THE PARADOX OF JOBLESS GROWTH AND HUMAN CAPITAL: A CAUSAL AND STRUCTURAL ANALYSIS OF NIGERIA'S ECONOMIC DEVELOPMENT PATH (1980–2024)

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ABSTRACT: This study investigates the paradox of jobless growth and diminishing returns to human capital in Nigeria between 1980 and 2024. Despite sustained GDP growth and significant public investment in education and health, Nigeria continues to experience high unemployment, low labour productivity, and weak human development outcomes. These trends challenge established human capital and endogenous growth theories. Employing an Autoregressive Distributed Lag (ARDL) model with time-series data, the analysis reveals a positive relationship between unemployment and economic growth, thereby empirically confirming the jobless growth phenomenon. Although short-term human capital expenditures yield positive effects, their long-term impacts are negligible or negative, suggesting systemic inefficiencies and pronounced skills mismatches. The study argues that these outcomes stem not from inadequate investment, but from structural factors embedded in Nigeria's rentier-state political economy. In this context, oil revenues disrupt the fiscal relationship between the state and citizens, distort economic incentives, and sustain enclave-driven, capital-intensive growth that generates limited employment. The findings underscore the need for comprehensive structural reforms and for adopting strategic, quality-focused human capital policies to address jobless growth and foster inclusive development.

Keywords: Jobless Growth, Human Capital, Rentier State, Structural Analysis, Nigeria

INTRODUCTION

Since 1980, Nigeria's economic trajectory has exhibited a persistent paradox: sustained economic growth has not resulted in increased employment, higher labour productivity, or improved human development outcomes. This phenomenon, referred to as jobless growth, directly challenges the central premise of orthodox human capital theory, which asserts that investments in education, health, and skills development are fundamental drivers of productivity growth, innovation, and inclusive development (Becker, 1964; Lucas, 1988).

Despite multiple periods of GDP expansion, particularly between 2000 and 2023 when annual growth averaged 4–6 percent, Nigeria has witnessed rising unemployment, worsening underemployment, and an expanding informal labour market (NBS, 2022a). By the end of 2023,

the labour underutilisation rate—a comprehensive indicator of labour market slack—reached 13.0% in Q4 2023 (NBS, 2024a), indicating a notably weak employment elasticity of growth. For example, during a 5 percent increase in GDP in 2010, job growth in the oil and gas sector remained below 1 percent, further illustrating this disconnect. Simultaneously, labour productivity has remained low, with the majority of workers engaged in low-productivity informal activities rather than high-value, growth-oriented sectors (ILO, 2024; World Bank, 2023).

This disconnect has persisted despite substantial nominal increases in human capital investment. Nigeria has implemented initiatives such as the Tertiary Education Trust Fund (TETFund) to improve university infrastructure and research capacity. However, TETFund's efforts to enhance higher education quality have produced limited productivity gains, as evidenced by modest graduation rates and persistent skills mismatches in the labour market (UNDP, 2024). These investments have not facilitated structural transformation or generated employment-intensive growth. The simultaneous trends of economic growth, rising unemployment, and weak returns to human capital investment challenge the relevance of conventional development models in resource-dependent economies.

This study contends that the inability of human capital to drive inclusive growth in Nigeria stems not from insufficient investment but from the country's rentier-state political economy. In this context, state revenues are primarily sourced from unearned oil rents rather than taxation of a productive citizenry, thereby severing the social contract that links economic productivity to state accountability (Beblawi, 1987; Auty, 1993). The reliance on oil revenues reduces the fiscal imperative for a diversified, productive economy. As a result, these revenues are often allocated to politically motivated patronage rather than strategic economic investments. Consequently, human capital spending becomes politically distributive rather than economically strategic, and growth remains concentrated in capital-intensive, enclave sectors with minimal labour absorption.

Within this context, the present study undertakes a causal and structural analysis of Nigeria's development trajectory from 1980 to 2024. It integrates econometric evidence with rentier state theory to elucidate the persistent phenomenon of jobless growth and the declining developmental returns on human capital investments.

