

Foreign Aid and Economic Wellbeing in Nigeria: A Disaggregated Approach

Happiness OWABIE¹, Victor AKIDI^{2*} & Dennis Brown EWUBARE³

^{1,2&3}Department of Economics,
Faculty of Social Sciences, Rivers State University,
Nkpolu-Orowurokwo, Port Harcourt, Rivers State,
Nigeria. Email Address: oawabiehappiness@gmail.com¹,
victor.akidi@ust.edu.ng^{2*} & ndennis.ewubare@rsu.edu.ng³
Corresponding Author^{2*}
<https://doi.org/10.56201/ijefm.v11.no9.2026.pg33.50>

Abstract:

Characterized by inadequate domestic savings and foreign exchange earnings, Nigeria is continuously challenged with weak economic wellbeing. This reality necessitates foreign aid as a measure for supporting investments in critical sectors of the economy. This study therefore examined the effects of foreign aid on economic wellbeing in Nigeria, considering the period, 1990 to 2024. Foreign aid is disaggregated into health, humanitarian, agriculture and rural development, education, and infrastructure and economic development aid while economic wellbeing is proxied by Human Development Index. Annual data were mostly sourced from the International Monetary Fund (IMF) Financial Statistics, the World Bank's World Development Indicators (WDI), the United Nations Development Programme (UNDP) reports, and the National Bureau of Statistics (NBS) publications. The Autoregressive Distributed Lag test processes were employed for short-run and long-run impact analyses of the model. The empirical findings revealed that health, agriculture and rural development, education, and infrastructure and economic development aid exerted positive and statistically significant effects on Human Development Index, whereas humanitarian aid exhibited positive but insignificant effect. The study concluded that foreign aid contributes meaningfully to enhancing economic wellbeing in Nigeria. Therefore, among other measures, emphasizing attraction and effective channeling of more aid; particularly, towards improving healthcare and education infrastructures, providing modern medical and schooling equipment, expanding rural healthcare and education services, supporting immunization and skills development programmes, and ensuring affordable healthcare and education services delivery, are vital for improving life expectancy and man's productive skills which will in the long-run strengthen Human Development Index in Nigeria.

Keywords: Foreign aid, Economic wellbeing, Human development index, Autoregressive Distributed Lag, Nigeria.

JEL Classifications: F35, I31, O15

1.0 Introduction

Faced with palpable development shortfalls and dwindling domestic resources, a greater reliance on foreign aid has become increasingly prevalent among many developing countries including Nigeria. The primary aim is to fill the vital resource deficits needed to promote fast-paced human welfare gains (Cassen, *et al.*, 2006). Human wellbeing broadly defined as the accruals in social, health, educational and material conditions of a population, goes beyond higher national incomes and greater national production to include longer life expectancy, higher levels of literacy and education, increased access to healthcare services and higher standards of living (Todaro & Smith, 2020). It requires relatively sizable resources to fund investments in health care, education and training, rural population-boosting activities and infrastructure. However, for several developing countries including Nigeria, such resources are still lacking within national coffers (World Bank, 2022). Consequently, foreign aid has become indispensable in complementing domestic resources via foreign-related supports, specifically in the areas of official development aid as well as grants, technical cooperation and sector-wide programmes, among others (IMF, 2021). In Nigeria, as in some other developing countries, such aid is specifically targeted at the areas of health, education, agriculture, governance, infrastructure, complex emergencies (humanitarian aid) and other sectors (OECD, 2023), each with the overarching premise of improving human welfare and alleviating destitution. For example, health aid is used in financing immunization drives, maternal-and-child health programmes and building the physical bases of health infrastructure which directly affect life expectancy – a prominent indicator in the Human Development Index; while aid in the sectors of education, agriculture, governance and infrastructure help to enhance literacy and lives, respectively. These inputs operate on the dual-gap theoretical logic of filling the deficits of required savings and foreign exchange earnings critical for bolstering investments in human capital and by extension, galvanize man's economic wellbeing in the society (Chenery & Strout, 1966).

Despite tens of years of substantial inflows of foreign assistance, Nigeria's level of human development has persisted at relatively moderate levels, within a tight band, ranking below quite a number of similar developing countries. This seeming paradox of increased foreign aid inflows with lethargic improvement in outcomes in human development dimensions such as the Human Development Index (HDI) forms the foundation of the study's research question. The question is whether the various types of foreign aid, in the forms of health aid, humanitarian aid, aid for agriculture and rural development, aid for education and for infrastructure and economic development have over time contributed statistically positive significant effects on the Human Development Index in Nigeria, and if in the affirmative, to what extent. Considerable number of existing studies on foreign aid in Nigeria for instance, have examined its effect on the overall level of economic growth (GDP), with hardly any emphasizing the effects on human development dimensions. Very few apart from works by Brennar, (1998), Angem and Aghalor (2001), have disaggregated foreign aid to examine the sectorial components' effects of aid inflows. It is against this background that this research examined the effects of foreign aid on the human development index dimension of economic wellbeing in Nigeria within the sample range of 1990 to 2024.

2.0 Literature Review

Theoretical Framework

Two-Gap (Savings-Investment Gap) Theory and the Endogenous Growth Theory were adopted and reviewed to provide theoretical explanation for the effects of foreign aid on economic

wellbeing in this study.

a. Two-Gap (Savings-Investment Gap) Theory

The Two-Gap Theory, also called the Savings-Investment Gap model, was formulated by economist Richard Jolly in the year 1969 and later extended by Chenery and Strout in 1966 in the context of development economics. The theory tended to address the hindrances to economic growth faced in developing countries. It centered its argument on the fact that developing countries are constrained by domestic savings lag in their economy and inadequate foreign exchange earnings from international transactions, thereby restraining domestic investments and ultimately development. The theory states that, developing countries have two bottleneck issues: a savings constraint, where investment is also constrained by low savings levels and a foreign exchange constraint, where the level of foreign currency needed to procure necessary capital good is not sufficient. The key elucidation from the model is that, foreign aid can remedy the two bottlenecks by providing the necessary foreign exchange and boosting the savings level, which would accelerate Nigeria's industrial and economic development. By doing so, the aid also positively influences the citizens' economic wellbeing on the long run, considering higher incomes, better living standards, better social amenities and access to more social services. Assumptions of the Two-Gap Model have been summarized as the fact that the extraction of domestic savings is not enough to finance the desired level of investment needed by the economy and foreign funds, including foreign aid, could otherwise complement domestic savings. In Nigeria, the applicability of the model is seen as the country still faces the burdens of low domestic savings and an over-dependence on imports of capital goods for industrial and infrastructural development. Foreign aid, by contributing to the 2-Gaps, in the form of health aid, education aid, agricultural development aid, and infrastructure aid boost the wellbeing of the country in the long run (Okafor, 2020; Nwosu & Ngele, 2023).

