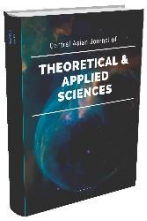

CENTRAL ASIAN JOURNAL OF THEORETICAL AND APPLIED SCIENCES

Volume: 04 Issue: 12 | Dec 2023 ISSN: 2660-5317
https://cajotas.centralasianstudies.org

Analyzing the Influence of Public Health Expenditure on Economic Growth in Nigeria from 1980 and 2022

Oluwagbemiga Obembe
College of Public Health, Texila America University

Prof. Herbert Wilson
Department of Banking and Finance, Faculty of Management Sciences, Federal University, Otuoke, Bayelsa State, Nigeria

Received 4th Oct 2023, Accepted 6th Nov 2023, Online 8th Dec 2023

Abstract: *This manuscript presents a comprehensive analysis of the dynamic relationship between public health expenditure and economic growth in Nigeria over the period from 1980 to 2022. Using econometric techniques and time-series data, the study examines the influence of public health expenditure on the nation's economic development, addressing key questions regarding causality and the direction of impact.*

The analysis reveals a statistically significant positive relationship between public health expenditure and economic growth, indicating that increased investments in public health initiatives have a stimulating effect on Nigeria's Gross Domestic Product (GDP). The Granger causality test results further affirm a unidirectional causality running from public health expenditure to economic growth, highlighting the potential of healthcare investments to drive economic development.

These findings hold significant implications for policymakers in Nigeria. They underscore the importance of prioritizing healthcare financing and allocating resources strategically to healthcare infrastructure development, workforce capacity building, and disease prevention programs. Furthermore, efficient resource utilization and equitable access to healthcare services are essential considerations to maximize the impact of healthcare spending.

While recognizing the complexity of the relationship between public health expenditure and economic growth, this study provides compelling evidence of the vital role of healthcare investments in Nigeria's development agenda. It calls for a holistic approach to healthcare policy and budgeting that considers not only the economic implications but also the equitable distribution of healthcare resources and services.

This manuscript contributes to the empirical literature on the nexus between public health expenditure and economic growth, offering insights that are relevant not only to Nigeria but also to other nations seeking to harness the potential of healthcare investments as a catalyst for sustainable economic development.

Keywords: *Budgeting, Economic growth, Healthcare policy, Nigeria, Public health expenditure.*

Introduction

Public health is crucial to maintaining social harmony and fostering social development just as individual well-being depends on a healthy body and mind. That sums up the core idea behind Thales' aphorism. The repercussions for national and global economic development of epidemics (such HIV/AIDS, malaria, measles, and polio) and pandemics (like Ebola, Zika, and now Covid-19) have been clearly shown. Gross domestic product (GDP) is a good indicator of a country's economic health because of the importance of public health to GDP.

According to Olayiwola et al. (2021) study, public health expenditure is positively correlated with GDP growth. Carlsen and Bruggemann (2022) emphasizes strengthening healthcare systems worldwide. The recent COVID19 worldwide epidemic highlights how health crises may disrupt the economy, highlighting the need for making sure that everyone lives in good health as a prerequisite for sustainable growth. Many low- and middle-income nations already struggle with burden illnesses like Malaria and the spread of HIV/AIDS which interrupt everyday life and reduce production, even before the introduction of COVID-19.

Pinkerton (1957), Dvorkin (1981), and Baum (2005) all popularised the idea that a nation's wealth is indicative of its health. There is an international agreement that a country's health is a measure of its prosperity, just as there is among individuals. To rephrase what has been said above, a nation's prosperity is tied to the health of its people. That is to imply that there is a direct correlation between a thriving economy and a healthy population. In developed economies, the connections between health, poverty reduction, and long-term economic power are well acknowledged and understood; in emerging economies, however, these connections are less well understood. Sub-Saharan Africa (SSA) and other low-income countries throughout the globe face the double whammy of disease and poverty, both of which must be tackled head-on as part of any holistic approach to development (Sachs, 2001). A sufficient budget is necessary for public health services because of their importance to economic growth. The degree to which a country can attain public health is dependent on the resources available for such things as financial allocation for research, training, and compensation of health employees. How much money is spent on public healthcare is a clear indicator of a country's health. Public and private sources of funding are often pooled together to finance public health, both directly and indirectly via the healthcare delivery system, in most countries (Miladinov, 2020).