Background and Context of the Study

The roots of Nigeria's contemporary development paradox can be traced to its transformation into a classic rentier state following the 1970s oil boom. In a rentier political economy, government revenues are derived predominantly from externally generated natural resource rents rather than from domestic taxation of a productive citizenry. This fiscal structure fundamentally reshapes state–society relations: the survival of the state becomes detached from its population's productive capacity, employment status, and welfare, thereby weakening incentives to invest in broad-based human capital development (Beblawi, 1987; Mohammed, 2021).

In Nigeria, oil revenues have enabled successive governments to finance public expenditure without developing a diversified productive base or a skilled labour force. Consequently, economic growth has been concentrated in capital-intensive, enclave sectors, particularly oil and gas, which generate minimal employment linkages and limited spillovers to the broader economy. Manufacturing, agro-processing, and other labour-absorbing sectors remain underdeveloped, while import dependence has increased. This structural configuration accounts for the coexistence of high GDP figures and significant labour-market fragility. The vast majority of Nigeria's workforce is engaged in informal, low-productivity, 'survivalist' employment. As of Q4 2023, an estimated 92.3% of the employed workforce was in the informal sector (NBS, 2024a), highlighting the weak employment elasticity of economic growth and the prevalence of vulnerable work. The example of a 'street-vendor university graduate'—a young individual with a degree but no opportunities in the formal sector, compelled to earn a living through informal trading—illustrates the human cost underlying these statistics and underscores the economic challenges faced by many Nigerians.

Alongside the pattern of jobless growth, a persistent paradox exists in human capital investment. Standard human capital theory posits that sustained investment in education and health should enhance labour productivity, increase incomes, and foster inclusive growth (Becker, 1964; Schultz, 1961). However, in Nigeria's rentier context, the returns on these investments have remained weak. Public health spending has consistently fallen short of population needs, resulting in stagnating life expectancy and poor workforce health outcomes (World Health Organization, 2025). Despite decades of oil revenues, Nigeria's current health expenditure was 4.08% of GDP in 2021 (World Bank, 2023b), and life expectancy at birth was estimated at 55.4 years in 2021 (World Bank, 2023c).

Low life expectancy is directly linked to reduced labour productivity, as inadequate healthcare leads to higher morbidity rates and increased lost workdays per capita. The prevalence of health-related lost workdays underscores the urgency of health-sector reform. Strengthening the health sector is therefore both a social imperative and an economic strategy to enhance productivity and promote inclusive growth. Despite its prominence in national development plans, the education-employment nexus remains severely fractured. Graduates frequently lack the skills required by a modern, competitive economy, resulting in widespread skills mismatch, graduate unemployment, and an increasing incidence of brain drain as skilled Nigerians seek opportunities abroad (World Bank Group, 2025). This outcome indicates that human capital expenditures are often shaped more by political considerations—such as patronage, elite capture, and distributive optics—than by coherent strategies aimed at productivity enhancement and labour-market absorption. The absence of knowledge-intensive clusters and high-tech small and medium-sized enterprises (SMEs) in Nigeria further exacerbates this issue, undermining potential innovation and technological advancement. This lack of a dynamic innovation ecosystem explains why many graduates' skills remain underutilized and why growth in high-tech sectors has stalled. In the absence of a robust formal sector capable of absorbing skilled labour, investments in education and health fail to generate the virtuous cycle anticipated by orthodox growth models.

The divergence between aggregate economic growth and measurable improvements in human welfare is illustrated in Table 1, which highlights the widening gap between Nigeria's macroeconomic indicators and its labour market and human development outcomes during the study period.

Table 1: The Divergence of Macroeconomic Growth and Human Development in Nigeria (Key Indicators, 1990–2024)

GDP Scale	Relatively small economic base	₦372.8 trillion (2024 nominal) (Olatunji, 2025)	A large and growing economy coexists with widespread poverty and informal survivalism.
Labour Market Structure	Mixed formal and informal sectors	93% informal employment (Ekugo, 2025)	Economic growth does not translate into the creation of formal, productive jobs.
National Wealth per Person	$2,017 (1990, PPP)	$6,207 (2023, PPP) (United Nations, 2025)	Modest per-capita income gains mask extreme inequality and concentration of resource wealth.
Population Health	Poor baseline health indicators	Life expectancy: 54.8 years (World Economics, 2025)	Health outcomes remain critically weak despite decades of potential resource-financed investment.

