Nexus between Population Growth and Poverty Incidence in Nigeria (1990-2025)

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ABSTRACT

Persistently high poverty levels, driven by inflation, weak labour market performance, regional inequalities, and limited social safety nets, revealed a widening gap between economic growth and societal welfare in Nigeria. Specifically, the research evaluated the effects of fertility rate, birth rate, population growth rate, income inequality, and per capita income on poverty levels. Employing a long-run econometric model, the analysis revealed that approximately 81.5% of the variations in Nigeria's poverty rate are jointly explained by population growth rate, fertility rate and birth rate as indicated by an R-square value of 0.815. The overall significance of the model was confirmed by an F-statistic of 1.144 and a probability value of 0.000, while the Durbin-Watson statistic of 1.80 indicated the absence of serial correlation in the residuals. The findings showed that the fertility rate has a statistically significant negative effect on poverty, suggesting that under specific socio-economic contexts, higher fertility may be associated with informal labour contributions and social safety structures that reduce household poverty. Conversely, birth rate exerted a positive and significant impact on poverty, aligning with the conventional view that high birth rates increase dependency burdens and strain limited resources. Population growth rate, although only marginally significant, also showed a negative relationship with poverty, hinting at its potential to reduce poverty if effectively harnessed through inclusive development policies. Meanwhile, income inequality and per capita income both revealed statistically insignificant effects on poverty in the long run, suggesting that structural and demographic factors may have more pronounced influence than aggregate income levels. These results underscored the complex and sometimes counter - intuitive nature of demographic - economic interactions in Nigeria. Thus, the paper recommended that poverty alleviation strategies incorporate demographic planning, equitable distribution of resources, and targeted social interventions to effectively address the root causes of poverty in Nigeria.

Keywords: Birth rate, Fertility rate, Income inequality, Population growth and poverty.

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INTRODUCTION

Population growth and poverty have been subjects of extensive research and policy discussions worldwide. Globally, the relationship between population growth and poverty is complex and varies across regions, depending on factors such as economic structures, governance quality, and social policies (Todaro and Smith, 2020; World Bank, 2023). In some regions, rapid population growth strains public resources and contributes to persistent poverty, while in others, effective policies and economic development can mitigate these effects and even turn demographic changes into economic opportunities (UNDP, 2022).

In many parts of Sub-Saharan Africa (SSA), including Nigeria, high population growth rates have been linked to increased poverty incidence (World Bank, 2023). Nigeria, the most populous country in Africa, has witnessed a significant rise in population over the decades, with an estimated population of over 200 million

people and an annual growth rate of approximately 2.6% (World Bank, 2023). In 2025, Sub-Saharan Africa represented about 16% of the global population, yet it shouldered a disproportionately large burden of extreme poverty, with 67 % of the world's population living on less than USD 2.15 per day residing in the region, highlighting the long-aged inequalities in the regional distribution of welfare.

Further empirical evidence underscored the structural persistence of poverty in the region. Recent estimates indicated that nearly 50 % of SSA's population remained trapped below the extreme poverty line, although global poverty levels experienced a modest decline in 2025, the incidence and concentration of poverty in SSA are expected to remain disproportionately high compared with other regions of the world (World Bank, 2025).

Despite Nigeria's position as Africa's largest economy, poverty incidence has worsened significantly in recent years, constituting a critical development concern. Nomor and Asue (2025) also indicated that over half of the Nigerian population lived in poverty, with estimates suggesting that about 139 million people, approximately 61 % of the population were poor by 2025, reflecting a substantial rise compared to the 2018/2019 period. This trend points to a disconnect between aggregate economic population growth and welfare outcomes in Nigeria.

Despite several decades of policy reforms and targeted interventions aimed at alleviating poverty, Nigeria continues to witness a troubling rise in poverty levels alongside increasing population trend. As Africa's most populous nation estimated to have exceeded 220 million people by 2025, Nigeria faced the dual burden of sustaining economic growth while managing her growing populations (World Bank, 2025).

Nigeria's demographic expansion has outpaced the growth of economic opportunities, placing tremendous strain on the already limited public resources and infrastructure. A high fertility rate of approximately 5.3 births per woman contributed to an annual population growth rate of around 2.6%, creating a large and youthful population that the economy is struggling to absorb into productive employment (National Bureau of Statistics, 2022). This has resulted in a disproportionately high dependency ratio, where fewer economically-active individuals responsible for supporting a growing non-working population, thus, worsening income inequality and perpetuating cycles of poverty.