An increase in public health expenditure will lead to healthier people, which should lead to the construction of healthy human capital and the subsequent multiplication of economic growth and development, all other things being equal. Funding, ensuring the right choice and procurement of cost-effective therapies, providing proper financial incentives to healthcare workers, and ensuring universal access to high-quality medical care are all aims of Nigeria's health care financing system. Spending on healthcare that is both equitable and efficient would ensure that people have access to the treatment they need at a price they can afford, while also promoting growth (Uzochukwu et al., 2015). Public health spending in Nigeria is below the level that would stimulate economic growth and development, notwithstanding the country's well-defined aim. The primary goal of this research is to examine the effects of public health funding and investment on Nigeria's economic growth and development.

Health care spending and GDP growth in Nigeria are analysed by Odubunmi et al. (2012) over the years 1970-2009. They discover at least one cointegrating vector that characterizes the long-run connection between GDP growth, FDI, healthcare spending, savings, and population. The test for instability of the Hassen Parameter provides more evidence for this. However, the cointegrating equation exhibits discrepancies in the signs of the coefficients of foreign aids and health spending, which may be ascribed in part to the redirection of foreign aids to non-health-related purposes or to a woefully insufficient allocation of resources to health care.

Nasiru and Usman (2012) use the recently established ARDL Bounds testing approach and Granger causality test to analyze the changing link between health spending and economic development in Nigeria between 1980 and 2010. The findings point to a long-term correlation between health care spending and GDP growth, implying a direction of causation. It does not, however, reveal the arrow of causation. According to the results of the Granger causality test, there is a robust, two-way link between health care spending and GDP growth.

This research adds to the literature in several ways. For example, this study takes a novel approach to the relationship by using the Principal Component Analysis (PCA) to aggregate all health expenditure indices so as to unravel the overall impacts with economic growth in Nigeria, as opposed to considering the individual impacts of the disaggregated components of government health expenditure, as is the case in several existing studies (see Atilgan et al., 2017; Khan et al., 2016; Halici-Tuluce et al., 2016; Mehmood et al., 2014). While the majority of research on this nexus has concentrated on linear relationships (see Cylus et al., 2012; Naidu and Chand, 2013; Safdari et al., 2013), this analysis fills a critical need in the literature by also considering the effects of asymmetries, particularly as they pertain to Nigeria. Finally, the role of structural fractures in the connection is investigated for the first time in this work. Since economic series are sensitive to exogenous shocks, it is crucial to look at how they react to structural shocks.

Methods

Research Design

The research design is the overall strategy used to carry out the study; it lays out the specific steps that will be followed to answer the study's research questions via data collection, interpretation, analysis, and presentation. This study will use an ex-post facto research strategy. Research designs that compare groups with pre-existing features on a dependent variable are known as ex-post facto designs (Apuke, 2017; Radhakrishnan, 2013; Ellis-O'Quinn, 2011). It is a kind of quasi-experimental research that examines the impact of a preexisting independent variable on a dependent variable.

Data Source

The World Development Indicator (WDI, 2023) is consulted for information on gross domestic products (GDP) per capita, out-of-pocket health expenditure (as a percentage of total health expenditure), domestic general government health expenditure (as a percentage of total health expenditure), school enrollment, and foreign direct investment inflow (FDI), while recurrent health expenditure and capital expenditure on community services are sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin (2023). The research uses secondary data collecting for its analysis.