To explain the effects of foreign aid on wellbeing of the Nigerian economy, the Two-Gap Theory emphasizes that foreign aid has critical function for driving investments; and could help in reducing poverty and further, narrowing the foreign exchange and savings gaps in Nigeria. When aid covers the savings gap, it allows foreign sourced investments and capital projects, such as, investments in new buildings, student enrollment, and health facilities, to be started without experiencing the disadvantages of slow domestic accumulation, thus, it speeds up investment in the country and raises income, while substantial aid inflow undermines the foreign exchange gap. It enables country to attain rapid industrialization, raises investment, and higher wages through mechanization. Enhance acquisition of inputs, such as equipment, instruments, machines and appliances required for rapid economic growth. Evidence based empirical outcomes also showed that foreign aid enhances access to social services, health care and education, decreases the disease burden, while raising household incomes from other sources, thus, seen as critical source of raising the HDI of Nigeria in health, education and income. (Ajakaiye, *et al.*, 2021; Nwosu & Ngele, 2023 in literature reviewed). To sum up, the Two-Gap Theory serves as a suitable framework for understanding how foreign aid can complement domestic resources and spurs more investment, income, outputs, and HDI in resource-constrained economies like Nigeria.

b. Endogenous Growth Theory

Endogenous Growth Theory was basically an idea by Paul Romer in 1986, 1990; and further developed by Robert Lucas in 1988. The theory is a development to the Solow-Swan

neoclassical growth model's limitation which considered technological progress as an exogenous factor. Romer and Lucas in this regard put forth that most country's economic growth is driven by factors within the economy; ranging from human capital, innovation, R&D (research and development), knowledge spillover, and policy interventions. They identified that consistent investments in knowledge, skills, technology, and innovation ends up bringing about increasing returns to scales resulting in long-lasting economic growth while the conventional classical theory is characterized by diminishing return to capital employed (Romer, 1986, 1990; Lucas, 1988; Todaro & Smith, 2020). Consequently, this theory supports that in the quest for developing economies with resource fundamentals including labour, capital, and technological innovations to drive growth, foreign financial aid are critical for complementing the effort toward accelerating the economy to the path of development (Romer, 1986, 1990; Lucas, 1988; Todaro & Smith, 2020). The assumptions of Endogenous Growth Theory postulate that human capital, technological advance and knowledge are fundamental resources for spurring effects on economic growth. They assume that knowledge, institutions, investments in education and health, technology and infrastructure do enhance productivity of the economy. It opposes the conventional assumption with diminishing return on investments in human capital, infrastructures, health care and technology. Government policies and external supports influence progressive growth and development trajectories. In the Nigerian context, this theoretical assumption suggests that foreign aid applied in the priority sectors including transport, health, education and other related sectors promote enduring productivity, income earning potentials and improve long-run general welfare (Romer, 1986; Ume et al 2017).

The Endogenous Growth Theory, explained in the context of economic wellbeing progress emphasized that aid-induced knowledge accumulation, skills and technology generation are significant for Nigeria. Human and physical capital aid (which stimulate growth in human capital and physical capital, respectively) build up the productive capacity of the economy, thereby iteratively lifting long-run higher levels of well-being. Human capital aid at the sector levels (health and education) helps improvements in productivity of the workforce, lessening the disease burden on the economy's scarce resources, while driving accumulation of investment capital that engenders long-term innovative and entrepreneurial progress. Similarly, physical capital aid, enhances infrastructure/technology provision, which facilitates increased knowledge diffusion and efficient resource employment. Following this path of aid utilisation, optimistic wellbeing outcomes are achievable when effective domestic policies and quality institutions are put in place to guide expected positive externalities of aid application. Existing empirical studies about human capital and infrastructure aid in Nigeria established significant enhancing influence on economic well-being, thus confirming the claim that sector-specific foreign aid investment is meaningfully associated with long term improvement in well-being indicators as opined by the Endogenous Growth Theory (Romer, 1990; Lucas, 1988; Nwosu & Ngele, 2023).

Empirical Review

Abeeb (2025) scrutinized the involvement and contributions of foreign aid in the process of development in the third world specifically taking into consideration of the contribution, role and exit of US Aid Agency (USAID) and the possible implications on Nigeria's socio-economic development. The research made use of secondary data such as documentary materials, textbooks, Journals, periodicals and internet materials. The results revealed that reasonable amount of aid and assistance flows to Nigeria from United States through the Usaid. However, this is small in comparison to resources that have been historically drained from Nigeria. The

research was of the opinion that the exit of USAID and the withdrawal of other forms of foreign aid and assistance will initially bring hardship but consequently provide a wake-up call for Nigeria to seek alternate funding avenues rather than bank on foreign aid and assistance.

Udo (2025) investigated the impact of foreign aid and aid-institutional quality interaction effect on economic growth in Nigeria for the time frame, 1981 to 2022 employing the FMOLS approach. The finding revealed that foreign aid (ODA) has positive insignificant effect on economic growth suggesting that ODA is relevant but not a major contributor to economic growth in Nigeria. The aid-institutional quality interaction variable which interacted with the corruption index negatively affected growth implying weak institutions limited the positive impact of foreign aid. Oketah, Ojeh and Oshim (2025) studied about the influence of official development assistance (ODA) on public capital expenditure in Nigeria over a period of 1990-2023. Employing the time series data and regression analysis, the study shows that ODA had no significant effect on public capital expenditure indicating that infrastructure projects financing using foreign aid is not effectual in Nigeria. Ebehung and Ogar (2025) investigated the relationship between aid funded infrastructure and economic growth in Nigeria using Toda-Yamamoto causality test as well as Autoregressive Distributed Lag (ARDL) approaches on time series data. Their results suggest that telecommunications infrastructure explains significant impact on growth while transport and power infrastructure exerted weak effects in the long run. They concluded that infrastructural development is still very important but has to be efficient.

