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Article

Income Inequality and Economic Growth in Nigeria

Ibeinmo Friday COOKEY*[1]

1. Department of Economics, Rivers State University, Nkpolu-Orowurokwo, Port Harcourt, Rivers State, Nigeria
*Correspondence: ibeinmocookey@gmail.com

Abstract: This study empirically examined the effect of income inequality on economic growth in Nigeria from 1990 to 2023. Specifically, the study analysed the effect of the three components of income inequality (Gini coefficient, poverty index and unemployment rate) on the measure of economic growth (Gross Domestic Product). In order to achieve the objectives of study, relevant annual time series data were used and sourced from Central Bank of Nigeria (CBN) statistical bulletin and World Bank Development indicators. The data analysis techniques adopted are: Augmented Dickey-Fuller (ADF) statistic of unit root test, bounds cointegration test and Autoregressive Distributed Lag Model (ARDL) approach. The results of the study showed that Gini coefficient has a negative and significant effect on Gross Domestic Product in Nigeria, poverty index has a negative and significant effect on Gross Domestic Product in Nigeria while unemployment rate has a negative and non-significant effect on Gross Domestic Product in Nigeria. Based on the findings, the study concluded that income inequality plays a significant role in promoting economic growth in Nigeria. The study recommended that government should prioritize inclusive economic policies that directly target poverty reduction, such as expanding access to affordable housing, healthcare, and education. Reducing the poverty index through targeted welfare programs and conditional cash transfers will enhance human capital development and stimulate broad-based economic growth.

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Keywords: Income inequality, economic growth, Gross Domestic Product (GDP), Gini coefficient, poverty index, unemployment rate, ARDL model, cointegration analysis, time series analysis, inclusive growth, poverty reduction.

Introduction

The foremost macroeconomic objective of governments in almost all countries of the world is the actualization of rapid economic growth. The actualization of economic growth leads to higher and ever-increasing economic prosperity. This increasing economic prosperity is empirically linked to greater overall levels of societal progress and improvement. Conversely, without economic growth, economies of nations tend to stagnate thereby leading to deficiency in the provision of the social and economic well-being of their citizens. Economic failure historically causes a loss of trust and social upheaval, frequent and ugly triggers of social conflicts, leading to high income inequality [1][2]. Hence, one of the greatest challenges of the Nigerian economy today is income inequality. Income inequality refers to the uneven distribution of income among individuals or households within an economy. Income inequality has long been a subject of intense debate among economists, policymakers, and social scientists due to its profound implications for economic growth and societal stability.

The relationship between income inequality and economic growth is complex, with theoretical and empirical studies offering divergent perspectives. Some economists argue that moderate levels of inequality can incentivize innovation, entrepreneurship, and investment, thereby fostering economic growth. Others contend that excessive inequality stifles growth by limiting human capital development, reducing aggregate demand, and fueling social and political instability [3][4]. A growing body of research highlights the detrimental effects of income inequality on economic growth, particularly in the long run. High levels of inequality can undermine growth by restricting access to education and healthcare for lower-income groups, thereby limiting human capital development. Nwosa demonstrated that inequality creates barriers to education, as poor families are unable to afford quality schooling, leading to a less skilled workforce and lower productivity. Moreover, excessive inequality can reduce aggregate demand, as lower-income households, which tend to spend a larger proportion of their income, have less purchasing power. This can result in slower economic growth, as seen in the works of Stiglitz who argued that inequality stifles consumption and weakens the overall economy [5]. Furthermore, inequality can exacerbate social and political instability, which deters investment and hampers economic progress. Also, countries with higher inequality are more prone to political unrest, which can disrupt economic activity and deter foreign investment [6].

Furthermore, Ogunjobi, Oladipo and Tokula stated that the mechanisms through which income inequality affects economic growth are diverse and interconnected. One critical pathway is through fiscal policy and public investment. In highly unequal societies, governments often face pressure to implement redistributive policies, such as progressive taxation and social welfare programs, to address disparities. While these policies can reduce inequality, they may also discourage private investment if they are perceived as overly burdensome or inefficient. Hence, Castells-Quintana, Royuela and Thiel suggested that there is a threshold beyond which redistribution harms growth by distorting incentives and reducing capital accumulation [7]. Conversely, insufficient redistribution can lead to underinvestment in public goods, such as education and infrastructure, which are essential for long-term growth. Another mechanism is the impact of inequality on institutional quality. Countries with high inequality often suffer from weaker governance, corruption, and rent-seeking behavior, which can undermine economic performance. Also, Guzaa, Ishakb, Banic and Madina argued that inequality perpetuates elite capture, where a small group of wealthy individuals influence policies to their advantage, often at the expense of broader economic development [8].