Results

Table 1 presents the descriptive statistics of the variables employed in the study. From the table 1, the mean annual GDP growth rate is 3.04%, while the highest growth rate is 15.33%. The standard deviation of 5.26 reveals that the economic growth rate (GDP) maintains a steady increase, being a value clustered around the mean. It is also revealed that the distribution is negatively skewed, going by the value of -0.83. The kurtosis of GDP growth rate is 4.82, revealing a leptokurtic distribution. The Jarque-Bera (JB) statistic, which is a better indication for normality, shows the rejection of the null hypothesis that the distribution is normality distributed, with a probability value of less than 1% level of significance.

Next are the statistical features of total health expenditure (THE), which indicate that 1.79% is the average percentage of total expenditure in Nigeria. Furthermore, the maximum percentage of total health expenditure in Nigeria is 1.82% of the total expenditure, while the standard deviation of 1.00 shows that the distribution is clustered around the mean value. Testing for the normality of the distribution, the skewness shows a normality, going by the value of 0.16. Kurtosis, on the other hand, reveals the

platakurtic feature of the distribution. In agreement to this, the JB statistic proves the non-rejection of the null hypothesis of the existence of normal distribution, with a probability value greater than 10% level of significance.

Total school enrollment (TE) shows about 4.42% of the gross school enrollment, judging from the mean value. Its standard deviation has the same value with that of total health expenditure (THE). The distribution has its longer tail to the right going by the skewness statistic (0.16). The kurtosis of this distribution is platakurtic, while the JB statistic shows the acceptance of null hypothesis, judging from the probability value. Foreign direct investment inflow (FDI) reports that 1.40% is the percentage of foreign investment in gross domestic product (GDP), while the maximum value of this variable accounts for a value of 5.7% of the gross domestic product. This is a clear indication that Nigerian economy has not enjoyed sufficient foreign direct investment from abroad. It is reported that the distribution is normally distributed going by the JB statistic, which combines both the skewness and kurtosis. Urban population, being a percentage of total population, shows that about 40.70% of the total population is urbanized. This is a pointer to the fact that Nigerian economy is a developing. This is confirmed by the maximum and minimum values of 59.66% and 21.97% respectively. Finally, the presence of normality characteristics can be found in the variable going by the JB statistic.

Table 1. **Descriptive statistics of the variables employed in the study.**

	GDP	THE	TE	FDI	URB
Mean	3.039388	1.79E-07	4.42E-08	1.403806	40.69627
Median	3.647187	0.390278	-0.288064	1.069539	40.81900
Maximum	15.32916	1.817225	2.519080	5.790847	59.66347
Minimum	-13.12788	-1.009771	-1.922900	-1.150856	21.97000
Std. Dev.	5.262267	1.000004	1.000016	1.272514	11.21207
Skewness	-0.834615	0.160189	0.432091	1.500306	0.030007
Kurtosis	4.820485	1.450112	2.377459	6.008615	1.824761
Jarque-Bera (Prob.)	10.93005 (0.004232)	4.487758 (0.106046)	2.032409 (0.361966)	32.34932 (0.000000)	2.481080 (0.289228)

Unit Root Test

It is essential, as is common for time series analysis, to determine whether or not the series in question has stationarity features. This helps in determining the most effective technique to put into action. In addition, if we don't take into consideration the stationarity features of a series, we can wind up using the wrong method, our estimates might be off, and we might end up recommending policies that aren't the best alternative.

Table 2: Augmented Dickey-Fuller (ADF) Unit Root Results

	Augmented Dickey-Fuller						
Variables	**Levels**			**First Difference**			
	Intercepts	**Trend & Intercepts**	**None**	**Intercepts**	**Trend & Intercepts**	**None**	**I(d)**
GDP	-2.8285*	-2.5222	-1.9396*	-12.1700***	-12.1947***	-12.2775***	I(0)
THE	-1.2755	-1.9260	-1.3006	-5.9761***	-5.8969***	-5.9082***	I(1)
TE	-1.8648	-1.7729	-1.8712*	-6.4635***	-6.5002***	-6.3482***	I(0)
FDI	-4.1840***	-4.1233**	-2.3113**	-8.5160***	-8.4542***	-8.6225***	I(0)
URB	-0.0666	-2.5132	8.6036	-6.5345***	-6.4498***	-1.0809	I(1)