The National Bureau of Statistics (2023) reported that over 63% of the population lived below the poverty line, a figure that underscores the urgent need for targeted and sustainable policies that address both demographic pressures and economic disparities.

More so, Nigeria currently has over 10 million out-of-school children, making it the country with the highest number of children not in formal education globally. This crisis is particularly acute in the northern regions, where entrenched poverty, cultural practices such as early marriage, gender discrimination, and persistent insecurity significantly hinder school attendance and completion rates (UNICEF, 2023). The exclusion of millions of children from the education system not only limits their individual potential but also undermines the country's broader prospects for human capital development and inclusive growth. Furthermore, low literacy rates and poor school enrolment affect workforce productivity and perpetuate cycles of poverty.

Given these critical concerns, it becomes essential to examine the nexus between population growth and poverty incidence in Nigeria. Without urgent strategic interventions to harmonize population management with inclusive economic growth, Nigeria risks facing heightened socio-economic instability in the years ahead.

Hence, this paper re-examined the population - poverty nexus, considering current economic realities in Nigeria. The specific objectives are to:

i. examine the effect of fertility rate on poverty incidence in Nigeria, assessing whether higher fertility levels are associated with increased poverty levels.

ii. evaluate the impact of birth rate and population growth rate on poverty levels in Nigeria, focusing on the demographic pressures that may hinder poverty alleviation efforts.

iii. analyse the influence of income inequality and per capita income on poverty incidence in Nigeria.

The following research questions were raised as research concerns:

i. To what extent does the fertility rate influence poverty incidence in Nigeria?

ii. How do the birth rate and population growth rate affect poverty levels in Nigeria?

iii. What are the effects of income inequality and per capita income on poverty incidence in Nigeria?

The following null hypotheses were tested in the course of this research:

H_{01}: Fertility rate has no significant effect on poverty incidence in Nigeria.

H_{02}: Birth rate and population growth rate have no significant impact on poverty levels in Nigeria.

H_{03}: Income inequality and per capita income have no significant effect on poverty outcome in Nigeria.

Consequently, empirical evidence on the relationship between population growth and poverty in Nigeria is inconclusive. While some studies documented adverse long-run effects, arguing that rapid population growth exerted pressure on limited resources, lowered per-capita income, and consequently deepens poverty (Onyeoma, 2020; Ochinyabo, 2021; Ogunjimi, 2022). Other researchers reported differing outcomes (Nabi, Shahid, Mubashir, Iqbal and Zaman, 2020; Akinyemi, Isuigo-Abambe, 2023; Adebayo and Okonkwo, 2024; Nomor and Asue, 2025). Thus, this paper revisited the population – poverty nexus in recent time in Nigeria.

Therefore, other sections of this paper are divided as follows: Section 2 covered the Literature review while Section 3 discussed the research methodology with reference to the data and data sources. Section 4 presented and discussed the research results while Section 5 provided the basis of conclusion on the debate and provided veritable recommendations and verifiable references to the work.

LITERATURE REVIEW

Theoretical Review

This section examined some relevant theories that discussed the nexus between population growth and poverty. It further presented some recent empirical findings on this discourse while highlighting the gaps and it reviewed the some of the estimation methods used by other researchers in the context of this research. Some of the economic theories on population- poverty nexus include, but not limited to: the Malthusian population theory; the Demographic Transition theory; the Endogenous Growth theory; and the Dependency theory. Thus, this paper is anchored on the Dependency theory as the investigation revealed.

Hence, the Dependency theory offered a critical view of the global economic system, arguing that the persistent poverty and underdevelopment experienced by countries in the global South are not solely the result of internal shortcomings, but largely due to the unequal and exploitative relationships between developed ("core") and developing ("peripheral") countries (Prebisch, 1962; Frank, 1967).

The Nigerian experience provided a compelling case study for Dependency Theory. Despite being rich in natural resources particularly crude oil Nigeria remains heavily dependent on the export of raw materials and the importation of refined products and consumer goods. This economic structure exposes the country to volatile global markets and terms-of-trade shocks, limiting its capacity to achieve long-term, self-sustained growth. According to the World Bank (2023), over 80% of Nigeria's export earnings come from oil, yet the country still imports refined petroleum products due to weak industrial capacity.

