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Effects of Health Expenditure and Health Outcomes on Economic Growth in Nigeria

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Abstract

This empirical study analyses the impact of health expenditure and health outcomes on GDP growth in Nigeria from 1990 to 2022 using data emanated from Central Bank of Nigeria and the World Bank. The descriptive statistics, unit root test, bound test, and ARDL model are all used in the analysis. The study shows that Nigeria's economic growth was substantially impeded in the short-term due to the country's rising child mortality rate. Meanwhile, the long-term effect of Nigeria's child mortality rate on economic growth was negative and negligible. Also, in the short term, life expectancy had an insignificant negative effect on Nigeria's economic growth. Looking at the bigger picture, life expectancy had a favorable but little effect on Nigeria's economic growth. In addition, both the short- and long-term effects of recurrent health expenditure on economic growth in Nigeria were insignificant. The study thus recommends that health sector spending should receive a larger share of the government's budget in order to lower the child mortality rate, improves life expectancy and boost economic growth; Use of disbursed health expenditure should be subjected to checks and balances for effective use; Government should support health-related programmes that raise public awareness about health issues and improve citizens' life expectancy.

Keywords: Health Outcomes, Life Expectancy, Child Mortality Rate, Recurrent Health Expenditure, Economic Growth
JEL Classification: H51; I15; O40

1.0 Introduction

A country's output is greatly affected by how healthy its people are. A productive workforce can only contribute to the increase of national output when its members are in good health. Consequently, a nation's health is of the utmost importance, and the government should prioritise health care provision because it contributes to economic growth, which is a macroeconomic goal (Ogunjimi & Adebayo, 2019). As a result, a boost to health will have a multiplier effect on health outcomes, leading to more money in the bank. The health status or condition of a population within a specific time frame is known as a health outcome. Economic, social, cultural, geographical, and environmental variables, in addition to actions within the health system, all play a vital role in shaping health outcomes. Indicators of health outcomes include the : life expectancy at birth, the number of deaths per 1,000 live births, the number of deaths in children under five, the number of deaths in adults, the number of deaths in the elderly, and the number of years lived with disabilities. However, life expectancy and infant or child death rates are the variables used to quantify health outcomes in this research.

Assuming that the variables impacting longevity remain constant, life expectancy is a measure of the amount of time and quality of life that a person is anticipated to have within a

specific geographic region. In 1990, the life expectancy in Nigeria was projected to be 46.3 years. From then until 1998, it fluctuated between 46 and 52.9 years. In 2019, it increased to 52.9 years, but in 2021, it fell back down to 52.7 years (World Bank, 2022). Something has to be done about this because it is quite concerning. Deaths of infants and children younger than one year old are collectively known as infant mortality and child mortality, respectively. Estimates for child mortality in Nigeria range from 209.3 per 100,000 in 1990 to 110.8 per 100,000 in 2021 (WDI, 2022), a steady decrease from that high point. Positive health outcomes may be stimulated by health spending, which in turn may lead to economic growth through the provision of services that contribute to a positive feedback loop.

This investigation was necessary since, unexpectedly, certain academic works have shown contradictory findings. For example, Yaqub, Ojapinwa and Yussuff (2012) looked at the link that exists amidst public health spending and health outcomes in Nigeria. When the governance indicators are taken into account, the results demonstrated that public health expenditure negatively affects new born mortality and under-5 mortalities. Using both individual and regional data, Becchetti, Conzo and Salustri (2015) studied a big sample of Europeans over the age of 50 to determine how health expenditure affected health outcomes. The findings demonstrated that healthcare spending has diverse impacts on health outcomes. Furthermore, a study conducted by Ogungbenle Olawumi, and Obasuyi (2013) has shown no evidence of a bidirectional causal association amidst life expectancy and economic growth in Nigeria over time. Finally, Ayoade, Monica, Adeyemi and Adediwura (2021) examined economic growth, health outcomes, public health expenditure, and their relationship in Nigeria using data spanning 1980–2019and adopted ARDL. Both the short- and long-term effects of healthcare spending on economic growth were negative, and not substantial. Consequently, this study delved into the link between health outcomes and GDP development in Nigeria from 1990 to 2022.