However, despite being Africa's largest economy, Nigeria exhibits one of the highest levels of income inequality globally, with a Gini coefficient of 35.1 in 2021 [9]. This disparity is exacerbated by uneven access to education, healthcare, and employment opportunities, particularly between urban and rural areas. The concentration of wealth among a small elite, coupled with widespread poverty, raises concerns about the long-term sustainability of Nigeria's economic growth [10]. While the country has experienced periods of Gross Domestic Product expansion, particularly during oil boom cycles, these gains have not translated into broad-based prosperity. Instead, the benefits of growth have been disproportionately captured by the wealthiest segments of society, leaving millions trapped in cycles of poverty. Also, the persistence of high income inequality in Nigeria poses significant barriers to inclusive economic growth. In Nigeria, where nearly 40% of the population lives below the poverty line, limited access to quality education and healthcare for low-income groups constrains the development of a skilled workforce. This is particularly problematic in an era where knowledge-based industries are becoming increasingly important for economic diversification. Furthermore, income inequality contributes to social tensions and political instability, which deter both domestic and foreign investment [11]. The World Bank reported that countries with high inequality, like Nigeria, often face greater challenges in maintaining stable economic policies due to

competing demands from different socioeconomic groups. Additionally, the concentration of wealth in the hands of a few reduces aggregate demand, as lower-income households, which constitute the majority of the population, have limited purchasing power to drive consumption-led growth. These factors collectively undermine Nigeria's potential to achieve sustainable and inclusive economic development. Given these complex challenges, there is a pressing need for rigorous research that examines the specific mechanisms through which income inequality affects economic growth in Nigeria [12]. This therefore motivates the researcher to empirically determine the dynamics of income inequality and its effect on economic growth in Nigeria. Specifically, the study sought to examine the effect of Gini coefficient, poverty index and unemployment rate on Gross Domestic Product in Nigeria.

2.0 Literature Review

Theoretical Framework

This study is anchored on Kuznets Theory and Marxist Theory of Income Inequality and Exogenous Growth Model. These theories are discussed as in this section as follow:

a. Kuznets Theory

The Kuznets theory of inequality was proposed by Kuznets in 1955 when he wrote about the movement of inequality in rich countries and a couple of poor ones. The US and the UK were among the countries with significant decrease of income inequality ever registered in history, coupled with fast economic development. Kuznets hypothesis was adopted because it aptly captures the relationship between income inequality and key economic variables such as per capita income. The Kuznets inverted 'U' hypothesis predicts that an indicator of income inequality, (Gini coefficient) should first be positively correlated with per capita income growth or economic development; then in a subsequent period, after the economy has reached the apex of the curve, an inverse relationship between the two variables should be observed. Although the only macroeconomic factor that Kuznets originally linked to inequality was economic growth, recently the hypothesis has been expanded to include other macroeconomic factors such as pollution, poverty, and technology [13]. Kuznets established the inverted 'U' hypothesis as an explanation of the progression income inequality undergoes as an economy develops from an agriculturally dominant structure, towards a more sophisticated, industrialized, or service-based economy. The prevailing initial conditions before the inverted 'U' Kuznets hypothesis takes effect include: First, in an agrarian economy, where a relatively low per capita income would abound and there may not likely be a high degree of income inequality within such an agricultural-based economy. Second, the industrial urban sector of the economy will be small in comparison to the rural agricultural sector. This industrial urban sector will be characterized by higher per capita income, and plausibly a relatively higher degree of income inequality. Furthermore, Kuznets suggests that income inequality rises in the first stage of development and a subsequent decline in the industrialisation stage of the economy [14]. The idea is that a curve with an inverted U form connects inequality and growth. When individuals move from the large, relatively poor, and egalitarian agricultural sector to the small, industrial sector, which is wealthier but more unequal, inequality increases throughout the early stages of economic expansion. However, as more people move to metropolitan areas, the relative salaries of lower paid workers in both urban and rural areas increase, and various government programs are implemented to reduce intra- and inter-sectoral inequality. As a result, the economy's overall income disparity decreases throughout the latter stages of growth. One implication of the Kuznets theory is that it may take a long time to eradicate poverty in developing nations if early stages of economic progress result in rising inequality [15].

b. Marxist Theory of Income Inequality

The Marxian theory of income is rooted in the broader framework of Marxist economic theory, which focuses on the dynamics of capitalist societies and the inherent conflicts between different classes, particularly the bourgeoisie (capitalists) and the proletariat (workers). Karl Marx's analysis of income distribution is integral to his critique of capitalism, emphasizing how the capitalist mode of production leads to the exploitation of labor and the concentration of wealth in the hands of a few [16]. Marx expressed that labour is the source of all incomes (wealth). However, the worker gets only a trivial part of this incomes (wealth); that is unsatisfactory to stay employed. This implies that the vast majority of the output of labour is routed to the capitalist, which leads to a revolting tussle between capital and labour. In this contest, the capitalist aims to bring wages to a minutest, thus, the capitalist considers labour simply as a commodity, and all human affairs are quickly reduced to money affairs. In his manuscript of 1844, he noted that the capitalist is certainly enriched at the disadvantage of the employee, who survives at a subsistence level. In his study, Marx noted an upward tendency on the way to monopoly concentration of capital into less hands, thus, capitalism, otherwise considered as exploitation tends to increase the profit (wealth) of the capitalist entrepreneur, as it exploits labour and raise a huge disparity in income.

Marx pronounced five laws or what he described as "general tendencies" innate in capitalism:

1. The Law of Accumulation and the falling Rate of Profit: Under capitalism, the quest for capitalists to increase profit; leads them to substitute capital for labour. Marx narrated that a situation where a capitalist adopts labour-savings mechanism, such capitalists will be capable to produce at a lesser cost than his competitors, and still trade at a price offered by less mechanized firms. Consequently, the combined influence of individual capitalist to amass more capital and added profit appears to slash the average proportion of profit [17].

2. The Law of Increasing Concentration and the Centralization of Industry: The increase in production capacity would lead to overproduction, therefore, driving prices down. The less efficient firms will be displaced out of business, as a result, a collection of firms would turn out to be more centralized, and income will be concentrated in the hands of a few, leading to income inequality.