Ugochukwu, Andem and Somekenechukwu (2024) studied the effect of foreign aid and external borrowings on Nigeria economic development from the point of view of the two-gap and endogenous growth models of economics. They came to the conclusion that external debt exerted insignificant effect on the economic growth of Nigeria both in the long run and short run, thus confirming the inapplicability of the two-gap theory in that case.

Litali, Opuodho and Fatoki (2024) examined the impact of Official Development Assistance (ODA) on the economic growth of the East African Community (EAC), using trade openness as a moderating variable and a Vector Error Correction Model (VECM) for the period 1974-2022. The complex dynamic was to discover that ODA has a negative individual impact on economic growth; and that a positive and significant value is recorded when ODA and trade openness interact. The conclusion was that trade openness as an enabling environment significantly enhances the growth impact of ODA. According to Okafor (2024) on infrastructure aid and economic growth: A study of Nigeria, using secondary data from (CBN, 2024), (NBS, 2024), and (World Bank, 2024), infrastructure aid plays a key role in economic growth. Poor infrastructure aid especially in power, transportation, and communication increase input costs and hinder industrial expansion. The study recommended an intervention to improve infrastructure aid through the massive investment and institutional reforms. Abu (2024) investigated the impact of education aid and institutions quality on economic growth in Sub-Saharan Africa using panel data econometrics. The study revealed that education aid significantly contributed to economic growth when the institutional quality was strong. Interestingly the research has discovered that education aid performs better in a good governance setting. In their empirical study, 'foreign aid (ODA) and Nigeria 's economic growth (GDP)', Okonta and Oyegun (2023) examined the effects of ODA on Nigeria 's economic growth using time series data between 1980 and 2020. Their findings showed net capital inflows, foreign direct investment (FDI), trade openness (TROPEN), and corruption perception index (CPI) as control variables, favour an error correction mechanism approach. Their findings indicated that ODA from multilateral financial institutions has no significant effect on the economic growth,

the long-run relationship still appeared negative blamable on dominant corruption and mismanagement of aid. Adesanya and Edward (2023) analyze the effect of foreign aid on economic growth and poverty reduction in Nigeria. With the use of ARDL technique and time series data 1986-2020, the empirical investigation established that foreign aid has positive significant effect on economic growth and poverty reduction in Nigeria in the long-run and short-run. Abraham Ijuo, Adofu and Ogiri (2023) studied the impact of time series data on Nigeria, zeroing on the dimensions of global health risk, government health spending and economic growth. Their investigation, through econometrics analysis, reveals that health spending reduces health risks which in turn enhances economic growth; the positive relationship exists between health spending and economic growth. They recommended that greater levels of health investment are needed in order to build a resilient economy, and that health programmes aid via donor support should also be encouraged.

Saliu (2023) analyzed how external aid and development of human capital impact economic growth in oil and non-oil African countries over the period 2000-2021. The author used panel data and Westerlund error correction-based cointegration approach. The results indicated the existence of long-run relation among foreign aid, education and health related human capital and growth of the economies in the study areas, and suggested aid is better effective in conjunction with investments in health and education. Mbelu and Ifionu (2023) examined infrastructural financing and economic growth in Nigeria with the empirical models of Ordinary Least Squares (OLS), Cointegration and Error correction modeling using time series data sets from 1981 to 2021. It was observed that infrastructural financing (namely, in economic and social services sector aid) had positive and significant impact on economic growth and have recommended a more disciplined fiscal structure and ordering for financing infrastructure.

Ita (2022) tried to find out the ways foreign aid contributed to development or is a way of maintaining economic dependency in Nigeria. Secondary data was analyzed within the framework of the dependency theory. The study emphasized that foreign aid had become a conduit for perpetuating economic dependency, caused political instability and debt-stock build up, thus, surmising that foreign aid has failed to be an effective means of development in Nigeria and other developing nations. In investigating the effect of foreign aid and economic growth on health in Nigeria, Akinola and Asaolu (2022) estimated for the period of 1981 to 2019 with use of the auto-regressive distributed lag (ARDL) and Toda Yamamoto procedures. It was established that Official Development Assistance (ODA) had a positive effect on life expectancy though it was insignificant, while government health expenditure had a positive and significant effect. They conclude that aid in itself cannot completely help in improving health and recommends greater government expenditure on health

Ikpe, Agu and Okwor (2022) reexamined the health outlay, governance and economic growth nexus in Nigeria by applying an ARDL approach, specified in augmented Solow model to analyze the extent to which quality of governance moderates the effects of health spending (including externally funded health programmes) on economic growth. Results found significant negative effect of poor governance on the impact of health expenditure on economic growth and opportunities for converging efforts towards a more vibrant and accountable governance system that would guarantee effective utilization of health funds. Okeocha, Ogbuabor and Orji (2021) investigated the effects of aid supported public infrastructural development on economic growth in Africa countries employing the panel data analysis and dynamic system Generalized method of moment (GMM) technique. The researchers did find that the disaggregated and combined infrastructure indices significantly and positively impacted on economic growth in Africa with

ICT and electricity having the highest impact.

Eze, Okpara and Madichie, (2020) undertook a disaggregated approach to investigation how foreign aid (health, education, industry, and economic infrastructure aid) individually impact on economic growth of the Nigerian economy in the sample period of 1995 to 2017. Utilizing annual data series with the application of the Canonical framework of Cointegration Regression process for reliable analyses. The estimated outcomes established individually that aid to education sector meaningfully spurs Nigeria's economic growth, to the health sector it exerted positive but insignificant impact, while aid to the industrial and economic infrastructure sectors weakened the country's growth in economic activities in the sampled period. This necessitated the conclusion that the implication of foreign aid on the economy is dependent on the considered aid type.