The health sector in Nigeria relatively continues to underperform despite the country's massive investments in the sector. Though, the rates are gradually getting better but relatively Nigeria still has some of the world's worst health outcomes, for example, the life expectancy for 2020, 2021, 2022, 2023 and 2024 are respectively 54.81, 55.12, 55.44, 55.75 and 56.05 (United Women Program (UNWP), 2024); the infant mortality for 2020, 2021, 2022, 2023 and 2024 are respectively 59.181, 59.701. 56.22, 54.74 and 53.674 per 100,000 (UNWP, 2024) and maternal mortality rate was 1,047 deaths per 100,000 live births in 2020 among the lowest in Africa and the world. Inadequate healthcare facilities and transportation issues make it difficult for people to get the quality healthcare they need, which in turn causes health benefits to be unequally distributed. Numerous scholars have attempted to address this ongoing issue through their research, but the problem remains unsolved due to the lack of understanding of the two-way link between health outcomes and economic growth. Additionally, there are difficulties in measuring the direct and indirect effects of a healthy population and an efficient healthcare system on overall economic development. To tackle these issues, there is need for a thorough comprehension of the complex relationships between health outcomes and economic development. If we want to improve the health of the

Nigerian people and boost their economy, we need to implement focused interventions, tweak our policies, and make smart investments.

The study looked at the short run and long run impact of health outcomes proxied by child mortality and life expectancy on the Nigerian economic growth. The next section of the paper considered the literature review, the third segment focused on the methodology, the fourth part presented the results and discussion of findings and the last section discussed the summary, conclusion and recommendations

2.0 Literature Review

What we call "health outcomes" are the actual physical and mental effects of a patient's experience with healthcare providers and their treatments. It is important to note that for proper shaping of health outcomes in any economy, the actions within the health system alone cannot effectively do the magic, the roles of economic, social, cultural, geographical, and environmental variables cannot be over emphasised. The state of health of individuals, a community as an entity, or a whole population is what is generally referred to as a health outcome. In light of certain national circumstances, it indicates the general health of the population. Because assessing health is challenging and no single measure is adequate, the literature has employed multiple indicators to capture health outcomes. Indicators of health outcomes include but not limited to the life expectancy at birth, maternal mortality rate per 100,000 live births, neonatal mortality rate per 1,000 live births, mortality rate for children under five, mortality rate for youth and adolescents, adult mortality rate per 1,000, disability years lived with (Hughes, 2020). However, for the purpose of this research work, life expectancy, and child mortality is considered.

A. Life Expectancy

Life expectancy at birth, as defined by the World Health Organisation (2022), refers to the average number of years that an infant can anticipate to live if they were to undergo the mortality rates associated with their age and sex at the time of their birth, within a particular year, in a specific nation. The life expectancy in Nigeria is a significant measure of health outcomes. In 2003, the predicted life expectancy was 47.9 years, which decreased from 45.8 years in 1999 to 47 years in 2011. However, it worsened to 52.89 years in 2020 and further declined to 61.33 years in 2022. The current level is among the lowest globally, falling below the benchmark set by Ghana at 54.4 in the year 2020.

B. Child Mortality

The child mortality rate and the under-five mortality rate are frequently employed as measure of mortality in scholarly literature. The calculation of the infant mortality rate involves determining the number of deaths occurring within the initial one thousand live births. The under-five mortality rate, on the other hand, measures the probability of fatality occurring within the age range of one to five years. To effectively monitor and enhance population health programmes, it is essential to utilise metrics that provide fundamental insights into the

availability, utilisation, and effectiveness of the healthcare system (Anyanwu & Erhijakpor, 2020).