3. The Law of a Growing Industrial Reserve Army: Technological invention and capitallabour changeover has a severe consequence on the unemployment. Introduction of technology (machines) brings about shift of workers, hence a "growing industrial army of unemployed." Marx classified this kind of unemployment into two types: technological unemployment and cyclical unemployment, as a result of overproduction.

4. The Law of Increasing Misery of the Proletariat: This law holds that as unemployment grows, alongside the misery of the proletariat.

5. The Law of Crises and Depressions: According to Marx in Ekelund and Hebert, increasing misery is related to unemployment. In his description, when unemployment

Empirical Review

Ogunjobi, Oladipo and Tokula examined the long run effect of income inequality and health status on economic growth in Nigeria between 1992 and 2022. Time series data for thirty one years were used while the authors employed Johansen Co-integration test as an estimating technique to evaluate the data based on the nature of the variables. The outcome of the findings revealed that income inequality has a significant negative effect on economic growth. It also revealed a statistically significant positive relationship between government healthcare spending and economic growth in Nigeria. Furthermore, capital formation, life expectancy and labor force on the other hand, revealed a significant positive effect on economic growth [18].

Chude and Chude investigated the effect of income inequality on the economic growth in Nigeria from 1981-2021, Ordinary least squared (OLS) method of data analysis was adopted because of its Best Linear Unbiased Estimators (BLUE) properties. The variables used were sourced from Central Bank of Nigeria Statistical Bulletin. The variables used were income inequality, employment, education, poverty and government capital expenditure and real gross domestic product. The collected data were sourced from central bank of Nigeria (CBN) statistical bulletin 2021 The study adopted the unit root test, co-integration approach, as well as Error Correction Mechanism. E- View software was used for the analysis. The study found that: Income inequality has no significant effect on economic growth in Nigeria: Employment rate has significant positive effect on economic growth in Nigeria: Poverty has significant negative effect on economic growth in Nigeria.

Adamu, Sule, Tersoo, Shimbura, Rimamskep, Isaac and Nomiri investigated the impact of income inequality on Nigerian economic growth. It used secondary time series data spanning the years 1980 to 2022. The data set was initially checked for stationarity using the Augmented Dickey Fuller (ADF) test. In addition, the research method used Bound test approach for examining long-run and short-run asymmetry effects using Nonlinear Autoregressive Distributed Lag Model (NARDL). The NARDL Bound test verified that the variables in the research had a longrun connection. It also demonstrated that the calculated model correctly captures asymmetries in the responses of the economic growth (GDPR) to changes in positive and negative income inequality. The positive changes to income inequality indicated an increasing but not significant effect on economic growth while negative changes to income inequality indicated an increasing and significant effect on economic growth in the long-run.

Gongora-Salazar, Casabianca and Rodríguez-Lesmes studied the relationship between self-assessed health status and income inequality in Colombia. Their study utilized time series data from the National Quality of Life Survey spanning the years 2011 to 2019. The robustness of the Income Inequality Hypothesis (IIH) is evaluated using multinomial probit estimations. Even after adjusting for socioeconomic factors such as socioeconomic characteristics and individual income levels, evidence supported the IIH. The likelihood of reporting poor health appears to be correlated with income inequality across all income quintiles. In order word, the level or the rate of such a relationship is significantly reduced when inequality measures that are comparatively more sensitive to differences in wealthy people's income were used.

Onwuka examined the relationship between poverty, income inequality and economic growth in Nigeria. The study used time series data from National Bureau of Statistics (NBS) and Central Bank of Nigeria (CBN) Statistical Bulletin between the periods from 1981 to 2019. The study employed the use of Augmented Dickey Fuller test, Co-integration test and Error Correction technique. From the study, the findings revealed that income inequality has a negative relationship with economic growth in the country while poverty was found to be positively related to economic growth. Similarly, the findings also revealed that poverty and income inequality has an insignificant effect on economic growth in Nigeria. Based on the findings, it can be concluded that poverty and income inequality has not significant relationship with economic growth in Nigeria.

Seher determined whether the effect of income inequality on economic growth is realized through transmission channels theoretically expressed. This relationship is examined for 143 countries and the periods between 1980 and 2017 through positive and negative channels. The findings highlight the complexity of the impact of income inequality on economic growth. Therefore, indirect impact needs to be scrutinized and policy recommendations need to be carefully designed [19].

An empirical study carried out in Nigeria by Chinonye demonstrated that income disparity has an inverse relationship with the country's economic growth, but poverty has a positive impact on economic growth. Similarly, it founds that poverty and income

disparity had an insignificant impact on Nigeria's economic growth. The methodologies employed by the study were ADF test for stationarity test, cointegration test for long-run relationship and ECM for short run dynamic analysis using annual secondary data spanning 1981 to 2019 which were sourced from NBS and CBN statistical bulletins.

Ibrahim and Okoh examined the impact of income inequality on economic development in Nigeria for the period of 1989 to 2020. The specific objectives were to examine if gini coefficient has a significant impact on per capita income in Nigeria, to ascertain if poverty rate has a significant impact on per capita income in Nigeria and to determine if inflation rate has a significant impact on per capita income in Nigeria. The study made use of quantitative research design which involved the use of secondary method of data collection. The data collected was analyzed through multiple linear regression. The findings revealed that income inequality as proxied by Gini coefficient and poverty rate has a negative and significant impact on per capita income, while inflation rate has a negative but insignificant impact on per capita income in Nigeria [20].