Literature Gap

This section has x-rayed systematically the related theoretical and empirical literature about the effect of foreign aid on economic wellbeing (indicated as the Human Development Index) in Nigeria. Explorations into the reviewed empirical studies enabled identification of some critical knowledge gaps, which that this study seeks to bridge. In terms of content, the majority of the reviewed empirical studies have only looked at the effect of total foreign aid/official development assistance (ODAF) on economic growth (GDP), rather than disaggregating foreign aid into the various sector-specific components, which are; health aid, humanitarian aid, agriculture and rural development aid, education aid and infrastructure aid employed as the relevant causation variables estimated for their effects on economic wellbeing measured in terms of Human Development Index. In terms of geographical coverage, a number of reviewed empirical studies focused on cross-country panel studies, other African economies/developing countries, rather than being specific to Nigeria. In terms of data coverage period, a considerable number of the reviewed research studies employed time-series data which scarcely captures to 2024. In terms of methodology, while significant number of the empirical studies adopted ARDL, VECM or ECM techniques in their model framework. However, hardly is there any study which simultaneously modeled all the five sector-specific aid components in a single (disaggregated) ARDL framework. Against the preceding departures, this study has provided updated, disaggregated, comprehensive and detailed empirical evidence of findings about the effect of the five sector-specific aid components on the economic wellbeing indicator, Human Development Index in Nigeria as adopted in this study, with application of annual time series data, over the sample time frame, 1990-2024.

3.0 Methodology

Research Design

Research design is the systematic steps or methods a researcher follows to arrive at a solution to an identified problem. In line with this, the ex-post facto research design was utilized in this study.

Data Collection Method and Sources

The study has used annual time series data spanning from 1990 to 2024, sourced from the International Monetary Fund (IMF) Financial Statistics, the Organization for Economic Co-operation and Development (OECD) reports, the World Bank's World Development Indicators (WDI), the United Nations Development Programme (UNDP) reports, and publications of the

National Bureau of Statistics (NBS).

Model Specification

To effectively capture the effect of foreign aid on economic wellbeing in Nigeria, in line with the research objectives, the study employed the Autoregressive Distributed Lag (ARDL) model. This study was anchored on the Two-Gap Theory propounded by Chenery and Strout (1966), which argues that developing countries often face two critical constraints to development, namely a savings-investment gap and a foreign exchange gap, which foreign aid can help to bridge. The model for this study was built on the empirical work of Eze, Okpara and Madichie (2020) who examined how foreign aid impacted Nigeria's economic growth, modeled as presented below:

$$RGDP_{gr} = f(CAPf, LABp, OILr, INSt, EFAid, IAid, EAid, HAid, DSAv) \quad (3.1)$$

Where each identity is respectively defined as; growth rate of real gross domestic product, gross fixed formation of capital, level of participation by labour force, revenue from oil, quality index of institutions, received aid for economic infrastructure, aid for industrial purposes, aid for improving education, health sector aid, and savings within the domestic economy.

However, the preceding anchor model was modified to incorporate variables not considered by Eze, Okpara and Madichie (2020) but critical for enhancing economic wellbeing (measured as human development index). Thus, the model framework is presented in functional, mathematical and econometric forms respectively:

Functional Model Specification

$$HDI = f(HTA, HUA, ARDA, EDA, IEDA) \quad (3.2)$$

Mathematical Model Specification

$$HDI_t = \beta_0 + \beta_1 HTA_t + \beta_2 HUA_t + \beta_3 ARDA_t + \beta_4 EDA_t + \beta_5 IEDA_t \quad (3.3)$$

Econometric Model Specification

$$\text{LOG}(HDI_t) = \beta_0 + \beta_1 \text{LOG}(HTA_t) + \beta_2 \text{LOG}(HUA_t) + \beta_3 \text{LOG}(ARDA_t) + \beta_4 \text{LOG}(EDA_t) + \beta_5 \text{LOG}(IEDA_t) + U_{it} \quad (3.4)$$

Where: HDI = Human Development Index; HTA = Health Aid; HUA = Humanitarian Aid; ARDA = Agriculture & Rural Development Aid; EDA = Education Aid; IEDA = Infrastructure & Economic Development Aid; β_0 = Constant; β_1 - β_5 = Coefficients of the independent variables; U_{it} = Error term.

A Priori Expectation: The coefficients of health aid, humanitarian aid, agriculture & rural development aid, education aid, and infrastructure & economic development aid are all expected to have positive effects on the Human Development Index. This is expressed as: $\beta_1 > 0$; $\beta_2 > 0$; $\beta_3 > 0$; $\beta_4 > 0$; $\beta_5 > 0$.

Method of Data Analysis

The data analysis technique employed in this study is the Autoregressive Distributed Lag (ARDL) model. This is because the result of the unit root test generated mixed stationarity, that is, $I(0)$ and $I(1)$, which necessitated the use of an estimation technique capable of accommodating a combination of both orders of integration.

ARDL Specification

$$\begin{aligned} \Delta \log(HDI_t) &= \beta_0 + \beta_1 \Delta \log(HDI_{t-1}) + \beta_2 \Delta \log(HTA_{t-1}) + \beta_3 \Delta \log(HUA_{t-1}) + \beta_4 \Delta \log(ARDA_{t-1}) \\ &+ \beta_5 \Delta \log(EDA_{t-1}) + \beta_6 \Delta \log(IEDA_{t-1}) + \sum_{t=i}^p \varphi_1 \Delta \log(HDI_{t-1}) + \sum_{t=i}^p \varphi_2 \Delta \log(HTA_{t-1}) \\ &+ \sum_{t=i}^p \varphi_3 \Delta \log(HUA_{t-1}) + \sum_{t=i}^p \varphi_4 \Delta \log(ARDA_{t-1}) + \sum_{t=i}^p \varphi_5 \Delta \log(EDA_{t-1}) \\ &+ \sum_{t=i}^p \varphi_6 \Delta \log(IEDA_{t-1}) + U_t \end{aligned} \quad (3.5)$$

Where: HDI, HTA, HUA, ARDA, EDA, IEDA are as earlier defined, log = Logarithmic notation; Δ = Difference operator; $t-1$ = Time lag; β_0 = Constant term; $\beta_1 - \beta_6$ = Long-run dynamic slope coefficients in of the model; $\varphi_1 - \varphi_6$ = Short-run dynamic slope indicators; U_t = stochastic term.