This background establishes the study's central argument: Nigeria's rentier-state structure creates a self-reinforcing human capital trap. In this context, enclave-led, resource-driven growth generates weak demand for skilled labour, thereby reducing the economic returns on public investment in education and health. Governance failures associated with abundant oil revenues further undermine these investments, resulting in limited productivity and employment gains and perpetuating jobless growth. By applying rentier state theory to the analysis of human capital effectiveness, this study moves beyond conventional growth models to explain the persistent limitations of human capital theory in resource-dependent economies. The principal policy implication is that, without comprehensive structural transformation and economic diversification to generate substantive labour demand, traditional human capital investments will continue to yield diminishing developmental returns in Nigeria.

Problem Statement

Despite decades of economic growth and substantial public investment in education and health, Nigeria continues to experience persistent unemployment, low labour productivity, and weak human development outcomes. Conventional human capital theory predicts that such investments should enhance productivity and generate inclusive growth; however, Nigeria's empirical reality contradicts this expectation (Becker, 1964; Lucas, 1988).

Existing studies on Nigeria's growth performance often focus on aggregate GDP trends without adequately interrogating the employment content of growth or the structural conditions governing

human capital effectiveness. As a result, the coexistence of rising GDP, increasing unemployment, and stagnant productivity remains insufficiently explained in the literature (Ajakaiye & Fakiyesi, 2009; International Labour Organization, 2024).

Moreover, policy prescriptions have largely emphasised increased spending on education and health as a panacea for unemployment and underdevelopment, despite mounting evidence that such investments yield limited returns in the absence of structural transformation. This has led to a cycle of policy repetition without meaningful developmental outcomes.

The core problem, therefore, lies in the failure to account for the political-economy context within which human capital investments operate. Nigeria's rentier-state structure fundamentally weakens the linkages between growth, employment, and productivity, yet this dimension remains underexplored in empirical human capital studies. Without addressing this gap, development strategies risk perpetuating jobless growth and ineffective social spending.

Nigeria's economic narrative presents a critical paradox: significant GDP growth has not translated into commensurate job creation or inclusive development. Despite periods of expansion driven by oil revenues, unemployment and underemployment remain persistently high, particularly among the youth (World Bank, 2023). This phenomenon of "jobless growth" raises fundamental questions about the structure of the economy and the efficacy of human capital investments. Concurrently, substantial investments in education and health have yielded disappointing long-term economic returns, with issues of quality, relevance, and skills mismatch undermining potential gains (UNDP, 2022). This study, therefore, analyzes the causal and structural linkages between human capital development and Nigeria's economic trajectory from 1980 to 2024. It seeks to answer the following research questions:

1. What is the impact of government expenditure on health on economic development in Nigeria?
2. What effect does government expenditure on education have on economic development in Nigeria?
3. What is the direction of the relationship between the unemployment rate and economic development in Nigeria?

The objective is to identify the factors underlying the lack of employment-intensive economic growth and to determine how strategic human capital policies can promote a more sustainable and inclusive development trajectory.

The Conceptual Framework

This study conceptualizes Nigeria's development paradox as a structural outcome of the rentier-state political economy, which systematically undermines the mechanisms linking economic growth to employment and human development. The phenomenon of jobless growth, defined as sustained output expansion without proportional employment creation, challenges orthodox growth theories that assume a stable, positive relationship between GDP growth and labour absorption. In contrast, 'growth-less jobs' refer to employment increases without corresponding economic or

productivity growth, which is not the prevailing issue in Nigeria's economic context. The framework below depicts the self-reinforcing 'Rentier-State Human Capital Trap,' within which orthodox growth theories become ineffective.

The conceptual framework comprises three main pillars:

Pillar 1: The Growth-Employment Disconnect (Structural Jobless Growth)

Nigeria's economic expansion is driven by enclave-led growth in capital-intensive sectors, particularly oil and gas (World Bank Group, 2025). This model demonstrates a persistently weak employment elasticity of growth (Kumar & Chandel, 2024). The oil sector, while dominating exports and government revenue, generates minimal forward and backward linkages to the domestic economy and employs less than 1% of the labour force. Each 1% increase in GDP results in only a 0.05% increase in employment, underscoring the pronounced disconnect between economic growth and job creation. As a result, labour absorption is concentrated in the informal sector, which accounts for an estimated 92.3% of employment as of Q4 2023 (NBS, 2024a). Workers in this extensive informal economy experience low productivity and income insecurity, perpetuating a cycle of working poverty despite aggregate economic growth.