Economic Growth

The issue of economic growth has generated the attention of academic researchers. The classical studies have established that economic growth is heavily reliant on labour and capital as key components of production. Economic growth refers to the expansion of a nation's overall production or gross domestic product. Furthermore, it signifies a rise in the economic capability to generate commodities and services in comparison to their production in preceding years (Abbas, 2016). The economy experiences growth when a unit of production is effectively introduced into the economic system. Therefore, it can be argued that economic growth pertains to the quantity of goods and services generated, with relatively less emphasis on the methods employed in their production (Matiti, 2018). Nominal terms, such as inflation or adjusted inflation, can be used to measure economic growth, specifically by considering the percentage rate of increase in national output (GDP). However, it is important to note that economic growth primarily focuses on monetary growth and does not take into account other dimensions of progress (Shawn, 2019). Based on the aforementioned definitions, it can be deduced that economic growth refers to the gradual and continuous rise in the overall production of a nation over a specific duration. According to Kuznets (2018), the concept of economic growth in a country refers to the sustained increase in its capacity to provide a wider range of economic products to its population over an extended period of time.

2.1 Empirical Review

Using malaria as a case study in Nigeria, Sede, et al. (2024) examined the link between health outcomes and economic production. The research used an ARDL, or autoregressive distributed lagged model. Economic growth in Nigeria is inversely related to current health expenditure, according to the research. A number of relevant characteristics, including secondary school enrolment and gross capital formation, have been shown to positively impact economic growth in Nigeria. Between 1981 and 2017, Ogunjimi and Adebayo (2019) looked at the statistics on Nigeria's economy, health spending, and health outcomes. This study investigated these connections using the Toda-Yamamoto causality model. The bound test revealed a long-run connection among the macroeconomic variables used in the study. A unidirectional causal link between infant mortality and health expenditure was found in the Toda-Yamamoto causality tests. However, no causality was found between real GDP and infant mortality. There was also a unidirectional causal relationship between health expenditure and life expectancy and maternal mortality in the real GDP causality tests. Lastly, there was a real GDP to health expenditure.

Studying the relationship between government spending on healthcare and patient outcomes in Nigeria, Yaqub, Ojapinwa, and Yussuff (2012) delves into the topic. There was a regression on infant mortality, under-five mortality, and life expectancy using both the conventional least squares and the 2-stage least squares methods, with data on public health expenditure and governance variables reflected by the corruption perception index. There

was a negative correlation between public health spending and baby and under-5 death rates after accounting for governance characteristics. It is highly unlikely that Nigeria would be able to accomplish the Millennium Development Goals of halving infant mortality by 2015, decreasing the under-5 mortality rate, and increasing life expectancy unless corruption is drastically reduced. This has important policy implications.

Research by Becchetti, Conzo, and Salustri (2015) used regional and individual-level data to examine the relationship between health spending and health outcomes in a sizable European sample of people over the age of 50. Health spending as a percentage of GDP and health spending per capita were found to significantly and negatively affect changes in the prevalence of chronic diseases. Furthermore, research demonstrated that health expenditure had diverse impacts on health outcomes, with the former being more significant for females, the elderly, those with overweight or obesity, those with incomes below the median, and those with lower levels of education when compared to their respective matching groups. In their 2016 study, Novignon and Lawanson looked into lagged effects in an effort to deduce how health expenditure relates to juvenile health outcomes. Health spending is positively and significantly correlated with excellent child health outcomes. It was determined that public health expenditure was substantially higher than private expenditure.

In a study conducted by Omeje (2017), the impact of public health spending on health outcomes in Nigeria was examined. The results showed that higher levels of public health spending enhanced life expectancy and decreased newborn mortality rates. Environmental factors, like carbon dioxide emissions, impact the health of individuals, and Matthew, Adegboye, and Fasina (2015) utilised the VECM to investigate the link amidst public spending on health and health outcomes in Nigeria. Their findings indicate that public spending on health significantly influences health outcomes in Nigeria. In a similar vein, Nwanosike, Orji, Okafor and Umesiobi (2015) used the OLS estimation method to study the cumulative effect of malaria spending and incidence on health outcomes in Nigeria. They discovered that spending more on health and education can lower malaria incidence. Ogungbenle, Olawumi, and Obasuyi (2013) conducted an empirical study on the connection amongst government's health expenditure, life expectancy, and economic growth in Nigeria. They discovered that these three variables do not have a bidirectional causal relationship. But the research did show that expenditure on public health and economic growth in Nigeria go hand in hand.