4.0 Estimated Results and Discussion of Findings

Descriptive Analysis

The descriptive statistics for the study variables are summarized in Table 4.1:

Table 4.1: Descriptive Statistics

	HDI	HTA	HUA	ARDA	EDA	IEDA
Mean	0.523029	564.4629	288.4371	423.1857	220.1943	628.5686
Median	0.518000	399.1000	112.9000	335.4000	117.4000	499.3000
Maximum	0.596000	1520.400	1153.600	1047.000	767.7000	1592.800
Minimum	0.465000	107.7000	46.10000	132.0000	59.20000	226.8000
Std. Dev.	0.041887	445.4813	326.1844	269.4221	179.4655	391.4375
Skewness	0.247558	0.769456	1.399712	0.833022	1.246107	0.965842
Kurtosis	1.731622	2.283742	3.661363	2.527397	3.837498	2.943599
Jarque-Bera	2.703638	4.201859	12.06651	4.373620	10.08078	5.446266
Probability	0.258769	0.122343	0.002398	0.112274	0.006471	0.065669
Sum	18.30600	19756.20	10095.30	14811.50	7706.800	21999.90
Sum Sq. Dev.	0.059655	6747421.	3617473.	2468001.	1095068.	5209593.
Observations	35	35	35	35	35	35

Source: Researcher's Computation (EViews 12 Output), 2026.

The employed measure of economic wellbeing, human development index recorded an average value of 0.523029, indicating a moderate level of human development in Nigeria during the study period. The maximum value of 0.596000 and minimum value of 0.465000 revealing that although there were improvements in human development over time, progress remained relatively slow and inconsistent. The standard deviation of 0.041887 indicates low variability, suggesting that changes in human development occurred gradually over the years. The Jarque-Bera probability value of 0.258769, which is greater than 0.05, confirms that the Human Development Index data is normally distributed. Health aid recorded an average value of \$564.46 million during the study period, with a wide gap between the maximum value of

\$1,520.4 million and minimum value of \$107.7 million, reflecting substantial fluctuations in health-related aid inflows across different years. Humanitarian aid had a mean value of \$288.4 million, with a maximum of \$1,153.6 million and minimum of \$46.1 million, indicating that humanitarian assistance varied substantially from year to year, especially during periods of emergencies and crises. Agriculture and rural development aid recorded a mean value of \$423.2 million, with fluctuations between \$132.0 million and \$1,047.0 million. Education aid had an average value of \$220.19 million, ranging between \$59.2 million and \$767.7 million, indicating that foreign assistance directed toward education was relatively moderate. Infrastructure and economic development aid recorded the highest average value of \$628.6 million among the foreign aid variables, ranging between \$226.8 million and \$1,592.8 million, indicating that a substantial portion of foreign aid to Nigeria was directed toward infrastructure and economic development projects. In terms of the standard deviation of the variables, except humanitarian aid (326.1844) which appeared highly volatile, human development index (0.041887), health aid (445.4813), agriculture and rural development aid (269.4221), education aid (179.4655) and infrastructure and economic development aid (391.4375) appeared with moderate variability, suggesting that changes in these variables occurred gradually over the sampled period. The Jarque-Bera probability values of 0.258769, 0.122343, 0.112274 and 0.065669 respectively for human development index, health aid, agriculture and rural development aid, and infrastructure and economic development aid, which are greater than 0.05, confirm that the data quantities are normally distribute, while the probability values (12.06651 and 10.08078), for humanitarian aid and education aid respectively appeared significant (greater than 0.05), suggesting the variables are not normally distributed.

Unit Root Test

Testing the unit root of a series is a precondition for the existence of a cointegrating relationship. This study employed the Augmented Dickey-Fuller (ADF) unit root test to investigate the stationarity of all variables used. The results are presented in Table 4.2.

Table 4.2: Augmented Dickey-Fuller (ADF) Test Results

Augmented Dickey-Fuller (ADF)						
Variables	Level	Critical Value @ 5%	1st Difference	Critical Value @ 5%	I(d)	Stationary @
LOG(HDI)	-0.127182	-2.954021	-8.311943***	-2.954021	I(1)	1st Diff.
LOG(HTA)	1.341619	-2.976263	-3.726610**	-2.976263	I(1)	1st Diff.
LOG(HUA)	-3.695879**	-2.957110	-	-	I(0)	Level
LOG(ARDA)	0.390928	-2.954021	-3.207211**	-2.954021	I(1)	1st Diff.
LOG(EDA)	-4.830114***	-2.957110	-	-	I(0)	Level
LOG(IEDA)	1.433907	-2.954021	-8.900577***	-2.954021	I(1)	1st Diff.

Source: Researchers' Computation (EViews 12), 2026.

The unit root test results showed that humanitarian aid (HUA) and education aid (EDA) attained stability at levels, meaning they are stationary at order zero, I(0). On the other hand, the Human Development Index (HDI), health aid (HTA), agriculture & rural development aid (ARDA), and

infrastructure & economic development aid (IEDA) attained stability after first differencing, meaning they are integrated at order one, I(1). The implication of this mixed stationarity is that conventional estimation techniques such as Ordinary Least Squares may produce spurious results if cointegration is not properly tested; however, the presence of mixed integration orders justifies the use of the Autoregressive Distributed Lag (ARDL) approach, which can effectively accommodate a combination of I(0) and I(1) variables.

Lag Selection Criteria

The lag selection criteria result is presented in Table 4.3:

Table 4.3: Results of Lag Selection Criteria

Lag	LogL	FDIM	FPE	AIC	SC	HQ
0	-528.2551	NA	12785229	33.39094	33.66577	33.48204
1	-21.57842	791.6823	2.24e-06	3.973651	5.897430*	4.611329
2	32.25931	63.93230*	9.47e-07	2.858793	6.431524	4.043052
3	92.93633	49.30008	4.41e-07*	1.316479*	6.538163	3.047320*

Source: Researchers' Computation (EViews 12), 2026.

Table 4.3 reports that the appropriate optimal lag length necessary for meaningful cointegration result according to Akaike Info Criterion (AIC) is lag three and as a result, subsequent analyses were carried out using the optimal lag length three.

ARDL Bounds Cointegration Test

Given that the variables have mixed stationarity, the study proceeded to ascertain the existence of long-run cointegrating relationship using the ARDL bounds cointegration test. The result is presented in Table 4.4.

Table 4.4: ARDL Bounds Cointegration Test of HDI Model

Significant Level	Critical Value Bound		Hypothesis	F-Statistics
	I(0) Bound	I(1) Bound		
10%	2.08	3	H0: There is no cointegration/long run relationship	4.959437***
5%	2.39	3.38		
2.5%	2.7	3.73		
1%	3.06	4.15		
F _{MPI} (HTA, HUA, ARDA, EDA, IEDA)			K = 5	

Source: Researchers' Computation (EViews 12), 2026.