Dependency Theory thus helps explain why, despite decades of foreign aid, loans, and participation in global trade, Nigeria continued to struggle with widespread poverty and under-development. This theory advocated for a re-thinking of global economic relationships and called for more autonomous development strategies such as industrialization, economic diversification, and regional trade integration that can reduce dependence on external borrowings and empower domestic economies.

Empirical and Methodological Review

Adebayo and Okonkwo (2024) examined the long-term relationship between demographic trends and poverty outcomes within the Nigerian context. They utilized the Autoregressive Distributed Lag (ARDL) model, where their findings revealed that population growth exerted a positive and statistically significant effect on poverty incidence in the long run. This implies that as the population increases, the proportion of people living below the poverty line also rises.

Olaniyan and Bako (2023) explored the intricate linkages between fertility patterns and education outcomes within the context of human capital formation. While utilizing the structural equation modeling (SEM) to capture both direct and indirect relationships among variables such as fertility rate, school enrolment, literacy levels, and household poverty indicators, they asserted that high fertility rates are strongly and negatively correlated with school enrolment and literacy levels, particularly among children from low-income households. They further observed that larger household sizes, often led to resource dilution where limited family income and attention are stretched thin across multiple children. Hence, the paper posited that this resource strain reduced the likelihood of consistent school attendance and impaired educational attainment, thereby entrenching poverty cycles.

Furthermore, Ekong and Abubakar (2023) investigated the extent to which population dynamics contribute to income disparities and poverty across different regions in Nigeria. The researchers employed the Gini coefficient to measure income inequality and regressed the nexus between population growth and socio-economic outcomes at the sub-national level. They reported that states with higher rates of population growth particularly in Nigeria's northern regions tended to experience elevated levels of income inequality and poverty.

In another vein, Chukwu and Usman (2022) explored the dynamic relationship between Nigeria's growing population and its rising unemployment levels, using the Vector Error Correction Model (VECM) to analyze the effects of both the short-run and the long-run dynamics between the high population and high level of unemployment, wherein the results showed that increase in population growth consistently led to higher unemployment rates in Nigeria from 2000 to 2021 indicating that a persistent mis-match between labour supply and demand in the country, over the years. Also, Onah and Igbokwe (2021) demonstrated that unless population growth is strategically managed and matched with adequate infrastructure investment, poverty reduction efforts may remain ineffective. Their findings re-inforced the call for integrated development planning that addresses both demographic trends and structural deficiencies in public service delivery.

Okafor and Mohammed (2020) re-visited the longstanding debate on whether rapid population expansion aids or hinders economic development and applied Granger causality tests and co-integration techniques to examine the dynamic long-run relationships between population growth and poverty levels in Nigeria. Their findings revealed a unidirectional causality flowing from population growth to poverty, implying that rising population rates are a driving factor behind the persistence of poverty in Nigeria, rather than the other way around.

Udo and Lawal (2020) also explored how rising population levels impacted the various components of human development in Nigeria by employing a multi-variate regression between population growth indicators and adult literacy rate, life expectancy, and per capita income from 1990 to 2018. Their findings revealed that rapid population growth significantly constrained progress in all three HDI dimensions. In the education sector, growing population numbers led to increased pressure on already limited school infrastructure, resulting in overcrowded classrooms and reduced quality of learning. Similarly, life expectancy was negatively affected due to the strain placed on healthcare systems, where rising demand outpaced the capacity of available facilities and personnel. Furthermore, income per capita declined in relative terms as the population expanded without corresponding increases in economic productivity and job creation.

Gaps in the Literature

Although a number of empirical studies have examined the relationship between population growth and poverty in Nigeria, significant gaps still remain in the literature. One major gap is the inadequate focus on recent population dynamics. More so, many of these studies relied on outdated datasets and fail to incorporate the current demographic realities, such as the population slum during the COVID 19 era, the economic recession of 2016, 2021 and the consequent increase in the dependency ratio in Nigeria. Hence, the need to re-visit the debate on the population- poverty nexus.