From 1980 to 2013, Okafor (2016) examined how public-private partnerships in Nigeria's healthcare sector affected patient outcomes. Using a qualitative research technique, it demonstrates that public-private partnerships can maximise private investment in healthcare, leading to better service delivery and more accessible high-quality medical treatment. Ayoade, Monica, Adeyemi, and Adediwura (2021) used data from 1980 to 2019 to examine the connection amongst health outcomes, public health spending and economic growth in Nigeria. The ARDL model was used in the investigation. Spending on healthcare has a detrimental, albeit negligible, impact on GDP growth in the short and long term. The two

proxies of health outcomes of life expectancy and child mortality and estimated the impact on economic growth are rarely found in the literature, hence this study covered this gap.

3.0 Methodology

The study employs ex-post facto research design as its chosen research methodology. This study design was chosen because data from the World Development Index and the Central Bank of Nigeria statistical bulletin from 1990 to 2022 on economic growth and health outcomes cannot be easily changed or altered.

The study incorporates the model specification proposed by Oyebola (2019), which examines the correlation between health expenditure, health facilities, and economic growth in Nigeria. The model is mathematically represented as follows:

$$GDP = F\ (CMT, LEXP, PEXP) \qquad 3.1$$

Where, CMT = Child Mortality Rate

LEXP = Life Expectancy

PEXP = Public Health Expenditure

GDP = Gross Domestic Product rate

Explicitly presenting Equation 3.1, and replacing public health expenditure with recurrent health expenditure, we have

$$GDP = \alpha 0 + \alpha 1 CMT + \alpha 2 LEXP + \alpha 3 RHE + \mu \qquad 3.2$$

Where:

GDP = Gross Domestic Product Growth Rate

CMT = Child Mortality Rate

LEXP = Life Expectancy

RHE = Recurrent Health Expenditure

α0, α1, α2, and α3 = Coefficients of the independent variables

μ= Error Term

The ARDL model specifications of the functional impact of child mortality rate, life expectancy and recurrent health expenditure on gross domestic product as expressed by Equation (3.2) can be written as follows:

$$GDP = \alpha + \sum_{i=1}^{N1} \Omega_i \, GDPt - k + \sum_{j=0}^{N2} \phi_i \, CMT_{t-j} + \sum_{k=0}^{N3} \mathcal{P}_i \, LEXP + \sum_{q=0}^{N4} \beta i \, RHE + \varepsilon_i \quad (3.3)$$

The generic form of Equation (3.3) in the context of the ECM is expressed as Equation (3.4):

$$\Delta GDP_t = \alpha + \sum_{i=1}^{N1} \Omega_i \, \Delta GDP_{t-i} + \sum_{j=0}^{N2} \emptyset_j \, \Delta CMT_{t-j} + \sum_{j=0}^{N3} \varphi j \, \Delta LEXP_{t-j} + \sum_{j=0}^{N4} \beta_j \, \Delta RHE + ECM_{t-1} + \mu_t \quad (3.4)$$

In the given context, α0 denotes the drift component. The symbol Δ denotes the first difference, whereas μ_t represents the coefficients of the Error Correction Model (ECM) for short-run dynamics. The ECM demonstrates the rate at which the long-term equilibrium adjusts following a short-term shock. The Akaike information criterion (AIC) is employed in this study to determine the appropriate lag length. Once the long-term relationship between variables has been identified, the study use the ECM to determine the short-term dynamics. The generic form of Equation (3.3) in the context of the ECM is expressed as Equation (3.4). The ECM demonstrates the rate at which the long-term equilibrium adjusts following a short-term shock.

The 'Apriori' Expectations

This describes the theoretical relationship between function parameter signs and magnitudes. The theory governing the economic interaction between variables determines a priori expectations.

Health outcomes and their factors are projected to boost economic growth during the research.