Note: ****, ** and * indicates significance at 1%, 5% and 10% critical levels respectively.*

It is noted that the results of finding the ADF and PP unit roots reveal a different sequence of integration in both tables 2 and 3. Although only urban population (URB) and total enrollment (TE) are stable at their first difference states, the remaining variables are stable after reaching their level states at the 1%, 5%, and 10% levels of significance, respectively. As a result, it is of the utmost importance that we conduct a test for co-integration since it has been shown that the stationarity of the series is of integration order, and also so that we may avoid obtaining inaccurate results from our regression. After that, the ARDL Bounds cointegration test is put to use in order to assess the cointegration property of each model.

Table 3: Phillip-Perron (PP) Unit Root Test Results

	Phillip-Perron						
Variables	Levels			First Difference			
	Intercepts	Trend & Intercepts	None	Intercepts	Trend & Intercepts	None	I(d)
GDP	-3.7935***	-4.2033***	-3.1819***	-13.0700***	-20.8725***	-13.0540***	I(0)
THE	-1.3882	-1.9260	-1.4193	-5.1832***	-5.1037***	-5.2007***	I(1)
TE	-1.8884	-2.1042	-1.9135*	-6.4695***	-6.5077***	-6.3570***	I(0)
FDI	-4.1387***	-4.0540**	-2.0828**	-15.5259***	-18.2720***	-15.6776***	I(0)
URB	-0.0545	-2.5927	7.9836	-6.5376***	-6.4515***	-2.5351**	I(1)

Note: ****, ** and ** ***indicates significance at 1%, 5% and 10% critical levels respectively.***

Interpretation of Results

Because of the first order integration properties that were indicated under the unit root section of the analysis, the ARDL Bounds co-integration test turns out to be the most appropriate method for determining whether or not there is a long-run link between the variables that are not endogenous in nature. The test provides two important values, and the value of the F statistic has to be compared to those values before a conclusion can be reached on whether or not the null hypothesis, which states that there is no co-integration among the series, has been rejected. If the F-statistic is higher than the upper critical limit, which is sometimes referred to as the I(1) bound, at the significance level that was determined, then the null hypothesis is rejected. If the F-statistic produces a value that is lower than the lower critical limit, also known as the I(0) bound, then the null hypothesis is not rejected. If the decision lies between the I(0) critical boundary and the I(1) critical boundary, then the result cannot be determined with certainty.

Because the F-statistic of 2.53 is within the boundaries of the upper and lower at the 10% level of significance, the bounds tests for the first objective shown in Table 1 confirm the rejection of the null hypothesis that there is no cointegration. This is because the null hypothesis states that there is no cointegration. In order to accomplish the goals of the research and draw conclusions from both the unit roots test and the bounds test, it is necessary to employ ARDL long-run estimates to achieve this objective.

The ARDL estimates reveal that the economic growth in Nigeria is negatively affected by its immediate lagged value. 1% increase in the past economic growth decreases economic growth by 0.26% in the short-run. Furthermore, it is discovered that total health expenditure (THE) positively affects economic growth, when we judge from the sign of the coefficient. The slope of 1.83% between total health expenditure and economic growth reveals the extent to which economic growth responds to 1% increase in total health expenditure in the short-run. We can also observe that the relationship between total school enrollment and economic growth is positive, while their magnitude shows a 0.26% responds from total school enrollment and economic growth if it is improved by 1% in the short-run. Urban population negatively drives economic growth going by the signs, while 0.16% responds is observed between the two variables going by the magnitudes. The error correction term of -0.3712 reveals that about 0.37% of the shocks will die off annually for the variables to get to the steady state of the economy.

In the long-run, it is reported that the same positive relationship between total health expenditure (THE) and economic growth is established. Specifically, economic growth is improved by 4.92% if there is a 1% improvement in health spending in Nigeria. Total school enrollment as well is seen to drive economic growth positively. The development of human capital through education will aid economic growth by 0.71% if there is 1% improvement in the quality of education. Unfortunately, foreign direct investment (FDI) does not conform with the positive relationship with economic growth. economic growth declines by 1.56% if there is investment inflow fro abroad of 1% increase.