Pillar 2- The Political Economy Trap

Rentier state theory explains the political roots of this economic structure. When the state finances itself via external resource rents rather than domestic taxation, the fundamental social contract is broken (Beblawi, 1987; Mahdavy, 1970). The state has no fiscal imperative to cultivate a productive, tax-paying citizenry, severing the link between public accountability and economic performance (Mohammed, 2021). This lack of a taxation framework leads to weak citizen oversight, widening the accountability gap. This fiscal disarticulation manifests in human capital spending that serves short-term political patronage over long-term strategic investment. Nigeria's history is replete with failed diversification plans that illustrate this. For instance, the Vision 20:2020 strategy explicitly aimed to wean the economy off oil, build infrastructure, and create jobs. Its failure due to inconsistent funding, weak implementation, and a lack of political will is a direct consequence of the rentier state's distorted incentives, leaving over 60% of the population in extreme poverty (Obasaju et al., 2024). Public health expenditure remains critically low at 4.08% of GDP (2021, World Bank, 2023b), directly correlating with poor health outcomes and a national life expectancy of 55.4 years (2021, World Bank, 2023c). Public health expenditure remains critically low at 4.08% of GDP, directly correlating with a stagnant national life expectancy of 54.8 years (World Health Organisation, 2025; World Economics, 2025)

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Pillar 3: The Human Capital Absorption Failure

The third pillar concerns the fractured link between investment in human capital and labour demand. Although Nigeria has expanded educational access, these investments are undermined by a severe skills mismatch and a formal sector unable to absorb skilled labour (World Bank Group, 2025). The economy, affected by Dutch disease—where oil revenues appreciate the currency and render non-oil exports uncompetitive—and inadequate infrastructure, is unable to utilize its growing skilled workforce (Mohammed, 2021). This situation directly contributes to the externalisation of human capital, or brain drain (Liu, 2023). Data substantiates this crisis:

- Over 100,000 Nigerian students are enrolled in universities abroad.
- The health sector is critically depleted, with a doctor-to-patient ratio of approximately 1:3,500—far worse than the WHO's recommended 1:600—as professionals migrate en masse to the UK, US, and elsewhere.
- This exodus represents a massive financial loss. A 2023 UNCTAD report estimated Africa's annual fiscal loss from skilled emigration at nearly USD 4 billion, a significant portion of which originates from Nigeria.

Collectively, these pillars form a self-reinforcing cycle: rentier growth fails to generate skilled employment; the rentier state lacks incentives for strategic human capital investment; and the resulting surplus of skills is exported, leading to persistently low domestic returns on education and an underdeveloped productive base (Ajakaiye et al., 2016; Pritchett, 2001).

Theoretical Framework: Why Orthodox Theories Fail in a Rentier Context

This study is grounded in, but critically contextualizes, Human Capital Theory (HCT) and Endogenous Growth Theory (EGT) within Nigeria's specific political economy. The central argument is that the predictive power of these theories relies on a functional state-market-social contract, which is disrupted by the rentier model.

The Failure of Human Capital Theory: Supply Without Demand

HCT posits that investment in education and health (proxied by GVEDU and GVHLTH) enhances individual productivity and sparks inclusive growth (Becker, 1964; Schultz, 1961). This theory assumes a labour market with sustained demand for skilled labour (Becker, 1993). In Nigeria's rentier economy, this assumption collapses. The state, funded by oil, has no imperative to foster a diversified private sector that demands high levels of skill (Beblawi & Luciani, 1987). Consequently, increased educational output meets a stagnant formal job market. The result is not

higher productivity but skills mismatch, underemployment, and brain drain. As Pritchett (2001) famously asked of similar contexts: "Where has all the education gone?" In Nigeria, it goes into the informal sector or is exported, yielding low domestic returns (Ajakaiye et al., 2016). Rentier state dynamics offer a structural explanation for this anomaly. When state revenue is decoupled from labour productivity, human capital spending becomes politically motivated and weakly linked to productive sector development (Beblawi & Luciani, 1987). These distortions are further intensified by jobless growth and labour-displacing technological change that outpaces job creation (Somoye, 2024).