RESEARCH METHODOLOGY

Model Specification

The Estimation Model is created thus:

PR = f (FR, BR, INEQ, PGR, PCI) ----------3.1

PRt = β0 + β1FRt + β2BRt + β3INEQt + β4PGRt + β5PCIt + μt----------3.2

Where; PR = Poverty Rate; FR = Fertility Rate; BR = Birth Rate; INEQ = Inequality; PGR = Population Growth Rate; PCI = Per Capital Income; c = error term.

To stabilize variance and allow coefficient interpretation as elasticities, the model is log-linearized as:

$$\ln PR_t = \beta_0 + \beta_1 \ln FR_t + \beta_2 \ln BR_t + \beta_3 \ln INEQ_t + \beta_4 \ln PGR_t + \beta_5 \ln PCI_t + \mu_t \ldots. 3.3$$

lnPRt = β0 + β1 lnFRt + β2 lnBRt + β3 lnINEQt + β4 lnPGRt + β5 lnPCIt + μt ------3.4

Thus, the general ARDL $(p, q_1, q_2, q_3, q_4, q_5)$model was specified as:

$$\begin{aligned}\Delta \ln PR_t = \alpha_0 &+ \sum_{i=1}^{p} \alpha_1 \Delta \ln PR_{t-i} + \sum_{i=0}^{q_1} \alpha_2 \Delta \ln FR_{t-i} + \sum_{i=0}^{q_2} \alpha_3 \Delta \ln BR_{t-i} + \sum_{i=0}^{q_3} \alpha_4 \Delta \ln INEQ_{t-i} \\ &+ \sum_{i=0}^{q_4} \alpha_5 \Delta \ln PGR_{t-i} + \sum_{i=0}^{q_5} \alpha_6 \Delta \ln PCI_{t-i} + \lambda_1 \ln PR_{t-1} + \lambda_2 \ln FR_{t-1} + \lambda_3 \ln BR_{t-1} \\ &+ \lambda_4 \ln INEQ_{t-1} + \lambda_5 \ln PGR_{t-1} + \lambda_6 \ln PCI_{t-1} + \varepsilon_t\end{aligned}$$

A Priori Expectations

Based on economic theory and empirical literature, the expected signs of the coefficients are:

Variable	Expected Sign	Justification
Fertility Rate (FR)	$\beta_1 > 0$	Higher fertility increases dependency burden and poverty risk
Birth Rate (BR)	$\beta_2 > 0$	Rising births strain household and public resources
Income Inequality (INEQ)	$\beta_3 > 0$	Greater inequality worsens poverty incidence
Population Growth Rate (PGR)	$\beta_4 > 0$	Rapid population growth may outpace economic growth
Per Capita Income (PCI)	$\beta_5 < 0$	Higher income per person reduces poverty

Method of Data Analysis

Summary of Data and Data Sources

Variable	Symbol	Definition / Measurement	Source
Poverty Incidence	POV	Percentage of the population living below the poverty line	World Bank, NBS
Fertility Rate	FR	Average number of children born to a woman over her lifetime	World Bank, UNDP
Birth Rate	BR	Number of live births per 1,000 people per year	World Bank, UN Population Division
Inequality	INEQ	Measured using the Gini Coefficient(0=perfect equality,1=perfect inequality)	World Bank, UNDP
Population Growth Rate	PGR	Annual percentage increase in the population	World Bank, UNDESA
Per Capita Income	PCI	Gross National Income (GNI) per capita (in constant US dollars)	World Bank

Presentation and Analysis of Results

Descriptive Statistics

The data used for this study include Poverty Rate (PR), Fertility Rate (FR), Inequality (GC), Birth Rate (BR), Population Growth Rate (PGR) and Per Capita Income (PCI). PR, FR, INEQ, BR, PGR and PCI were available from 1990 till 2023.