The result of the bounds cointegration test in Table 4.4 shows that there is long-run relationship among the human development index, health aid, humanitarian aid, agriculture & rural development aid, education aid, and infrastructure & economic development aid, given that the F-statistic value of 4.959437 is greater than the 5% upper bound critical value of 3.38. The null hypothesis of no cointegration is therefore rejected, confirming a cointegrating relationship among the variables and necessitating the estimation of the ARDL model to determine the extent of the long-run and short-run relationships.

ARDL Long-Run and Short-Run Estimates

The long-run and short-run HDI model specified is estimated in this section. The results are presented in Table 4.5.

Table 4.5: Estimated Long-Run and Short-Run Coefficients of ARDL HDI Model

Dependent Variable = HDI				
Long-Run Results				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOG(HTA)	0.473203	0.122451	3.864440	0.0026
LOG(HUA)	0.108545	0.158930	0.682972	0.5118
LOG(ARDA)	7.175689	1.265539	5.670065	0.0013
LOG(EDA)	2.324032	0.336368	6.909199	0.0005
LOG(IEDA)	1.503898	0.247333	6.080468	0.0009
C	-0.939251	0.329377	-2.851602	0.0190
EC = = LOG(HDI) - (0.4732*LOG(HTA) + 0.1085*LOG(HUA) 7.175*LOG(ARDA) + 2.3240*LOG(EDA) + 1.5039*LOG(IEDA) -0.9393)				
Short-Run Results				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
DLOG(HDI(-1))	-0.725916	0.204381	-3.551776	0.0062
DLOG(HDI(-2))	-0.725745	0.172248	-4.213376	0.0023
DLOG(HTA)	0.034093	0.005289	6.445382	0.0001
DLOG(HTA(-1))	-0.007461	0.004413	-1.690646	0.1252
DLOG(HUA)	0.115569	0.055299	2.089895	0.0816
DLOG(HUA(-1))	0.648654	0.290014	2.236632	0.0667
DLOG(HUA(-2))	-0.136350	0.118003	-1.155481	0.2776
DLOG(ARDA)	0.154433	0.042456	3.637440	0.0054
DLOG(ARDA(-1))	-0.216809	0.078780	-2.752096	0.0224
DLOG(ARDA(-2))	-0.200129	0.061287	-3.265467	0.0098
DLOG(EDA)	0.091465	0.028201	3.243350	0.0101
DLOG(EDA(-1))	0.121673	0.032402	3.755115	0.0045
DLOG(EDA(-2))	-0.047378	0.022554	-2.100669	0.0650
DLOG(IEDA)	0.279607	0.098239	2.846202	0.0192
DLOG(IEDA(-1))	-0.249696	0.113266	-2.204502	0.0697
DLOG(IEDA(-2))	-0.189306	0.081229	-2.330523	0.0447
CointEq(-1)*	-0.222285	0.029223	-7.606582	0.0000
R ²	0.880970	Adjusted R ²	0.860671	Durbin-Watson stat 2.129571

Source: Researchers' Computation (EViews 12), 2026.

Interpretation of Results

Health Aid (HTA) and Human Development Index (HDI)

The long-run and short-run estimates of the ARDL model are shown in Table 4.6. The long-run estimates of the ARDL model results revealed health aid has a positive and significant effect on human development index in Nigeria. This is evident by the positive coefficient value (0.473203) of health aid and its p-value (0.0026) which is less than 0.05. This implies that an increase in the health aid by one percent will lead to 47.3% significant increase in human development index in the long run. Also, the short-run estimates of the ARDL model results

revealed that health aid has a positive and significant relationship with the human development index in Nigeria. This is evident by the positive coefficient value (0.034093) of health aid and its p-value (0.0001) which is less than 0.05. This implies that an increase in the health aid by one percent will lead to 3.4% significant increase in human development index in the short run.

Humanitarian Aid (HUA) and Human Development Index (HDI)

Furthermore, the results of the long-run estimates of the ARDL model revealed that humanitarian aid appeared positively insignificant in the long-run effect on human development index in Nigeria. This is evident by the positive coefficient value (0.108545) of humanitarian aid and its p-value (0.5118) which is greater than 0.05. This implies that an increase in humanitarian aid by one percent produced about 10.9% insignificant increase in human development index in the long run. Also, the results of the short-run estimates of the ARDL model revealed that humanitarian aid had non-significant positive effect on human development index in Nigeria. This is evident by the positive coefficient value (0.115569) of humanitarian aid and its p-value (0.0816) which is greater than 0.05. This implies that an increase in the humanitarian aid by one percent lead to about 11.6% insignificant increase in human development index in the short run.

Agriculture & Rural Development Aid (ARDA) and Human Development Index (HDI)

Moreover, the results of the long-run estimates of the ARDL model revealed that agriculture & rural development aid has positive and significant effect on human development index in Nigeria in the long-run. This is evident by the positive coefficient value (7.175689) of agriculture & rural development aid and its p-value (0.0013) which is less than 0.05. This implies that one percent increase in agriculture & rural development aid will lead to 717.6% increase in human development index in the long run. Also, the results of the short-run estimates of the ARDL model revealed that agriculture & rural development aid has a significant positive short-run relationship with the human development index in Nigeria. This is evident by the positive coefficient value (0.154433) of agriculture & rural development aid and its p-value (0.0054) which is less than 0.05. This implies that one percent increase in agriculture & rural development aid resulted in 15.4% increase in human development index in the short run.

Education Aid (EDA) and Human Development Index (HDI)

Moreover, the results of the long-run estimates of the ARDL model revealed that education aid has significant positive long-run effect on human development index in Nigeria. This is evident by the positive coefficient value (2.324032) of education aid and its p-value (0.0005) which is less than 0.05. This implies that one percent increase in education aid will lead to 232.4% increase in human development index in the long run. Also, the results of the short-run estimates of the ARDL model revealed that education aid has a significant positive short-run effect on the human development index in Nigeria. This is evident by the positive coefficient value (0.091465) of education aid and its p-value (0.0101) which is less than 0.05. This implies that an increase in the education aid by a unit caused 9.1% increase in human development index in the short run.