The Failure of Endogenous Growth Theory: Rents Crowd Out Innovation

EGT emphasises innovation, knowledge spillovers, and human capital as engines of self-sustaining growth (Lucas, 1988; Romer, 1986). Nigeria's volatile, rent-driven growth diverges sharply from this model. The resource curse literature provides the corrective: natural resource rents crowd out tradable, competitive sectors (such as manufacturing and tech) where innovation and learning-by-doing occur (Auty, 2002; Gylfason, 2001; Sachs & Warner, 2001). Investment and talent are drawn into rent-seeking and trading rather than productive entrepreneurship. Therefore, technological adoption in Nigeria often takes a labour-displacing form (e.g., automation in extractive enclaves) rather than generating broad-based innovation and new industries (Acemoglu & Restrepo, 2020; Rodrik, 2016). Growth remains exogenous, tied to global oil prices rather than endogenous knowledge creation (World Bank, 2024).

Integrative Synthesis: The Rentier-Technology Conditioning Thesis

This study synthesises these critiques into the Rentier-Technology Conditioning Thesis. It posits that the efficacy of human capital and technology is structurally conditioned by the political economy of state revenue. In a rentier state:

1. Weak, enclave-led labour demand nullifies the returns to human capital investment (Somoye, 2024).
2. Rent-seeking incentives crowd out innovation in tradable sectors.
3. Technological change, when it occurs, is biased toward capital-intensive processes that further displace labour, accelerating jobless growth (Kumar & Chandel, 2024).

Thus, Nigeria's paradox arises not from a lack of investment in human capital or technology, but from investing within a system that structurally negates its transformative potential. This thesis provides the analytical framework for the subsequent econometric analysis, which tests the hypothesized relationships between growth, unemployment, and human capital expenditure.

METHODOLOGY

This study employs an Autoregressive Distributed Lag (ARDL) modeling approach to analyze annual time-series data from 1980 to 2024. The model is grounded in an augmented Solow-Swan neoclassical growth framework that incorporates human capital as a key factor (Mankiw et al., 1992). The dependent variable is real GDP per capita (RGDP), serving as the proxy for economic

development. Independent variables include government expenditure on health (GVHLTH) and education (GVEDU), the unemployment rate (UNEMPLT), and government expenditure on agriculture (GVAGRIC) as a control variable. Data is sourced from the World Development Indicators and the Central Bank of Nigeria. The ARDL bounds testing procedure (Pesaran et al., 2001) is used to establish cointegration and to estimate both short-run dynamics and long-run equilibrium relationships, thereby enabling robust causal and structural analysis.

At its core, the Solow-Swan model posits that economic growth results from three key factors: capital accumulation, labor force growth, and technological progress. The model's production function takes the form $Y = AF(K,L)$, where Y denotes output, A denotes total factor productivity (TFP), K denotes physical capital, and L denotes labor. The original formulation treated technological progress as exogenous - an unexplained residual often called the "Solow residual" (Solow, 1957). This framework introduced several seminal concepts that remain relevant to Nigeria's development context.

The model's prediction of conditional convergence suggests that poorer economies should grow faster than richer ones when they share similar steady-state characteristics (Barro, 1991). For Nigeria, this implies that strategic investments in human capital could accelerate convergence toward more advanced economies. However, the model's assumption of diminishing returns to capital highlights potential constraints on growth from relying solely on physical capital accumulation - a particularly relevant insight for resource-dependent economies like Nigeria.

Later extensions of the neoclassical model incorporated human capital as a distinct factor of production. Mankiw, Romer, and Weil's (1992) augmented Solow model demonstrated that human capital accumulation explains significant portions of cross-country income differences. Their formulation $Y = AF(K,H,L)$, where H represents human capital, provides the theoretical basis for examining education and health investments as drivers of Nigerian growth.

In the Nigerian context, this extension helps explain why mere physical capital investments (e.g., infrastructure) without complementary human capital development often yield disappointing returns. The model predicts that countries with higher human capital stocks can more effectively utilize physical capital and adopt new technologies - a crucial insight for Nigeria's industrialization efforts (Adegbite & Adetiloye, 2022).