Igwegbe and Metu examined the key determinants of increase in income inequality experienced in Nigeria using annual time series data from 1981 to 2018. The data were estimated using the fully modified ordinary least square (FMOLS) technique. Factors identified as having affected income inequality during the period include the level of economic development attained, technology, globalization, fiscal policy, rural-urban drift, and financial access. The result also showed that the relationship between income growth and income inequality over time was linearly monotonic, rather than inverted U-shape as stipulated in the Kuznets hypothesis.

Similarly, Victoria and Macdonald investigated the influence of wealth disparity on Nigerian economic development from 1989 to 2020. The study employed a quantitative research strategy that included the use of secondary data gathering methods. Multiple linear regressions were used to examine the acquired data. The study found that income inequality and poverty indicated an inverse ans substantial relationship with economic growth in Nigeria, but the inflation rate has a negative but small impact [21].

Tibber, Walji, Kirkbride and Huddy investigated the sub-national relationship between income inequality and adult mental health. The study made use of the data from the PsycINFO and Web of Science database. In their analysis, they used a vote-count method to synthesize the data at the subnational level to examine the relationship between adult mental health and income inequality [22].

Akinwale examined economic growth, health spending, and life expectancy at birth in developing economies, focusing on Saudi Arabia and Nigeria. The work made use of autoregressive distributed lag (ARDL) model, error correction model, and granger causality, his research reveals that in the short run, both health spending and life expectancy positively influence Saudi Arabia's economic growth, while only health spending has a positive effect on Nigeria's economic growth. His findings support the notion that Saudi Arabia and Nigeria will experience growth driven by improved health[23].

Ali investigated the determinants of income inequality in Nigeria by conducting an empirical analysis of some selected variables using Autoregressive Distributed Lag (ARDL) bounds approach for the period 1990 to 2016. The findings show evidence of co-integration between income inequality and its determinants in Nigeria. It also indicated that the Gini coefficient is relatively high in Nigeria, showing a high level of income inequality in the country. Furthermore, the critical determinants of income inequality as revealed by the study are economic growth, education level and real GDP per capita in Nigeria [24].

A study on the effect of income distribution on state well-being was conducted by Bilan, Mishchuk, Samoliuk, and Yurchyk. They examined the effects of income inequality on the welfare and economic development in European countries (EU) and Ukraine. Data

were collected from the EU member States and Ukraine. In their collinearity results, they discovered an inherent relationship between the Gini coefficient and the human development index, demonstrating to them that a fair or low level of income inequality in a country would lead to an increase in the level of economic development and its citizens' social well-being of the country [25].

Manyeki and Balázs investigation on the relationship between income inequality and economic growth and the hypothesis addressed was: inequality is harmful for growth. We contribute to the literature by employing an autoregressive distributed lag model using a time series date spanning from 1990–2015. The study found a significant positive but weak long run relationship between income inequality and growth. The short run was a strong positive relationship, which was significant at 1% level [26].

Danso and Boateng examined the relationship between inequality and economic growth, this paper focused on the top ten biggest economies in Africa. There was positive correlation between income inequality and economic growth in the long term. Mean School Year and Gross Savings also regressed positively because it was established that a 1% increase in the number of years spent in school within these countries will causes the economy to grow about 214.76%, and 1% increase in gross savings pushes economic growth by 3.61% annually. Expectedly, unemployment had negative relationship with economic growth. A 1% decrease in unemployment rate within these countries will boost long term economic growth by 7.72% [27].

Ibrahim and Taiga assessed the impact of income inequality on poverty in Nigeria spanning the period of 1986 to 2018. The Autoregressive Distributed Lag (ARDL) model was used to carry out this objective. Findings from the study revealed that income inequality significantly contributed to the rising poverty in Nigeria, increasing poverty by 75%. Similarly, unemployment and the rising inflation exacerbated the poverty situation in the country. Conversely, growth in per capita income dampened the negative effect of poverty over the period of study [28].

Ewubare and Nnamdi offered update on the assessments of income inequality and unemployment in Nigeria, using data from the General Household Surveys of the National Bureau of Statistics. Data were also obtained from World Bank and Central Bank of Nigeria. Based on an array of operational techniques, the study made the following major findings: first, the Nigeria economy is characterized by a persistent rise in national unemployment rate, with variability at some periods; which may persist. Second, the male labour force has a higher unemployment rate compared to their female counterpart. Third, unemployment is higher among youths, between 15-34years. Fourth, in addition to socioeconomic and demographic characteristics, post-secondary educational labour force is the dominant class of the unemployed. Fifth, a growing trend of income disparity was found between Nigerian states and regional clusters. Finally, it was revealed that rising unemployment accelerates income inequality. Besides, fiscal federalism, strategic economic policies aimed at providing sustainable employment encompassing the youths and graduates of post-secondary education should be put in place.

Furthermore, FitzGerald, Williams, Field, Tikkanen, and Doty examined the effect of income equality in terms of access and affordability to primary healthcare delivery in eleven countries using the Wald chi-square test and Stata 14.2. They also examined income-related variations between adults around the world with respect to the lower and higher incomes earners healthcare status. According to the research, people in the study area performed relatively worse than those in other countries in terms regarding the affordability and access to primary care among adults with lower incomes, and disparities related to income across domains are typically more pronounced.