Table 1.2: Summary Statistics of the Variables

	PR	FR	BR	PGR	GC	PCI
Mean	43.4196	5.9407	5.82418	1.88098	28.4484	1632.967
Median	43.4779	6.078	6.053	2.52152	28.0008	1871.756
Maximum	87.7283	6.459	6.459	2.68091	40.2184	3200.953
Minimum	4.50324	5.143	4.552	0	23.4878	494.1292
Std. Dev.	26.9634	0.36045	0.54539	1.17135	3.51267	812.5669
Skewness	0.12038	-0.6832	-1.1113	-1.0112	1.19153	-0.01519
Kurtosis	1.70316	2.44247	3.05438	2.03651	5.08122	1.833415
Jarque-Bera	2.39215	2.99461	6.79603	6.90087	13.7644	1.872537
Probability	0.30238	0.22373	0.03344	0.03173	0.00103	0.392088
Sum	1432.85	196.043	192.198	62.0722	938.797	53887.93

Sum Sq. Dev.	23264.7	4.15748	9.51824	43.9062	394.844	21128481
Observations	33	33	33	33	33	33

Source: Author Computation 2025

The average poverty rate (mean) was 43.42%, with a median of 43.48%, indicating that the data was relatively symmetrical and that extreme values do not heavily skew the average. The maximum poverty rate recorded was quite high at 87.73%, while the minimum was significantly low at 4.50%, thereby revealed a wide disparity in poverty levels across the observed data points. The standard deviation of 26.96 reflected high variability, suggesting that poverty rates differ greatly across the dataset. Skewness was slightly positive (0.12), implying a minor right-skewness, while the kurtosis value of 1.70 indicated a relatively flat distribution (platykurtic). The Jarque Bera test statistic (2.39) with a p-value of 0.30 suggested that the poverty was reported to be normally distributed, as we rejected the null hypothesis of non- normality. The mean fertility rate was 5.94, with a median of 6.08, which suggested the presence of a few low fertility values pulling the average fertility rate down. The maximum fertility rate was 6.46, and the minimum was 5.14, indicating a narrow range and less variation across the sample. This was supported by a low standard deviation of 0.36. The skewness of -0.68 suggested a moderate left skew, meaning the distribution has a longer tail on the left side. The kurtosis value of 2.44 indicated a distribution that was slightly flatter than normal. The p-value from the Jarque-Bera test (0.22) indicated no significant deviation from normality. The average birth rate stood at 5.82, slightly lower than the median of 6.05, indicating left-skewed distribution (skewness = -1.11), with more values concentrated on the higher end and some lower outliers. The minimum and maximum values (4.55 and 6.46, respectively) reflected a relatively narrow range, but the standard deviation of 0.55 showed moderate variability. The kurtosis was 3.05, which was close to the normal distribution. However, the Jarque-Bera statistic of 6.80 and its p-value of 0.033 suggested that the birth rate distribution significantly deviated from normality. The population growth rate has a mean of 1.88%, while the median was slightly higher at 2.52%, pointing to a negatively skewed distribution (skewness = -1.01), with several observations clustered at higher values and a few extreme low values, including the minimum of 0%. The standard deviation of 1.17 indicated a relatively high variation in growth rates across the sample. Kurtosis was 2.04, suggesting a relatively flat distribution. The Jarque-Bera test yielded a statistic of 6.90 and a p-value of 0.0317, implying the distribution of PGR is not normal. Inequality, measured by Gini coefficient, showed a fairly symmetrical distribution at first glance. However, the standard deviation of 3.51 indicated noticeable variability. The skewness was 1.19 revealed strong right-skewness, with a few high values like the maximum of 40.22 dragging the distribution to the right. The kurtosis was 5.08, which was significantly higher than 3, indicating a leptokurtic distribution that is, it has heavier tails and a sharper peak than a normal distribution. The Jarque-Bera test result (13.76) and a p-value of 0.001 confirmed that the inequality data significantly deviated from normality. Per capita income showed an average of ₦1,632.97, while the median was higher at ₦1,871.76, suggesting that lower-income observations are pulling down the mean. The income distribution ranged widely from a minimum of ₦494.13 to a maximum of ₦3,200.95, with a large standard deviation of ₦812.57, indicating substantial income inequality among the observations. The skewness was 0.015, essentially symmetrical, and the kurtosis was 1.83, which is flatter than the normal distribution. Furthermore, the Jarque-Bera statistic was 1.87 with a p-value of 0.39, suggesting that PCI is approximately normally distributed.

Overall, the descriptive statistics revealed significant variations across all variables, particularly in poverty rate and per capita income, which exhibited wider ranges and high standard deviations. Inequality is heavily right-skewed and leptokurtic, indicating the presence of outliers or extreme values. Variables such as population growth rate and birth rate are negatively skewed, suggesting concentrations at the higher end of their value ranges. Notably, only a few variables (PR, FR, PCI) meet the assumption of normal distribution based on the Jarque-Bera test. These results have important implications for further statistical modeling for example, the presence of non-normality in key variables like inequality and birth rate might necessitate data transformation or robust estimation techniques in regression analysis.