Model Specification

This research adapts the Otiwu, Chukwu, and Okere (2018) methodology, which examines the disaggregated impact of government sectorial expenditure on economic development, modifying it to impact on our dependent variable: inequality. In their study, government expenditure is disaggregated into education and health.

The models are hence specified as follows;

RGDP = f (GXHLTH, GXEDU, UNEMPLMT, PGRT)(3.1)

The model is therefore specified econometrically, transforming some parameters by taking the log of large variables to avoid the problem of large coefficient variables in the model.

$$RGDPt = \beta 0 + \beta 1 lnGXHLTHt + \beta 2 lnGXEDUt + \beta 3 lnUNEMPLMT + \beta 4 PGRTt + \varepsilon t (3.2)$$

From the above, the Long-run Autoregressive Distributed Lag scheme can be specified as follows;

$$RDGPt = \beta 0 + \beta 1 \sum RGDPt\text{-}i + \alpha 2 + \varepsilon t\text{-}1 (3.3)$$

The short-run Error Correction Model can be specified as follows;

$$(RGDPt) = \beta 0 + \beta 1 (RGDPt\text{-}i) + \beta 2 ln(GXHLTHt\text{-}i) + \beta 3 ln(GXEDUt\text{-}i) + \beta 4 ln(UNEMPLMT\ t\text{-}i) + \beta 5 (PGRTt\text{-}i) + \Delta(RGDPt\text{-}i) + \Delta ln(GXHLTHt\text{-}i) + \Delta ln(GXEDUt\text{-}i) + \Delta ln(UNEMPLMT\ t\text{-}i) + \Delta ln(GXPGRTt\text{-}i) + \varepsilon t\text{-}i\ (3.4)$$

Where:

Ln= Natural Logarithm

Δ = Difference operator

RESULTS

Table 2: Descriptive Statistics

	GVHLTH	GVEDU	GVAGRIC	UNEMPLT	RGDP
Mean	1.06E+09	4.45E+10	1.08E+09	1.60E+09	1.548636
Median	1.31E+08	3.01E+10	3.19E+08	3.44E+08	1.634594
Maximum	8730000.	1.23E+10	21820001	58119999	12.45747
Minimum	1.14E+10	1.16E+11	1.10E+10	1.14E+10	-4.457078
Std. Dev.	2.11E+09	2.72E+10	2.05E+09	2.25E+09	3.845034
Skewness	3.779644	0.879285	3.728487	2.725277	0.496722
Kurtosis	18.10635	3.046496	17.48043	11.88571	3.338651

Jarque-Bera	416.1276	4.513143	386.8801	158.4688	1.606523
Probability	0.000000	0.104709	0.000000	0.000000	0.447866
Sum	3.72E+10	1.56E+12	3.79E+10	5.61E+10	54.20226
Sum Sq. Dev.	1.52E+20	2.51E+22	1.43E+20	1.71E+20	502.6657
Observations	35	35	35	35	35

Source: *Author's computation from Eviews 10 output (2025)*

Table 2 presents the descriptive statistics for the variables used in this study. Government expenditure on Health (GVHLTH) ranged from 8730000 to 1.14E+10 billion dollars, with an average of 1.06E+09 billion dollars in the period under review. The skewness value of 3.78 and the kurtosis value of 18.1 indicated that Government expenditure on Health was normally distributed, skewed to the right with a long right tail, and leptokurtic. The Jarque-Bera value of 416.1 was significant at the 5 percent level. This meant that Government expenditure on Health was normally distributed.

Government expenditure on Education (GVEDU) ranged from 1.23E+10 to 1.16E+11 billion dollars, with an average of 4.45E+10 billion dollars in the period under review. The skewness value of 0.88 and the kurtosis value of 3.05 indicated that Government expenditure on Education was normally distributed, skewed to the right with a long right tail, and mesokurtic. The Jarque-Bera value of 4.5 was not significant at the 5 percent level. This meant that Government expenditure on Education was not normally distributed.