Estimation procedures

First, a unit root test was conducted on all the variables used in the empirical study. This procedure made use of the Augmented Dicky-Fuller Unit root test. An ARDL bound test was utilised to determine cointegration. How well the variables were integrated dictated the methodology. The variables were integrated in level and first order. The research also made use of the ARDL model.

Also, it was necessary to conduct post-estimation tests in order to guarantee that the estimates may be relied upon accurately. It is also important to consider whether or not the estimations obtained from the research can be used to forecast the values of the dependent variable in the future.

4.0 Results and Discussion of Findings

Pre estimation test

The descriptive statistics result is presented in Table 4.1.

Table 4.1: Descriptive statistics

	GDP	CMT	LEXP	RHE
Mean	4.287737	159.4563	49.14534	124.7124
Median	4.230061	152.6500	49.51350	62.25362
Maximum	15.32916	209.3000	52.91000	437.5212
Minimum	-2.035119	110.8000	45.48700	0.150161
Std. Dev.	3.958301	34.18290	2.722792	139.4448
Skewness	0.465009	0.204051	-0.089687	0.963900
Kurtosis	3.389531	1.521882	1.444934	2.666174
Jarque-Bera	1.397917	3.135176	3.267205	5.263298
Probability	0.497103	0.208548	0.195225	0.071960
Sum	141.4953	5102.600	1572.651	4115.509
Sum Sq. Dev.	501.3807	36222.60	229.8215	622235.4
Observations	33	32	32	33

Source: Authors' computation 2024

Table 4.1 provides descriptive statistics. The GDP has a mean of 4.288, standard deviation of 3.958, and follows a normal distribution with a minimum of -2.04 and a maximum of 15.33. The CMT has a mean of 159.46, standard deviation of 34.18, and follows a normal distribution with a minimum of 110.80 and a maximum of 209.30. The LEXP has a mean of 49.15, standard deviation of 2.72, and follows a normal distribution with a minimum of 45.49 and a maximum of 52.91. Finally, RHE was normally distributed with minimum and maximum of 0.15 and 437.52, respectively, with a mean of 124.71 and a standard deviation of 139.44.

A. Unit Root Test

The Augmented Dickey-Fuller test was employed to analyse the integration nature and order of the data series. The results are shown in the table below.

Table 4.2: ADF unit root test

Variables	**ADF (level)**	**Prob.**	**ADF (1st diff.)**	**Prob.**	**Order**	**Remark**
GDP	-3.683300*	0.00	-9.338412*	0.00	I(0), I(1)	Stationary
CMT	-2.008576^{N}	0.28	-3.811731**	0.01	I(1)	Stationary
logLEXP	0.079679^{N}	0.96	-3.042851**	0.04	I(1)	Stationary
logRHE	-4.598614*	0.00	-9.808685*	0.00	I(0), I(1)	Stationary

Source: Authors' Computation, 2024.

Notes: The values - * and **, represent the significance levels of 1% and 5%, respectively, and "N" is used to indicate that it is Not Significant.

Table 4.2 indicates that, at a significance threshold of 5%, both GDP and logRHE exhibited stationarity at level. Conversely, CMT and logLEXP exhibited stationarity after being subjected to first difference. Given that the variables exhibited stationarity at a mixed order, the ARDL bound test was employed to ascertain their long-term association.

B. Co-integration

A key rationale for cointegration analysis is that variables frequently exhibit strong correlations with one another, regardless of whether they possess identical non-stationary properties or not. In light of this, doing cointegration tests is critical. According to Pesaran et al. (2001), the ARDL or Bound Testing method can be used to determine cointegration if all the variables are integrated of different orders, zero and one, and none of them are integrated of second order. Below we show the co-integration result after estimating the ARDL model with the Akaike information criterion (AIC).

Table 4.3: ARDL Bound test

F- Statistics		**Critical Value Bounds**	
5.904370	Significance	I0 Bound	I1 Bound
		3.23	4.35

Source: Authors' Computation, 2024.

According to the data in table 4.3, the F-statistic exceeds both the lower and higher bounds. Consequently, the null hypothesis does not provide support for the lack of a level relationship. This suggests that the variables are connected in the long run.