Unit Root Test

The study deployed Augmented Dickey-Fuller (ADF) test to examine the stationarity of the time series and test the null hypothesis of unit root. It is expected that the series do not contain unit root in order to find relationship among the variables in the long run. The test is carried out at level, and first difference using 5% Mackinnon Critical value. The variables of Poverty Rate (PR), Fertility Rate (FR), Inequality (GC), Birth Rate (BR), Population Growth Rate (PGR) and Per Capita Income (PCI) were tested. The levels of statistics of the tests are reported in table 4.2. ADF reported that only two of the variables are stationary while the remaining variables ae not stationary at level.

We then tested the series at first differences as also presented in table 4.2. At 1%, and 5% Mackinnon Critical value, ADF test reported all the variables stationary at this first difference.

This finding implies that the series contains no unit root; hence, their seasonal variation has been corrected for, making them fit for regression. These are illustrated in the table below.

Table 4.2 Unit Root Test Result

Variable	**Method**	**ADF at level**	**ADF at level critical value (5%)**	**ADF at first difference**	**ADF at First difference critical value (5%)**	**Order of integration**
PR	ADF	-3.653730 (0.0003)	-2.957110	-3.661661 (0.0000)	-2.960411	I (1)
FR	ADF	-3.670170 (0.9996)	-2.963972	-3.670170 (0.0000)	-2.963972	I (1)
BR	ADF	-3.661661 (0.9736)	-2.960411	-3.661661 (0.0004)	-2.963972	I (1)
PGR	ADF	-3.653730 (0.4630)	-2.957110	-3.661661 (0.0001)	-2.960411	I (1)
GC	ADF	-3.653730 (0.0001)	-2.957110	-3.670170 (0.0000)	-2.963972	I (1)
PCI	ADF	-3.653730 (0.5086)	-2.957110	-3.661661 (0.0008)	-2.960411	I (1)

Source: Author Computation 2025

Co-Integration Test

Table 4.3: Johansen Co-Integration Test

Hypothesized	Trace	0.05	Critical Value
No. of CE(s)	Eigenvalue	Statistic	Prob.**

None *	0.831780	108.8718	95.75366	0.0046
At most 1	0.524086	53.61479	69.81889	0.4783
At most 2	0.423932	30.59674	47.85613	0.6880
At most 3	0.255153	13.49930	29.79707	0.8675
At most 4	0.131193	4.367415	15.49471	0.8717
At most 5	0.000251	0.007767	3.841466	0.9293

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

In table 4.3, the result showed that at 5% and 1% critical values, one (1) co-integrating vector exist among the explanatory variables. By this finding we cannot accept the null hypothesis of no co-integration among the time series. Hence, the variables are interrelated with each other in the long run that is, they could move together on the long run growth path, and their existing relationships are not spurious.

Summary of the Regression Result

In this section, we presented the regression result according to our model specified. The results obtained are in the tables below:

Table 4.5: Long run Analysis Autoregressive Distributed Lag Model Estimate Dependent Variable: PR

Variables	Coefficient	t- Statistic	Prob
FR	-322.2443	-2.199063	0.0373
BR	210.8265	2.263930	0.0325
PGR	-12.87279	-1.917670	0.0666
GC	-1.247949	-0.890252	0.3818
PCI	-0.001640	-0.163014	0.8718

R-squared	0.815444	Mean dependent var	44.58823
Adjusted R-squared	0.027151	S.D. dependent var	26.53213
S.E. of regression	26.16947	Akaike info criterion	9.557704
Sum squared resid	17121.03	Schwarz criterion	9.878334
Log likelihood	-145.9233	Hannan-Quinn criter.	9.663984
F-statistic	1.144193	Durbin-Watson stat	1.805193
Prob(F-statistic)	0.000045		

Source: Authors' Computation 2025

DISCUSSION OF FINDINGS

Long Run Estimate (Table 4.5)

The long-run estimation results presented in Table 4.5 indicated that the model has a strong explanatory power, with an R-squared value of 0.815, suggesting that approximately 81.5% of the variations in the poverty rate are explained by the independent variables included in the model.

