi (2023).

Table 4: Error Correction Representation ARDL Model

Dependent Variable: D(GDPgr)			
Regressor	**Coefficient**	**t-Value**	**P-Value**
C	46.36163	2.092732	0.0441***
D(INFR)	-0.954140	-1.581728	0.1233
D(PHEF)	1.485128	-0.956779	0.3456
D(POVR)	-0.042574	0.358838	0.7220
D(POPGR)	29.835204	2.755042	0.0095**
D(DGGHE)	-0.002249	-0.761028	0.4520
D(GTHE)	2.985145	-0.645120	0.0034**
CointEq(-1)	-0.745345	-3.845240	0.0000*
Cointeq = GDPgr - (-2.6732*INFR -8.4236*PHEF + 0.0626*POVR+ 43.8592*POPGR - 0.0122*DGGHE + 68.1538 +23.3563*GTHE)			

Source: Extracted from Regression Output

Notes: *, (**),*** indicates statistically significant level at 1%, 5% and 10%

From table 5, the short-term dynamics in the model was examined by estimating an error correction term (ECM_{t-1}) which further represents the speed of adjustment in equation. The estimate also shows that the model was statistically significant, carries the correct signed as well confirms that there is disequilibrium in the short-run which the set of variables in the model are trying to correct in the long-run. The absolute value of the coefficients of -0.7453 suggesting that in Nigeria, the adjustment from the short-run to the long-run equilibrium in model is very high at 75% within the first year to ensure full convergence to their various equilibrium levels. While the disequilibrium errors that occurred in the previous year are corrected in the current year.

The coefficient of D(INFR -0.9541), D(PHEF 1.4851), D(POVR -0.0425), D(POPGR 29.8352) and D(GTHE 2.9851) meet up with expected signs. They all indicate a direct relationship with GDPgr at the current level and statistically insignificant at different levels, as some of the results conform to the long run analysis. However, this ``result signifies that in the short run, economic growth is negatively affected by high inflation and high population growth, whereas health investments aimed at improving public health can create positive economic growth. This was in line with the work of Abere and Elamah, 2025. While the coefficient of D(DGGHE -0.002249) exhibit contrary signs, having an inverse relationship GDPgr at the current level and statistically insignificant at 10% level. This implies DGGHE while necessary for long term development; immediate public health spending frequently suffers from inefficiency of mismanagement, thus failing to boost immediate productivity. This result coincides with the work of Okolie and Fadeyi (2023).

The basic diagnostic tests show that the coefficient of determination R^2 for model is 0.84 implying that 84% of the total variation in gross domestic product per capita was jointly explained by the set of explanatory variables in the model. Consequently, the coefficient of determination that measures the goodness-of-fit of the estimated model shows that the model has predictive capability as high as 83%. The F-statistic value of 53.774 for the model indicative of the overall statistical significance of both models at 1% levels as shown by their p-values, indicating that the null hypothesis of insignificance of the joint explanatory variables is rejected at the highest level of significance. Thus, all the explanatory variables used in the model simultaneously explain the variations in the level of socioeconomic development in Nigeria. The Durbin-Watson statistic shows that the model is free of serial autocorrelation problems as its value fall within the acceptance region.