Infrastructure & Economic Development Aid (IEDA) and Human Development Index (HDI)

Further, the results of the long-run estimates of the ARDL model revealed that infrastructure & economic development aid has significant positive long-run relationship with the human

development index in Nigeria. This is evident by the positive coefficient value (1.503898) of infrastructure & economic development aid and its p-value (0.0009) which is less than 0.05. This implies that an increase in the infrastructure & economic development aid by one percent caused 150.4% significant increase in human development index in the long run. Also, the results of the short-run estimates of the ARDL model revealed that infrastructure & economic development aid has a significant positive relationship with the human development index in Nigeria. This is evident by the positive coefficient value (0.279607) of infrastructure & economic development aid and its p-value (0.0192) which is less than 0.05. This implies that an increase in the infrastructure & economic development aid by one percent will lead to 27.96% significant increase in human development index in the short run.

Interpretation of CointEq(-1) Result

The results of the short-run dynamic coefficients associated with the long-run relationships obtained from the error correction model are given in Table 4.6. The signs of the short-run dynamic interactions are consistent with that of the long-run relationship. The estimated error correction coefficient of -0.222285 (with p-value of 0.0000) is highly significant, has the correct sign, and imply a low speed of adjustment to equilibrium after a shock. This implies that approximately 22% of disequilibria from the previous year's shock converge back to the long run equilibrium in the current year.

Interpretation of Adjusted R-Squared (Adj. R²) Value

The Adjusted R-squared value of 0.860671 from the results of the short-run estimates of the ARDL model in Table 4.6 indicated that the estimated model is well fitted as the systematic changes in explanatory variables (health aid, humanitarian aid, agriculture & rural development aid, education aid and infrastructure & economic development aid) explained approximately 86 percent (R-squared) variation in human development index while the remaining 14 percent is explained by other variables or factors outside the model.

Post-Estimation Tests

Table 4.6: Post-Estimation Test Results

Test	Null Hypothesis	X ² Value	X ² Prob	Remark
Jarque-Bera	Normal distribution exists	1.986893	0.3703	Normal Residuals
Breusch-Godfrey LM	Serial correlation does not exist	47.05804	0.1025	Serial Independence
Breusch-Pagan-Godfrey	Homoscedasticity exists	0.888300	0.6136	Constant Variance
Ramsey RESET	Model is stable	0.026553	0.9795	Correctly Specified

Source: Researchers' Computation (EViews 12), 2026.

The diagnostic tests in Table 4.6 confirm that the residuals are normally distributed (Jarque-Bera $p = 0.3703$), the model is free of serial correlation ($p = 0.1025$), the residuals are homoscedastic ($p = 0.6136$), and the model is correctly specified (Ramsey RESET $p = 0.9795$). Additionally, the cumulative sum (CUSUM) stability test graph shown below indicated that the CUSUM line stayed within the 5 percent critical bound, confirming the stability of the long-run coefficients of

the study variables.

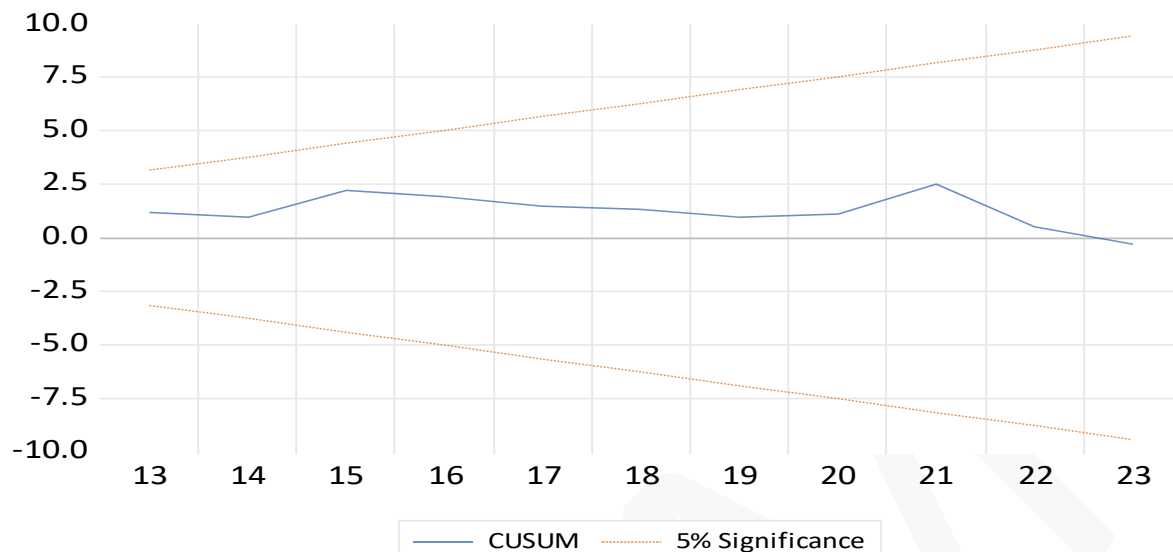


Figure 4.1: Stability CUSUM Test

Discussion of Findings

The findings of this study revealed that health aid exerts positive and significant effect on human development index in Nigeria. This implies that increased inflows of health-related foreign assistance have contributed significantly to improvements in life expectancy, healthcare delivery, and general living standards. This finding aligns with the study of Abraham Ijuo, Adofu and Ogiri (2023), who found that health expenditure positively affects economic growth by mitigating the adverse effects of health shocks in Nigeria, and supports the findings of Ikpe, Agu and Okwor (2022) and Odhiambo (2021), who established that health expenditure positively influences growth and human capital development. Humanitarian aid is found to have positive but non-significant effect on the human development index. This suggests that humanitarian assistance in Nigeria may be more effective in addressing short-term emergencies rather than generating statistically significant long-term development outcomes. This finding is consistent with Udo (2025) and Okonta and Oyegun (2023), both of whom found that certain forms of aid exerted positive but statistically insignificant effects on Nigeria's development outcomes.

Agriculture and rural development aid is found to have positive and significant effect on the human development index, suggesting that aid directed toward agriculture and rural development improves food security, rural livelihoods, income generation and overall economic wellbeing. This finding aligns with the conclusions of Ebehung and Ogar (2025) and Mbelu and Ifionu (2023) on the productivity-enhancing role of targeted sectoral investment in Nigeria.