Furthermore, the F-statistic of 1.144193, accompanied by a probability value of 0.000, also confirmed the overall statistical significance of the model. This implied that, collectively, the explanatory variables have a meaningful impact on the poverty rate. Additionally, the Durbin-Watson (D.W.) statistic of 1.80, which was close to the benchmark value of 2, suggested the absence of serial correlation in the model's residuals, thereby affirming the reliability of the regression estimates.

With regard to individual variables, the fertility rate (FR) exhibited a statistically significant negative effect on poverty at the 5% significance level. Specifically, a one-unit increase in fertility rate was associated with a 322.24-unit decline in the poverty rate. While this finding may appear counter-intuitive, it may be interpreted in the context of socio-economic factors such as family-based labour contributions in informal sectors or cultural support structures associated with larger family sizes, which may mitigate poverty.

In contrast, the birth rate (BR) had a positive and statistically significant effect on poverty at the 5% level. A one-unit increase in birth rate was estimated to raise the poverty rate by approximately 210.83 units. This aligned with conventional economic theory, where higher birth rates can lead to increased dependency ratios, strain on household resources, and heightened demand for limited social services, all of which exacerbate poverty conditions (Onyeoma, 2020; Ochinyabo, 2021; Ogunjimi, 2022).

The population growth rate (PGR) also showed a negative relationship with poverty, with a coefficient of -12.87. Although only marginally significant at the 10% level, this suggested that population growth, when effectively managed and accompanied by job creation and inclusive development policies, could reduce poverty through increased labour force participation and economic productivity.

On the other hand, the coefficient for inequality (GC) was negative and statistically insignificant, indicating that changes in inequality do not have a reliable long-term effect on poverty within the scope of this model. Although inequality is generally seen as a driver of poverty, the result suggested that other structural factors may play a more dominant role in explaining poverty trends in this context.

Similarly, per capita income (PCI) had an insignificant and negligible negative effect on poverty. The near-zero coefficient and high p-value indicate that increases in average income alone, without addressing issues related to income distribution, access to opportunities, and demographic pressures, do not significantly influence long-term poverty reduction.

Comparison of Results with previous Findings

The findings of this study offer both convergence and divergence with prior empirical literature on poverty determinants, particularly within the Nigerian. The significant negative relationship between fertility rate and poverty rate contrasts with conventional wisdom and several earlier studies, which often suggest that high fertility exacerbates poverty by increasing household dependency ratios and reducing per capita resource allocation. For example, Aigbokhan (2020) and Okojie and Ojo (2019) found that elevated fertility levels tend to intensify poverty, especially among low-income households. However, the current result aligns with Ogunleye and Adepoju (2023), who argue that in rural or low-income communities, children often contribute economically through informal labor, helping to offset poverty in the long run. This reinforces the need for a contextual understanding of fertility within socio-economic and cultural frameworks.

Conversely, the positive and significant effect of birth rate on poverty is consistent with prior studies such as Adewale and Yusuf (2022), who found that rising birth rates impose additional burdens on household welfare

and public infrastructure, ultimately exacerbating poverty levels. The present study thus reinforces the notion that high birth rates, especially in the absence of corresponding investments in healthcare, education, and employment, can have deleterious effects on poverty reduction efforts.

From an economic perspective in present-day Nigeria, these findings carry important implications. Nigeria's population, currently estimated at over 220 million and still growing rapidly, presents a double-edged sword for poverty alleviation. On one hand, in rural economies and informal sectors, larger household sizes and fertility may provide extra hands for subsistence farming, petty trade, and informal labour, which could cushion poverty in the short term. On the other hand, the persistently high birth rates strain limited economic resources, deepen unemployment challenges, and overwhelm public services such as schools, hospitals, and housing infrastructure. This imbalance worsens income inequality and perpetuates intergenerational poverty traps. In urban areas especially, where opportunities for child labor are limited and the cost of living is high, rising birth rates tend to intensify economic hardship rather than alleviate it. Therefore, while fertility may offer marginal benefits in rural contexts, the broader macroeconomic effect of high population growth in Nigeria today is largely negative, as it undermines efforts to achieve sustainable poverty reduction and economic development.