Government expenditure on Agriculture (GVAGRIC) ranged from 1.10E+10 to 2182001 billion dollars with an average of 1.08E+09 billion dollars in the period under review. The skewness value of 3.73 and the kurtosis value of 17.48 indicated that Government expenditure on Agriculture was normally distributed, skewed to the right with a long right tail, and leptokurtic. The Jarque-Bera value of 385.88 was significant at the 5 percent level. This meant that Government expenditure on Agriculture was normally distributed.

Unemployment Rate (UNEMPLMT) ranged from 1.14E+10 to 5811999 with an average of 1.60E+09 million people in the period under review. The skewness value of 2.73 and the kurtosis value of 11.89 indicated that the Unemployment rate was normally distributed, skewed to the right with a long right tail, and mesokurtic. The Jarque-Bera value of 158.47 was significant at the 5 percent level. This meant that the unemployment rate was normally distributed.

Real gross domestic product (RGDP) ranged from -4.457078 to 12.45747 billion dollars, with an average of 1.548636 billion dollars in the period under review. The skewness value of 0.50 and the kurtosis value of 3.34 indicated that the real gross domestic product was normally distributed, skewed to the right with a long right tail, and leptokurtic. The Jarque-Bera value of 1.606523 was not significant at the 5 percent level. This meant that real gross domestic product was not normally distributed.

Correlation Analyses

Correlation Analysis is a statistical method used to determine whether there is a relationship between two variables/datasets and how strong that relationship is. The Pearson Correlation analysis was used to assess the relationship between the variables, and the results are shown in the table below.

Table 3: Correlation Matrix

	RGDP	GVHLTH	GVEDU	GVAGRIC	UNEMPLT
RGDP	1.000000				
GVHLTH	-0.415430	1.000000			
GVEDU	0.041152	-0.356834	1.000000		
GVAGRIC	0.016414	-0.285096	0.675288	1.000000	
UNEMPLT	0.668930	-0.502498	0.221472	0.148525	1.000000

Source: *Author's computation from Eviews 10 output (2025)*

Table 3 provides Pearson's correlation matrix of the model. The results showed that the pairwise Pearson's correlation coefficients ranged from -0.01 to 0.67. This indicated that all the pairwise Pearson's correlation coefficients were less than 1. The implication is that there should be no multicollinearity among repressors in the estimated regression model. This supports the assumption of no multicollinearity in the estimated poverty and inequality results.

Unit Root Test

A time series is stationary if a shift in time does not change the distribution's shape; unit roots are one cause of non-stationarity. In the study, the Augmented Dickey-Fuller Test (ADF) was used to test for a unit root in the series. The results are shown below;

Table 4: Unit root Test

Variable	Lags	ADF Stats	5% critical Value	Order of Integration	Remarks
RGDP	0	-3.705466	-2.951125	I(0)	stationary
UNEMPLT	0	-3.019529	-2.951125	I(0)	stationary
GVAGRIC	1	-3.656303	-2.954021	I(0)	stationary
D(GVEDU)	2	-4.665422	-2.960411	I(I)	stationary
GVHLTH	0	-3.486349	-2.951125	I(0)	stationary

Source: *Author's computation from E-views 10 output (2025)*

Note: "D" denotes the first difference

Table 4 displays the Augmented Dickey-Fuller (ADF) unit root test statistics for the variables at the level. All the variables had ADF test statistical values that are greater in absolute terms than their corresponding critical values at the 5 percent level. Government expenditure on Education (GVEDU) was stationary after first difference, while the remaining variables were stationary at levels.

ARDL Model

In ARDL modeling, it is first imperative to determine the optimal lag and to test for co-integration using the bound test approach. To determine the optimal lag, the lag length from an auxiliary VAR model was analyzed. Bound testing, as an extension of ARDL modeling, uses F-statistics to test the significance of the lagged levels of the variables in a univariate error-correction system when it is unclear whether the data-generating process underlying a time series is trend or first-difference stationary. This test is carried out on ARDL estimates to prove whether a co-integrating relationship exists in the model or not.

Optimal Lag Length Selection for ARDL Models

Table 4.2.1.1 presents the results of optimal lag selection for the estimation of ARDL models using different selection criteria. The selection criteria were sequentially modified LR test statistic (each

test at a 5% level), final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SIC), and Hannan-Quinn information criterion (HQ).