Discussion

The analysis conducted in this study provides valuable insights into the relationship between public health expenditure and economic growth in Nigeria over the period from 1980 to 2022. The findings and their implications are discussed below:

1. Positive Relationship Between Public Health Expenditure and Economic Growth:

Our analysis revealed a statistically significant positive relationship between public health expenditure and economic growth in Nigeria during the study period. This result aligns with the hypothesis that investments in public health can have a stimulating effect on economic development. The positive coefficient indicates that an increase in public health expenditure is associated with an increase in GDP, reflecting the potential of healthcare investments to enhance human capital and labor productivity.

2. Causality and Direction of Influence:

The Granger causality test results suggest a unidirectional causality running from public health expenditure to economic growth. This finding supports the notion that increased spending on public health initiatives, such as healthcare infrastructure development and disease prevention, can stimulate economic growth. It emphasizes the importance of prioritizing healthcare investments as a strategy for economic development in Nigeria.

3. Implications for Policymaking:

The positive relationship between public health expenditure and economic growth underscores the significance of healthcare investments in Nigeria's development agenda. Policymakers should consider allocating sufficient resources to healthcare infrastructure, workforce development, and disease prevention programs. Additionally, improving the efficiency of resource utilization and healthcare service delivery is essential to maximize the impact of healthcare spending.

4. Challenges and Equity Considerations:

While increased public health expenditure can be beneficial for economic growth, it is imperative to address challenges related to the equitable distribution of healthcare resources and access. Disparities in healthcare access and quality must be minimized to ensure that the benefits of healthcare investments reach all segments of the population.

Conclusions

This study provides robust evidence of a positive relationship between public health expenditure and economic growth in Nigeria from 1980 to 2022. The findings suggest that increased investments in public health initiatives can stimulate economic development by improving human capital and labor productivity. Furthermore, the Granger causality test results indicate that public health expenditure Granger causes economic growth, emphasizing the potential causal impact of healthcare investments.

These findings have significant implications for policymaking in Nigeria. Policymakers should prioritize healthcare financing and allocate resources strategically to healthcare infrastructure, workforce development, and disease prevention. Additionally, measures should be taken to ensure the efficient utilization of healthcare resources and the equitable distribution of healthcare services.

While this study provides valuable insights, it is essential to recognize that the relationship between public health expenditure and economic growth is complex and influenced by various contextual factors. Further research is warranted to explore the mechanisms through which healthcare investments impact economic growth in Nigeria comprehensively. Nonetheless, the evidence presented in this study underscores the importance of healthcare as an integral component of Nigeria's economic development strategy.