CONCLUSION AND RECOMMENDATIONS

Conclusion

i. Fertility Rate (FR) was found to have a statistically significant negative impact on the poverty rate in the long run. Specifically, an increase in fertility rate led to a reduction in poverty, which, while counterintuitive, may be attributed to the socio-cultural and economic roles children play in low-income households in Nigeria. This finding suggests that larger families might be perceived as economic support systems in rural and informal settings.

ii. Birth Rate (BR) exhibited a positive and statistically significant relationship with poverty. A higher birth rate increases the proportion of dependents within households, leading to more strain on household income and public infrastructure. This finding aligns with the traditional argument that uncontrolled birth rates contribute to worsening poverty levels, especially in the absence of sufficient economic opportunities and social services.

iii. Population Growth Rate (PGR) showed a negative relationship with poverty, although the effect was only marginally significant. This suggests that population growth, when coupled with proper investments in education, healthcare, and employment opportunities, has the potential to reduce poverty through a productive labor force. However, without these supports, the demographic pressure could yield the opposite effect.

iv. Inequality (GC), as measured in the model, was found to have no statistically significant impact on poverty in the long run. While previous studies often emphasize the strong link between inequality and poverty, this result implies that, within the Nigerian context, other factors such as unemployment, inflation, or regional disparities may have a more dominant influence.

v. Per Capita Income (PCI) also had an insignificant effect on the poverty rate, indicating that increases in average income levels do not automatically translate into poverty reduction unless accompanied by equitable wealth distribution and targeted social interventions.

Recommendations

Based on the findings of this study, the following recommendations are proposed to effectively address poverty in Nigeria through population management and the reduction of inequality:

i. Given the significant impact of birth and fertility rates on poverty, the government should strengthen efforts to manage population growth through the promotion of family planning

programs, reproductive health education, and access to contraceptives, especially in rural and underserved areas. Emphasis should be placed on sensitizing communities about the socio-economic consequences of high birth rates and the benefits of smaller, planned families.

ii. To harness the potential benefits of population growth, the government should invest heavily in education, healthcare, and vocational training. A growing population can become an asset only when it is healthy, well-educated, and productively engaged. Empowering the youth with skills and education will enhance their employability and reduce poverty levels over time.

iii. Although income inequality was not statistically significant in this model, its potential indirect effects on poverty cannot be ignored. Government and development partners should implement region-specific programs that promote equitable access to resources, infrastructure, and public services. Special attention should be paid to marginalized communities in the North-East, North-West, and other regions with high poverty prevalence.

iv. Policies aimed at increasing per capita income must also be inclusive. Economic growth should be pro-poor, ensuring that the benefits of national development reach the most vulnerable populations. This includes supporting micro, small, and medium-sized enterprises (MSMEs), particularly those led by women and youth, and expanding social safety nets to protect low-income households.

v. Accurate and up-to-date data on demographic indicators and poverty levels are crucial for effective planning and policy-making. The government should support agencies like the National Bureau of Statistics (NBS) in conducting regular, nationwide surveys to monitor changes in population dynamics, income distribution, and poverty indices.

vi. Expanding social intervention schemes such as conditional cash transfers, school feeding programs, and public works employment can provide immediate relief to the poor while also addressing structural poverty. These programs should be transparently managed, properly targeted, and regularly evaluated for effectiveness.

vii. Rapid population growth often leads to urban congestion, slums, and pressure on infrastructure. Urban and regional planning must incorporate poverty reduction goals by ensuring affordable housing, improved transportation systems, and access to basic amenities in growing cities and peri-urban areas.

viii. Local governments and civil society organizations should play a more active role in educating citizens on the links between family size, inequality, and poverty. Grassroots campaigns, town hall meetings, and community-driven development models can help foster local ownership of poverty reduction strategies.

Suggestion for Further Studies

While this study has provided valuable insights into the long-run impact of population growth on poverty incidence in Nigeria, there remain several important areas that future researchers may explore to deepen understanding and broaden the policy relevance of these issues. Future studies should consider disaggregating data at the state or regional level to account for geographical disparities in poverty, population growth, and inequality. Nigeria is a diverse country, and factors affecting poverty may differ significantly between the North and South or between rural and urban areas. Subsequent research could focus on how gender inequality and youth population dynamics as it influences poverty trends in Sub-Saharan Africa.

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