Also, Yildirim, Yildirim and Calıskan investigated the effect of healthcare spending on economic growth and for sustainable development in OECD countries. For the panel threshold analysis, secondary data on such variables as fixed capital investments, inflation,

and other variables were used. Although they discovered no threshold effect in clusters, the study still distinguished high and low health status (level) countries as two major clusters. It was discovered that increased birth life expectancy in those nations with better healthcare delivery had no significant effect on economic growth. The improvement in life expectancy at birth of countries with poorer health had a positive effect on economic growth.

Muhammad, Nurulkamal, Kamarulzaman and Saiful examined the changes in income inequality based on three different indices, which are Gini, Atkinson and generalized entropy using the household incomes data available from the surveys conducted in 2007, 2009, 2012 and 2014. Modification for each index is employed by taking sample weights into account for better measurement. Lorenz curves are fitted to the data to describe how the incomes of different household income groups are distributed over the time period. All the indices show a decreasing trend from 2007 to 2014, indicating an overall improvement of income distribution.

3.0 Methodology

The nature of this study necessitated the use of secondary (time series) data for a period of thirty-four years (1990 to 2023). These data were sourced from Central Bank of Nigeria (CBN) Statistical Bulletin and World Bank Development indicators 2023 editions.

Model Specification

For the purpose of this study, multiple linear regression model is adopted. To achieve a robust result in the context of the Nigerian environment, the study will adopt empirical model of Danso and Boateng in their work on the relationship between inequality and economic growth in the top ten biggest economies in Africa with slight modifications. Thus, to frame the model to suit the Nigerian context and by incorporating other variables of this study, our model is specified as follows:

Expressing the model in its functional form, we have:

$$GDP = f(GIC, PTI, UMR) \quad (3.1)$$

Equation (3.1) is transformed into a mathematical form as follows:

$$GDP_t = \beta_0 + \beta_1 GIC_t + \beta_2 PTI_t + \beta_3 UMR_t \quad (3.2)$$

Equation (3.2) is transformed into an econometric form as follows:

$$GDP_t = \beta_0 + \beta_1 GIC_t + \beta_2 PTI_t + \beta_3 UMR_t + \mu_t \quad (3.3)$$

A Priori Expectation (Economic Theory): $\beta_1 < 0$, $\beta_2 < 0$, $\beta_3 < 0$.

Where: GDP = Gross Domestic Product, GIC = Gini coefficient, PTI = Poverty index, UMR = Unemployment rate, β_0 = Constant variable in the model. β_1 = Parameter or coefficient of Gini coefficient, β_2 = Parameter or coefficient of poverty index, β_3 = Parameter or coefficient of unemployment rate, $_t$ = Time subscript, μ_t = Disturbance or error term.

Data Analysis Techniques

The analysis of data in this study began with descriptive statistics, followed by conducting certain pre-estimation tests (unit root test and cointegration as stated earlier, in order to ensure that the estimated model is not spurious in nature. However, since all the variables have mixed stationarity, that is, mixture of stationary at levels and stationary at first difference, Autoregressive Distributed Lag (ARDL) technique was adopted.

4.0 Results and Discussion Findings

Descriptive Statistical Analysis

Table 4.1 presents the descriptive statistics of the data for this study as follows:

Table 4.1. Descriptive Statistics.

	GDP	GIC	PTI	UMR
Mean	58070.71	44.62941	54.50294	4.830294
Median	32525.56	44.75000	54.80000	3.770000
Maximum	234425.9	56.00000	66.90000	10.10000
Minimum	494.6400	35.10000	38.90000	1.900000
Std. Dev.	65322.39	5.600624	7.002142	2.287331
Skewness	1.117183	0.170837	-0.506903	1.198219
Kurtosis	3.263955	2.536944	3.142225	2.905803
Jarque-Bera	7.171263	0.469147	1.484711	8.148373
Probability	0.027719	0.790908	0.475991	0.017006
Sum	1974404.	1517.400	1853.100	164.2300
Sum Sq. Dev.	1.41E+11	1035.111	1617.990	172.6521
Observations	34	34	34	34

Source: *Researcher's Computation, 2026.*

Note: GDP = Gross Domestic Product; GIC = Gini Coefficient, PTI = Poverty Index UMR = Unemployment Rate

Table 4.1 shows that there are thirty-four (34) observations for all the variables over a period of thirty-three years from 1990 to 2023 with one explained variable, which is Gross Domestic Product and three explanatory variables, which are Gini coefficient, poverty index and unemployment rate. From Table 4.2, the average Gross Domestic Product from 1990 to 2023 is 58070.71. This is shown by the mean value of Gross Domestic Product. The maximum value for Gross Domestic Product is 234425.9 while the minimum value of Gross Domestic Product is 494.64. In furtherance, Table 4.2 showed that the average Gini coefficient which is one of the proxies of income inequality from 1990 to 2023 is 44.63%. This is shown by the mean value of Gini coefficient. The maximum value for Gini coefficient is 56.0% while the minimum value of Gini coefficient is 35.1. Moreover, Table 4.2 showed that the average poverty index is 54.5%. This is shown by the mean value for poverty index. The maximum value for poverty index is 66.9% while the minimum value of poverty index is 38.9%. Lastly, Table 4.2 showed that the average unemployment rate which is one of the proxies of income inequality is 4.83%. This is shown by the mean value of unemployment rate. The maximum value for unemployment rate is 10.1% while the minimum value of unemployment rate is 1.9%.