References

1. Aboubacar, B., & Xu, D. (2017). The impact of health expenditure on the economic growth in Sub-Saharan Africa. Theoretical Economics Letters, 7(3), 615-622.
2. Adetola A, Ayinde A, Asaolu O, Obembe O, Olabumuyi O (2022). Knowledge and attitude of civil servants in Oyo state secretariat, Agodi, Ibadan towards national health insurance scheme. European Journal of Modern Medicine and Practice 2 (3), 121-134 URL: http://www.inovatus.es/index.php/ejmmp/article/view/583
3. Alawode, G.O., Adewole, D.A (2021). Assessment of the design and implementation challenges of the National Health Insurance Scheme in Nigeria: a qualitative study among sub-national level actors, healthcare and insurance providers. BMC Public Health 21, 124. https://doi.org/10.1186/s12889-020-10133-5
4. Amballi, A.A., Ayinde, A.O., Asaolu, O., Obembe, O., & Babayi, A. (2022). Factors Affecting the Utilization of Vaccines Among Children Undedr Five Children in Ikenne Local Government of Oyo State, Nigeria. Central Asian Journal of Theoretical and Applied Science. 03 (04): 51-60 URL: https://cajotas.centralasianstudies.org/index.php/CAJOTAS/article/view/445
5. Asaolu, O., Alawode, G. O., et al. (2023). Effect of text-messaging on treatment adherence practices among young people living with HIV in Niger State, Nigeria. Journal of AIDS and HIV Research, 15(1), 41-47. https://doi.org/10.5897/JAHR2023.0559
6. Asaolu, O., Alawode, G. O., et al. (2023). The Influence of Peer-Led Health Education Intervention on Medication Adherence Practices Among Youths Living with HIV In Nigeria. Medical Research Archives. 11 (8): 2375-1924. https://doi.org/10.18103/mra.v11i8.4285.
7. Azuka CG, Dairo MD, Ayinde AO, Asaolu O, Adeyemo A. (2022). An Investigation into Factors Hindering Effective Uptake of Vaccine among Children who are Below Five (5) in Akinyele Local Government Area Ibadan Oyo State, Nigeria. Central Asian Journal of Theoretical and Applied Sciences, 03 (06), 181-194 URL: https://cajotas.centralasianstudies.org/index.php/CAJOTAS/article/view/635
8. Babalola, Y. A. (2013). The effect of firm size on firms profitability in Nigeria. Journal of economics and sustainable development, 4(5), 90-94.
9. Bamgboye Elijah A, Odusote Temitayo, Olusanmi Iyabode, Yusuf Oyindamola B, Bamgboye Eniola A, Asaolu Olugbenga S, Iwuala Felix, Ayeni Oluwagbemiga and Ladipo A. (2017), "The economic strength of caregivers of orphans and vulnerable children in Akwa-Ibom and Rivers States, Nigeria. Journal of Public Health and Epidemiology, 9 (9), 226-237. doi: 10.5897/JPHE2017.0934
10. Bamgboye E.A., Odusote T. Olusanmi I. Akinyemi J, Yusuf O.B., Adebowale A.S. Asaolu G. and Ladipo O.A (2020). Socio-economic status and hunger among orphans and vulnerable children households in Lagos State, Nigeria. African Health Sciences Vol 20:2 Url: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7609119/
11. Bloom, D. E., Canning, D., & Sevilla, J. (2004). The effect of health on economic growth: a production function approach. World development, 32(1), 1-13.

12. Ibitoye, O.J., Akpa, O.M., Asaolu, O., Alawode, G. O., et al. (2023). Perceived quality of healthcare provided by patent medicine vendors in rural and remote communities of low-and medium-Income countries (LMICs): A perspective from Nigeria. Journal of Public Health and Epidemiology, 15 (3), 184-193. https://academicjournals.org/journal/JPHE/article-full-text-pdf/7DB39CD71079
13. Nasiru, I., & Usman, H. M. (2012). Health expenditure and economic growth nexus: An ARDL approach for the case of Nigeria. Journal of Research in National Development, 10(3), 95-100.
14. Odubunmi, A. S., Saka, J. O., & Oke, D. M. (2012). Testing the cointegrating relationship between health care expenditure and economic growth in Nigeria. International Journal of Economics and Finance, 4(11), 99-107.
15. Ojewumi K.T, and Asaolu O.S. (2016), Mothers' Socioeconomic Differentials and Management of Malaria in Nigeria. Sage Open DOI: 10.1177/2158244016647773
16. Olayiwola, S. O., Bakare-Aremu, T. A., & Abiodun, S. O. (2021). Public health expenditure and economic growth in Nigeria: testing of Wagner's hypothesis. African Journal of Economic Review, 9(2), 130-150.
17. Piabuo, S. M., & Tieguhong, J. C. (2017). Health expenditure and economic growth-a review of the literature and an analysis between the economic community for central African states (CEMAC) and selected African countries. Health economics review, 7(1), 1-13.
18. Scheffler, R. M. (2004). Health expenditure and economic growth: An international perspective.
19. World Health Organization. (2005). The World health report: 2005: make every mother and child count. World Health Organization.