C. Auto-regressive Distributed Lag (ARDL) Model

ARDL Short-run Dynamics

There are two functions for this section. Verify the statistical significance of the short-run model first. Secondly, to gauge equilibrium adjustment, utilise the error correction term. This error correction term, ECMt-1, measures how stable variables are in the short term when exposed to shock. To ensure stability, the ECMt-1 coefficients should be negative and have a statistical significance.

Table 4.4: Estimated short-run model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CMT)	-1.469996	0.481820	-3.050921	0.0053
D(LNLEXP)	-79.182572	168.280655	-0.470539	0.6420
D(LRHE)	-1.410167	1.080971	-1.304537	0.2039

ECM_{t-1}	-0.662755	0.153269	-4.324117	0.0002

Source: Authors' Computation, 2024.

The above-mentioned Table 4.4 reveals that the child mortality rate (CMT) significantly lowers Nigeria's GDP in the short-term. Similarly, life expectancy (LEXP) was found to have a positive but negligible effect on Nigeria's GDP. In contrast, recurrent health expenditure (RHE) had a negligible negative effect on Nigeria's GDP. Also, as shown in Table 3 above, there is a negative and statistically significant estimated coefficient for the ECMt-1 (ECM= -0.662755, t-test = -4.324117, Prob = 0.00). Consequently, in the long run, there is a correction of around 66.3% in GDP deviates from its equilibrium trajectory. Put simply, the pace of adjustment is comparatively swift in Nigeria. The ECMt-1's statistical significance verifies that Nigeria's GDP, child mortality rate, life expectancy, and recurrent health spending all form an equilibrium relationship in the long run.

ARDL Long-Run Dynamics

below shows the predicted long-run coefficients (elasticities) of the ECM model.

Table 4.5: Estimated Long-run model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CMT	-0.343987	0.464767	-0.740128	0.4661
LNLEXP	-119.474957	265.230531	-0.450457	0.6563
LRHE	-2.127736	1.694226	-1.255875	0.2208
C	525.367675	1107.012230	0.474582	0.6392

Source: Authors' Computation, 2024.

The long-run data suggests a negative correlation between GDP and child mortality rate (CMT), however this correlation is not statistically significant (CMT = -0.343987, t-test= -0.740128, Prob = 0.4661). The "negative" here indicates that the infant mortality rate has a propensity to reduce GDP. The observed shift in child mortality rate is not strong enough to influence Nigeria's GDP growth rate, which is why it is deemed "insignificant" in this context. Furthermore, it was observed that the GDP growth rate in Nigeria experienced a negative impact due to life expectancy (LEXP) (-119.474957, t-test= -0.450457, Prob = 0.6563). However, it is important to note that this influence did not reach statistical significance. This suggests that life expectancy is a powerful enough variable to affect Nigeria's GDP growth rate, but it may eventually operate as a drag on GDP in the country. Also, RHE = -2.127736, t-test= -1.255875, Prob = 0.2208 shows a negative association between RHE and GDP, although it is not statistically significant. Recurrent health expense has a propensity to reduce GDP, which is the "negative" in this context. Also, the increase in recurrent health expenditure is not powerful enough to influence Nigeria's GDP growth rate, which is why it is deemed "insignificant" in this context.

D. Post estimation test.

A post-estimation test was conducted to assess the model's adherence to econometric norms. The study achieved this by doing tests for normality, CUSUM, autocorrelation, and heteroscedasticity.

Test of Serial Correlation

To determine whether the error term exhibits autocorrelation, the LM serial correlation test was performed.

Table 4.6: Breusch-Godfrey serial correlation LM test:

F-statistic	**0.367174**
Prob. Chi-Square(2)	0.6190

Source: Authors' Computation, 2024.

The error terms do not exhibit serial correlation, as shown in Table 4.6 above. This is because, as shown in the table above, the chi-square probability value was more than the 5% level of significance. Hence, this model does not suffer from autocorrelation.

Test of heteroscedasticity

This test determines if the error term's variance and covariance are invariant or subject to time variation. The Breusch-Pagan Godfrey test for heteroskedasticity was used for this purpose.