Pre-Estimation Tests

Unit Root Test

The first stage of econometric analysis is to test for the stationarity properties of the variables. Augmented Dickey-Fuller (ADF) type of unit root test was conducted in this study to help avoid "spurious" or "nonsense" regression results. The results of Augmented Dickey-Fuller (ADF) unit root tests are presented in Table 4.2:

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

	ADF at Levels			ADF at First Difference			
Variables	**ADF Statistic**	**5% Critical Value**	**Decision**	**ADF Statistic**	**5% Critical Value**	**Decision**	**Order of Integration**
GDP	-4.621966	-2.954021	Stationary	-	-	-	I(0)
GIC	-2.415211	-2.957110	Not Stationary	-3.331807	-2.960411	Stationary	I(1)
PTI	-1.798533	-2.954021	Not Stationary	-6.277640	-2.957110	Stationary	I(1)
UMR	-1.907744	-2.957110	Not Stationary	-6.757053	-2.957110	Stationary	I(1)

Source: *Researcher's Computation, 2026.*

The results of the Augmented Dickey Fuller (ADF) unit root test at levels reported in Table 4.2 showed that Gross Domestic Product (GDP) was stationary at order zero [i.e., I(0)]. On the other hand, Gini coefficient, poverty index and unemployment rate were stationary at order one [i.e., I(1)]. Based on the Augmented Dickey Fuller (ADF) unit root test therefore, while one of the time series was stationary at level i.e. integrated of order zero, others only became stationary after first differencing i.e. integrated of order one. It can therefore be inferred that a mixed order of integration is evident among the time series in the model.

Bound Cointegration Test

The result of the ARDL Bounds Cointegration Test for this study is reported in Table 4.3:

Table 4.3. ARDL Bounds Cointegration Test Result.

Selected Model: ARDL (1, 1, 1, 1)		
Test Statistic	**Value**	**K**
F-statistic	34.78268*	3
Critical Value Bounds		
Significance	**Lower Bound [**I(0)]	**Upper Bound [**I(1)]
10%	2.37	3.2
5%	2.79	3.67
2.5%	3.15	4.08
1%	3.65	4.66

Source: *Researcher's Computation, 2026.*

Note: * implies that F-statistic is greater than upper bound 5% critical value and long run exists between the variables in the model.

The result of ARDL Bounds Test presented in Table 4.3 showed that the F-statistic (34.78268) is greater than the lower bound (2.79) and upper bound (3.67) at 5% level of significance. Hence, there is sufficient statistical evidence to reject the null hypothesis of no co-integration at 5% level of significance and conclude that there exists a long run relationship or cointegration between the variables. Specifically, it can therefore be concluded based on the ARDL Bounds cointegration test that there is a long-run relationship among Gross Domestic Product, Gini coefficient, poverty index and unemployment rate. The confirmation of long run dynamics among the variables gives credence for the estimation of the extent of the relationship by proceeding to estimate the ARDL short-run model, ARDL long-run form and ARDL error correction for Gross Domestic Product model.

Autoregressive Distributed Lag (ARDL) Estimation

ARDL Long-Run Dynamics

In this section, the study estimates the long run effect of Gini coefficient, poverty index and unemployment rate on Gross Domestic Product in Nigeria. The long run estimations are conducted using the Autoregressive Distributed Lag (ARDL) technique. In the selected long run ARDL (1, 1, 1, 1) model, the maximum lag length was set out by using Akaike Info Criterion (AIC). However, the normalized short run coefficient estimates are reported in Table 4.4:

Table 4.4. Autoregressive Distributive Lag (ARDL) Long Run Dynamics Result.

Dependent Variable: **GDP** **Selected Model**: **ARDL (1, 1, 1, 1)**				
Independent	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob**

Variables (Regressors)	(Parameter estimates)			
GIC	-0.950460	0.014916	-63.72060	0.0000
PTI	-0.279752	0.106712	-2.621560	0.0153
UMR	-0.232280	0.099779	-2.327943	0.0291
C	20.54233	4.890369	4.200568	0.0002

Source: *Researcher's Computation, 2026.*

From the ARDL long run estimate result in Table 4.4, Gini coefficient has a negative coefficient value of -0.950460. This implies that Gini coefficient has a negative effect on Gross Domestic Product. Hence, a unit increase in Gini coefficient will lead to 0.950460 unit decrease in Gross Domestic Product while a unit decrease in Gini coefficient will lead to 0.950460 unit increase in Gross Domestic Product. Also, the p-value (i.e., 0.0000) of the coefficient of Gini coefficient which is less than 0.05 indicates that Gini coefficient has a significant effect on Gross Domestic Product. It can therefore be concluded that Gini coefficient has a negative and significant effect on Gross Domestic Product in Nigeria in the long run. Also, from the ARDL long run estimate result in Table 4.4, poverty index has a negative coefficient value of -0.279752. This implies that poverty index has a negative effect on Gross Domestic Product. Hence, a unit increase in poverty index will lead to 0.279752 unit decrease in Gross Domestic Product while a unit decrease in poverty index will lead to 0.279752 unit increase in Gross Domestic Product. Also, the p-value (i.e., 0.0153) of the coefficient of poverty index which is less than 0.05 indicates that poverty index has a significant effect on Gross Domestic Product. It can therefore be concluded that poverty index has a negative and significant effect on Gross Domestic Product in Nigeria in the long run. Lastly, from the ARDL long run estimate result in Table 4.4, unemployment rate has a negative coefficient value of -0.23228. This implies that unemployment rate has a negative effect on Gross Domestic Product. Hence, a unit increase in unemployment rate will lead to 0.23228 unit decrease in Gross Domestic Product while a unit decrease in unemployment rate will lead to 0.23228 unit increase in Gross Domestic Product. Also, the p-value (i.e., 0.0291) of the coefficient of unemployment rate which is less than 0.05 indicates that unemployment rate has a significant effect on Gross Domestic Product. It can therefore be concluded that unemployment rate has a negative and significant effect on Gross Domestic Product in Nigeria in the long run.