In addition, education aid exerted positive and significant effect on human development index, indicating that foreign assistance directed toward education has improved literacy, school enrolment, and human knowledge capacity. This finding supports Abu (2024), who found that education significantly promotes economic growth in Sub-Saharan Africa, particularly where institutions are strong. Finally, infrastructure and economic development aid is found to exert positive and significant effect on human development index, implying that aid directed toward infrastructure contributes to improved living standards and economic activity. This finding supports Ebehung and Ogar (2025), who found that infrastructure significantly contributes to

economic growth in Nigeria, and aligns with Ekeocha, Ogbuabor and Orji (2021), who found that infrastructure significantly promotes GDP per capita growth across African countries.

5.0 Conclusion and Recommendations

Conclusion

This study empirically examined the disaggregated effects of foreign aid on economic wellbeing (measured by Human Development Index) in Nigeria from 1990 to 2024. The findings indicated that health aid, agriculture & rural development aid, education aid, and infrastructure & economic development aid have positive and statistically significant effects on the Human Development Index, while humanitarian aid had positive but statistically insignificant effect. The study therefore concludes that foreign aid, when consciously channeled for purposes of improving the health, agriculture & rural development, education, infrastructure & economic development as well as the humanitarian safety net sectors, are critical for enhancing economic wellbeing in Nigeria.

Recommendations

Based on the findings, the following recommendations are emphasized:

1. Government should increase and effectively channel health-related aid towards improving healthcare infrastructure, providing modern medical equipment, expanding rural healthcare services, supporting immunization programmes, and ensuring affordable healthcare delivery, so as to improve general health outcomes and particularly, life expectancy and living standards among Nigerians.
2. Government should increase investments in agriculture and rural development projects through foreign aid partnerships by supporting rural infrastructure, mechanized farming, irrigation systems, and access to agricultural credit, given the strong positive effect of this aid category on human development.
3. Policymakers should ensure that education aid is adequately directed toward improving access to quality education, provision of educational infrastructure, teacher training, and scholarship programmes, particularly in underserved areas.
4. Government should channel infrastructure and economic development aid into critical sectors such as transportation, electricity supply, water resources, and digital infrastructure to stimulate economic activities and improve socioeconomic welfare.
5. Government and donor agencies should improve the coordination, targeting, and monitoring of humanitarian aid programmes, given its currently insignificant effect on human development, to ensure that assistance translates more effectively into measurable, long-term wellbeing gains rather than short-term relief.

References

- Abeeb, O. (2025). The role and contributions of foreign aid in the development of third world countries: A study of USAID and Nigeria. *Journal of International Development Studies*, 12(1), 1-18.
- Abraham Ijuo, O., Adofu, I., & Ogiri, I. H. (2023). Global health risk, government health expenditure and economic growth in Nigeria. *International Journal of Economics and Development Policy*, 6(2), 45-61.
- Abu, N. (2024). Education and institutional quality in economic growth: Evidence from Sub-Saharan Africa. *African Journal of Economic Policy*, 31(1), 22-40.
- Adesanya, B. M., & Edward, O. (2023). Foreign aid, economic growth and poverty reduction in Nigeria: An ARDL approach. *Journal of Economics and Sustainable Development*, 14(4), 33-49.
- Akinola, G. W., & Asaolu, T. O. (2022). Foreign aid, economic growth and health outcomes in Nigeria. *West African Journal of Public Health*, 9(1), 12-29.
- Chenery, H. B., & Strout, A. M. (1966). Foreign assistance and economic development. *American Economic Review*, 56(4), 679-733.
- Ebehung, I., & Ogar, S. (2025). Infrastructure and economic growth in Nigeria: A Toda-Yamamoto causality approach. *Nigerian Journal of Economic Studies*, 17(1), 61-79.
- Ekeocha, D. O., Ogbuabor, J. E., & Orji, A. (2021). Public infrastructural development and economic performance in Africa: A dynamic GMM approach. *African Development Review*, 33(2), 210-225.
- Eze, O. R., Okpara, G. C., & Madichie, C. V. (2020). Foreign aid and economic growth in Nigeria: A disaggregated analysis. *International Journal of Development and Economic Sustainability*, 8(3), 1-19.
- Ikpe, M., Agu, C., & Okwor, I. (2022). Health expenditure, governance and economic growth in Nigeria: An ARDL approach. *Health Economics Review*, 12(1), 5-20.
- Ita, J. J. (2022). Foreign aid and the perpetuation of economic dependency in Nigeria. *Journal of Political Economy and Development Studies*, 6(1), 40-58.
- Litali, G., Opuodho, G., & Fatoki, O. (2024). Official development assistance and economic development in East Africa: The moderating role of trade openness. *East African Economic Review*, 10(2), 88-105.
- Mbelu, A. C., & Ifionu, E. P. (2023). Infrastructural financing and economic growth in Nigeria. *Journal of Finance and Economic Research*, 9(1), 15-33.
- Odhiambo, N. M. (2021). Health expenditure and economic growth in Sub-Saharan Africa: A panel data analysis. *Journal of African Economies*, 30(3), 245-263.
- Okafor, C. (2024). Infrastructural deficits and economic growth in Nigeria. *Nigerian Journal of Economic Policy*, 16(2), 101-118.
- Oketah, C., Ojeh, V., & Oshim, C. (2025). Official development assistance and government capital expenditure in Nigeria. *Journal of Public Finance Studies*, 11(1), 27-44.
- Okonta, P. A., & Oyegun, G. (2023). Foreign aid and economic growth in Nigeria: An error correction mechanism approach. *Journal of Economics and Policy Analysis*, 8(2), 66-84.
- Saliu, A. (2023). Foreign aid, human capital development and economic growth in oil and non-oil producing African countries. *African Journal of Development Economics*, 15(1), 33-52.
- Todaro, M. P., & Smith, S. C. (2020). *Economic development* (13th ed.). Pearson Education.
- Udo, U. (2025). Foreign aid, aid-institutional quality interaction and economic growth in

Nigeria. *Nigerian Journal of Economic and Financial Studies*, 13(1), 19-38.
Ugochukwu, N., Andem, F., & Somekenechukwu, O. (2024). Foreign aid, external borrowing and economic development of Nigeria. *Journal of Development Finance*, 12(2), 77-95.