Post Estimation Test Analysis

Table 5: Diagnostic Tests of ARDL Model

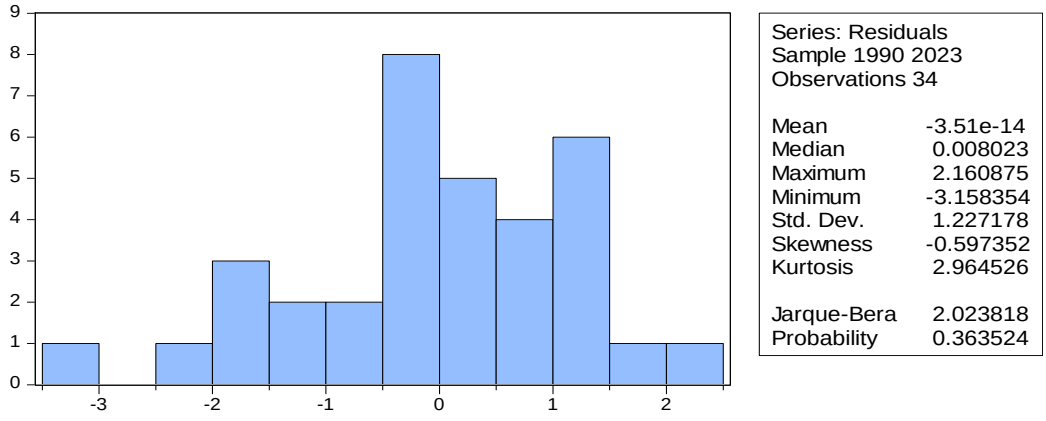
MODEL		
Diagnostic Test	**F-statistic**	**P-Value**
B-G Serial Correlation LM Test	3.038793	0.0451
Heteroskedasticity Test: ARCH	0.452761	0.5693
Heteroskedasticity Test: B-P-G	2.12632	0.2621
Ramsey RESET Test	1.63452	0.2581

Source: **Author's Regression Output**

Table above indicate the diagnostic tests conducted. Thus, the model's residuals are serially uncorrelated (3.039 > 0.05) and has a correct functional form, normally distributed (0.363 > 0.05) and homoskedastic, based on Breusch-Godfrey serial correlation LM test (2.126 > 0.05), Ramesy RESET Test (1.634 > 0.05) and ARCH LM test (0.453 > 0.05) respectively. It can therefore be deduced that the model has satisfactory econometric properties, valid for reliable interpretation and can also be used for policy making without re-specification.

Normality Test

Figure 1 /Table 7 Normality Test



Source: **Author's Regression Output**

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The Jarque-Bera test result of normality in figure 1, showed that the statistic value stood at 2.0238 and their associated p-value of 0.3635 indicates that the null hypothesis calling for not normally distributed error term can be rejected in the model indicated that the Jarque-Bera statistic of 2.02% confidence level greater than 5%. Therefore, the study accepts the null hypothesis of normal distribution of the residuals in the model.