ARDL Short Run Dynamics

Having performed the long run estimation of the Gross Domestic Product model, it therefore becomes necessary and important to determine the correction of short run disequilibrium to long run equilibrium. To achieve this, the Error Correction Mechanism (ECM) was conducted and the results are reported in Table 4.5.

Table 4.5. Autoregressive Distributive Lag (ARDL) Error Correction Result.

	Dependent Variable: LOG(GDP) **Selected Model: ARDL** (1, 1, 1, 1)			
Independent Variables (Regressors)	**Coefficient (Parameter Estimates)**	**Std. Error**	**t-Statistic**	**Prob**
D(GIC)	-0.324965	0.070941	-4.580814	0.0001
D(PTI)	-0.232280	0.072604	-3.199249	0.0040
D(UMR)	-0.049540	0.002887	-17.16149	0.0000
CointEq(-1)*	-0.543563	0.083090	-6.768395	0.0000

Source: *Researcher's Computation, 2026.*

Note: ** and * implies statistical significance of the coefficient at 1% and 5% respectively.

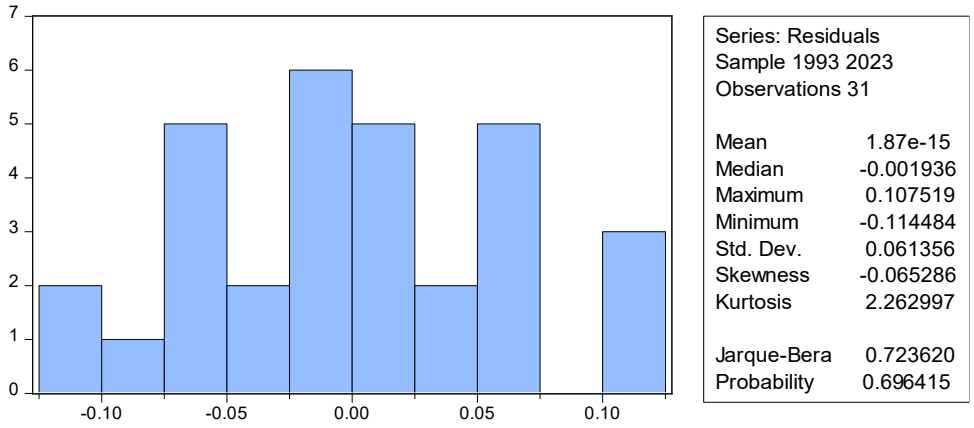
The short run estimations are conducted using the Autoregressive Distributed Lag (ARDL) technique. Thus, the results of the ARDL Error Correction are reported in Table 4.5. The result shows that Gini coefficient has a negative coefficient value of -0.324965. This implies that Gini coefficient has a negative effect on Gross Domestic Product. Hence, a unit increase in Gini coefficient will lead to 0.324965 unit decrease in Gross Domestic Product while a unit decrease in Gini coefficient will lead to 0.324965 unit increase in Gross Domestic Product. Also, the p-value (i.e., 0.0001) of the coefficient of Gini coefficient which is less than 0.05 indicates that Gini coefficient has a significant effect on Gross Domestic Product. It can therefore be concluded that Gini coefficient has a negative and significant effect on Gross Domestic Product in Nigeria in the short run. In addition, the result shows that at initial level, poverty index has a negative coefficient value of -0.232280. This implies that poverty index at the initial level has a negative effect on Gross Domestic Product. Hence, a unit increase in unemployment rate will lead to 0.232280 unit decrease in Gross Domestic Product while a unit decrease in poverty index will lead to 0.232280 unit increase in Gross Domestic Product. Also, the p-value (i.e., 0.0000) of the coefficient of unemployment rate which is greater than 0.05 indicates that unemployment rate has a significant effect on Gross Domestic Product. It can therefore be concluded that poverty index has a negative but insignificant effect on Gross Domestic Product in Nigeria in the short run.

In addition, the result shows that at initial level, unemployment rate has a negative coefficient value of -0.049540. This implies that unemployment rate at the initial level has a negative effect on Gross Domestic Product. Hence, a unit increase in unemployment rate will lead to 0.049540 unit decrease in Gross Domestic Product while a unit decrease in unemployment rate will lead to 0.049540 unit increase in Gross Domestic Product. Also, the p-value (i.e., 0.0000) of the coefficient of unemployment rate which is greater than 0.05 indicates that unemployment rate has a significant effect on Gross Domestic Product. It can therefore be concluded that unemployment rate has a negative but insignificant effect on Gross Domestic Product in Nigeria in the short run. However, the error correction term indicates the speed adjustment to restore equilibrium in the dynamic model. The error correction mechanism coefficient shows how quickly variables converge to equilibrium and it should have a statistically significant coefficient with a negative sign. Thus, the error correction coefficient estimated at Coint Eq (-1) is highly significant (0.0000) and negative (-0.543563) as expected. This implies a very high speed of adjustment to equilibrium. The highly significant error correction term further confirms the existence of a stable long-run relationship among all the research variables with their various significant lags. Specifically, the coefficient of CointEq(-1) which is -0.543563 indicates that deviation from the long-term growth rate in Gross Domestic Product is corrected by 54% in the following year. In furtherance, the adjusted R-Square of 0.660411indicates that about sixty-six (66) percent of the total variation in Gross Domestic Product is explained by systematic changes in Gini coefficient, poverty index and unemployment rate while the remaining thirty-four (34) percent of the variation is explained by other factors not included in the model. Lastly, the Durbin-Watson stat statistics of 1.949730 shows that the model is free from the problem of autocorrelation.