Table 4.7: Breusch-Pagan-Godfrey Heteroskedasticity Test

F-statistic	**0.269322**
Prob. Chi-Square	0.9031

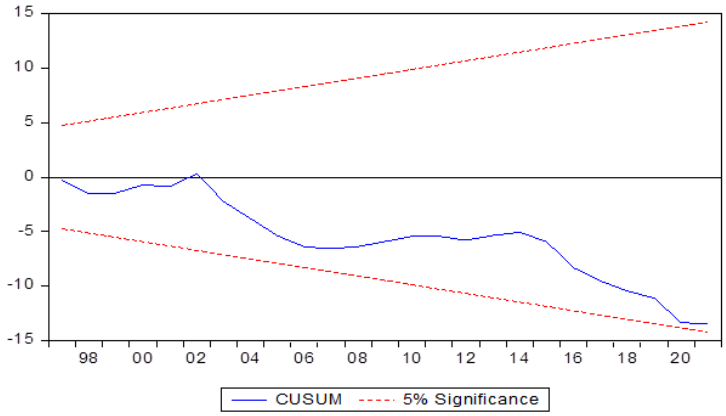
Source: Authors' Computation, 2024.

Since the F-statistic and Chi-square probability values are far greater than 5%, we can accept homoscedasticity as the null hypothesis and reject heteroscedasticity as the alternative. When we say the error term is homoscedastic, we indicate that the variance and covariance remain the same regardless of how much the explanatory variables are raised or lowered. Heteroscedasticity is thus not a problem in our model.

Stability Test

The CUSUM test is used to check if the model is stable. The stability of the estimated model depends on the CUSUM statistic plot being inside the two straight lines representing a 5% significance level.

Figure 4.1: Stability Test - Plots of Cumulative Sum of Residual



Source: Authors' Computation, 2024.

Based on the CUSUM statistics depicted in Figure 4.1, it can be observed that the estimated model exhibits stability, as evidenced by the presence of the 5% significance threshold falling within the two straight lines. This study has shown that the long-term effect of Nigeria's child mortality rate on economic growth was negative and negligible. Also, in the short term, life expectancy had an insignificant negative effect on Nigeria's economic growth. In addition, both the short- and long-term effects of recurrent health expenditure on economic growth in Nigeria were insignificant. This is in line with the previous studies like, Ogungbenle, Olawumi, and Obasuyi (2013) has shown no evidence of a bidirectional causal association amidst life expectancy and economic growth in Nigeria over time. Also, Ayoade, Monica, Adeyemi, and Adediwura (2021) confirmed that both in the short- and long-term effects of healthcare spending on economic growth were negative, and not substantial.

5.0 Summary, Conclusion and Recommendations

The study assessed the link between health outcomes and GDP growth in Nigeria from 1990 to 2022. Among its many goals was the evaluation of life expectancy's influence on GDP growth, the effect of the effect of child mortality rate on GDP growth, and the determination of the extent to which recurrent health expenditure impacts GDP growth. The results of applying the ARDL Model shown that child mortality had a negative but negligible impact on Nigeria's economic growth, in the short-term effect of life expectancy on economic growth in Nigeria was negligible and both the short- and long-term impact of recurrent health expenditure on economic growth in Nigeria were negative and negligible.

Conclusively, this study conducted an assessment on the influence of health outcomes on economic growth. The findings of the investigation indicated that there exists a statistically significant inverse relationship between the child mortality rate and GDP. In contrast, the impact of life expectancy and recurrent health expenditure on economic growth was found to be statistically insignificant and negative. This implies that the monies allocated by the Nigerian government for the goal of enhancing health outcomes, for instance, the enhancement of life span and the reduction of death rates, have not been adequately and efficiently utilised. Based on the findings of this study, it can be concluded that the influence of health outcomes on the economic growth of Nigeria is not significant during the specified

time frame. For the health outcomes and health expenditure to have negligible positive effects on the economic growth drastic actions must be taken. These actions are in terms of budgetary allocation to the health sector, proper monitoring of the allocated fund and encouragement of the manpower in the health sector among others.

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