Stability Test

Figure 2: CUMSUM

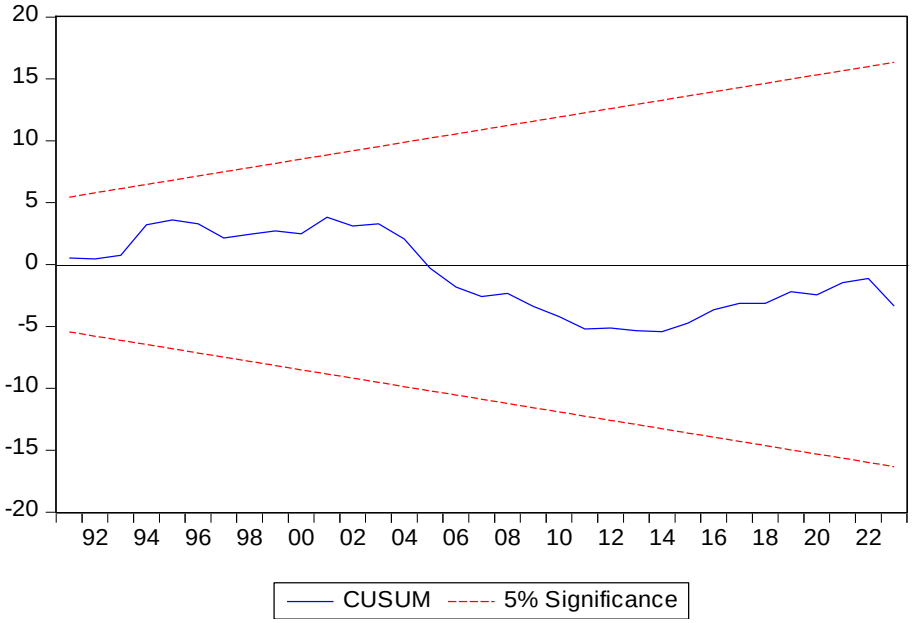
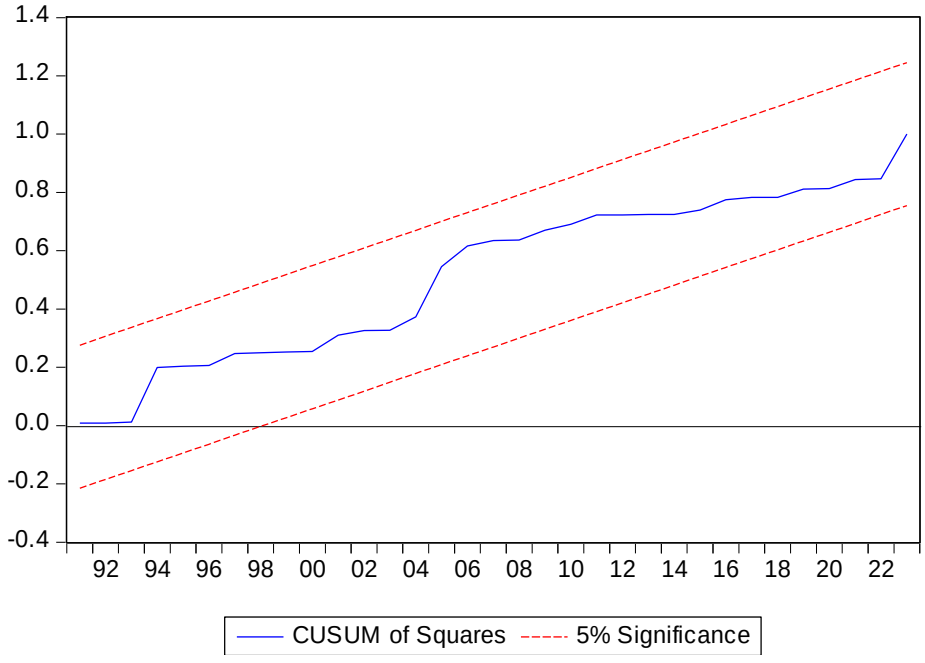


Figure 3: CUSUM of Squares



The cumulative sum (CUSUM) and cumulative sum of squares (CUSUMQ) plots presented in figure 4 and 5 indicates stability in the coefficients over the sample period. A cursory look indicated that both CUSUM and CUSUMQ plots of the model was stable within 5% critical bands for all periods. This implies that the coefficient of the estimated model is stable.

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V. CONCLUDING REMARKS AND POLICY RECOMMENDATIONS

Concluding Remarks:

Based on the findings, the study concludes that public health financing and increased government health expenditure exhibit significant positive impact on economic growth in Nigeria, but their effectiveness is hindered by inefficiency in health funding and excessive leakages in health sector. While high inflation negatively and significantly affect sustainable growth by increasing healthcare cost of imported medicines and equipment as well as reducing the consumers' purchasing power. Thus, inflation rate hinders economic growth by discouraging investment and reducing real income. From findings also, we conclude that sustainable economic growth is achieved when public health financing increases to improve human capital, while monetary authorities manage inflation to ensure economic stability in the country.

Policy Recommendations

The study therefore recommends that government needs to raise health sector spending beyond current levels to meet, or exceed the 2001 Abuja Declaration standards. In a bid to control rising inflation of medical facilities, aggressive and pragmatic monetary policies are necessary to manage and reduce its adverse impact on economic growth. Above all, government should also strengthen the health sector management and monitoring of health expenditure to ensure that funds translate to better health outcomes, rather than being lost to funds mismanagement or inefficiency.

Policy Directions:

Based on the recommendations, policymakers should focus on increasing budgetary allocations to health to meet the 15% Abuja Declaration 2001 compliance, thereby enforcing strict fiscal discipline to curb inflation, and adopting performance-based budgeting so as to improve health outcomes occasioned by reduction in mortality, morbidities rates, and among others in the country.

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