Post-Estimation Tests

In order to ensure the reliability of the model and further ascertain that the estimated model is adequate for adoption and policy formulation, both residual and stability post-estimation tests were conducted on the Gross Domestic Product model as follows:

Normality Test



Source: *Researcher's Computation, 2024.*

Figure 4.1. Normality Test Result.

Normality test was carried out to verify if the error term is normally distributed. The null hypothesis states that the residuals are normal distributed at 5 % level of significance. To test this hypothesis, Jarque-Bera statistics was used. The result in Figure 4.1 above shows that Jarque-Bera statistic is 0.723620 and the probability is 0.696415. However, since the probability value (0.696415) of Jarque-Bera statistic is greater than 5%, we do not reject the null hypothesis and conclude that the residuals are normally distributed at 5 % level of significance.

Serial Correlation Test

Table 4.6. Breusch-Godfrey Serial Correlation LM Test Result.

Test	F-Statistic	P-value	Null Hypothesis	Decision
Breusch-Godfrey Serial Correlation LM Test	0.183950	0.8331	**H_0:** No serial correlation	Do not reject H_0

Source: *Researcher's Computation, 2026.*

The results in Table 4.6 above shows that F-statistic is 0.183950 and the probability value is 0.8085. However, since the probability value (0.8331) of the F-statistic is greater than 5 percent, we do not reject the null hypothesis and conclude that the residuals are not serially correlated. That is, the estimated model is not suffering from serial autocorrelation problem.

Heteroscedasticity Test

Table 4.7. Breusch-Pagan-Godfrey Heteroscedasticity Test Result.

Test	F-Statistic	P-value	Null Hypothesis	Decision
Breusch-Pagan-Godfrey Heteroskedasticity Test	2.151435	0.1007	**H_0:** Homoscedasticity	Do not reject H_0

Source: *Researcher's Computation, 2026.*

The result in Table 4.7 above shows that F-statistic is 2.151435 and the probability value is 0.1007. However, since the probability value (0.1007) of the F-statistic is greater than 5 percent, we do not reject the null hypothesis and conclude that the variance of the residuals is homoscedastic over the period covered in this study. This implies that the estimated model is free from the problem of heteroskedasticity.

Ramsey RESET Test

Table 4.8. Ramsey RESET Test Result.

Test	F-Statistic	P-value	Null Hypothesis	Decision
Ramsey RESET test	0.000452	0.7954	**H_0:** The model is correctly specified	Do not reject H_0

Source: *Researcher's Computation, 2025.*

The results in Table 4.8 above show that F-statistic is 0.000452 and the probability value is 0.9832. However, since the probability value (0.9832) of the F-statistic is greater than 5 percent, we do not reject the null hypothesis and conclude that the model is correctly specified. This suggests that the variables included in the model are adequate and sufficient.

Discussion of Findings

The results of the study showed that Gini coefficient has a negative and significant effect on Gross Domestic Product in Nigeria in both short run and long run. This result is also supported by the result of Onwuka who found that the findings revealed that income inequality has a negative relationship with economic growth in the country. In furtherance to this, evidences that emerged from the results of the study showed that poverty index has a negative and significant effect on Gross Domestic Product in Nigeria in both short run and long run. The finding is also related to the finding of Ofori who found that economic growth as measured by Gross Domestic Product is significantly related to poverty reduction. Additionally, the results of this study showed that unemployment rate has a negative and significant effect on Gross Domestic Product in Nigeria in both short run and long run. This result is also in agreement with the finding of Nnachi and Ugochukwu whose findings revealed that inflation and unemployment have long run relationship with economic growth. It further revealed that unemployment is inversely correlated with economic growth.

5.0 Conclusion and Recommendations

Conclusion

This study determined the effect of income inequality on economic growth in Nigeria. The empirical results of the study showed that Gini coefficient, poverty index and unemployment rate have joint significant effect on Gross Domestic Product in Nigeria. Based on the findings, the study concluded that income inequality plays a significant role in promoting economic growth in Nigeria.

Recommendations

Based on the above findings and conclusions, the following are recommendation are made:

1. Government should prioritize inclusive economic policies that directly target poverty reduction, such as expanding access to affordable housing, healthcare, and education. Reducing the poverty index through targeted welfare programs and conditional cash transfers will enhance human capital development and stimulate broad-based economic growth.
2. Addressing unemployment is key to reducing inequality and accelerating growth. Policies should be focused on creating decent jobs through investments in labor-intensive sectors like agriculture, manufacturing, and renewable energy, while also supporting youth and women entrepreneurship with access to skills training and credit facilities.

Government should strengthen progressive taxation systems and channel the revenues into social safety nets and public investments that benefit low-income groups. This would help reduce the Gini coefficient, narrow income disparities, and enhance social cohesion necessary for sustainable growth.

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