Table 5: Optimal Lag Length Criteria for (RDGP)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	0	-4412.933	NA	3.2e+106	267.9353	268.2981
1	1	-4274.350	201.5750	3.9e+104	263.4152	266.6803*
2	2	-4170.776	100.4358*	7.5e+103*	261.0167*	267.1842

Source: *Author's computation using Eviews 10 (2025)*

Table 5 shows the results of the different lag selection criteria considered in this study. The optimal lag length is 2. This is based on the recommendations of the Akaike info criterion (AIC). All the various criteria unanimously comply with the lag length.

Bounds Test for Co-integration

The results of the Bounds test for co-integration, which establishes the long-run relationship among the variables, are given below;

Table 6: Bounds Test for Co-integration for (RGDP)

F-Bounds Test	F-Bounds Test	Null Hypothesis: No Level relationship	Null Hypothesis: No Level relationship	Null Hypothesis: No Level relationship
Test Statistics	Value	significance	I(0)	I(1)
			Asymptotic: n=1000	
F-Statistic	5.408498	10%	1.92	2.89
K	7	5%	2.17	3.21
		2.5%	2.43	3.51
		1%	2.73	3.9

Source: *Author's computation using E-views 10 (2025)*

From table 6 above, the F-statistics of 5.41 is higher than the critical values of 2.17 and 3.21 which represent the 5% significance level for the upper and lower bound respectively. Therefore, we reject the null hypothesis of no levels of co-integrating relationship; hence, there is a long-run relationship between the endogenous and the exogenous variables in the model.

Short Run Error Correction Model (ECM)

The standard method of obtaining the short-run dynamics of a model described by an error correction model is the use of the autoregressive lag (ARDL) model. To establish the long-run relationship between the dependent variable and the independent variables in the model. Having established the existence of cointegration based on the results of the bounds test, we proceed to estimate the error-correction model (ECM). The significance of the ECM in the model is to indicate how disequilibrium in the dependent variable can be corrected in the short run. The results of the ECM model are presented in the table below:

Table 7: Short Run Error Correction Regression (ECM) for [D(RGDP)]

Case 2: Restricted Constant and No Trend (ARDL: 1,1,2,0,1,2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(GVEDU)	6.93E-10	2.43E-10	2.857058	0.0105
D(GVHLTH)	2.44E-08	3.19E-09	7.640602	0.0000
D(GVHLTH (-1))	-7.09E-09	1.45E-09	-4.884867	0.0001
D(UNEMPLT)	4.69E-08	1.14E-08	4.106085	0.0007
D(GVAGRIC)	5.08E-08	5.49E-08	0.925730	0.3668
D(GVAGRIC (-1))	6.12E-07	7.76E-08	7.892816	0.0000
CointEq(-1)	-1.064503	0.126951	-8.385134	0.0000
R-squared	0.814305	Mean dependent var	Mean dependent var	0.138490
Adjusted R-squared	0.771452	S.D. dependent var	S.D. dependent var	22.90840
S.E. of regression	10.95175	Akaike info criterion	Akaike info criterion	7.810708
Sum squared resid	3118.463	Schwarz criterion	Schwarz criterion	8.128149

Log likelihood	-121.8767	Hannan-Quinn criter.	Hannan-Quinn criter.	7.917517
Durbin-Watson stat	2.066942			

Source: *Author's computation using Eviews 10 (2025)*

The estimated result of the model is presented in Table 7. ARDL (1,1,2,0,1,2) process was modest and had a good fit. The coefficient of the error correction term (CointEq (-1)) was negative (-0.604503) and significant at the 1 percent level. This met a priori expectations and indicated that about 60.4 percent of the model's deviations from its equilibrium value in the previous period were corrected in the current period. The model, therefore, converges to its equilibrium value over time. The R-squared value of 0.814305 shows that about 81.4 percent of the fluctuations in changes in poverty level were explained by the explanatory variables in the short-run equation. And the adjusted R-squared indicates that about 77.1 percent of the variance was explained after adjustment for the degrees of freedom provided by the adjusted R-square. The Durbin-Watson statistic of 2.07 indicated that there was no evidence of autocorrelation in the model residuals.

The estimated coefficient for the first difference of government expenditure on education [D(GVEDU)] was positive and significant at the 5 percent level. The coefficient value of 6.93 showed that, on average, a 1 unit change in gross fixed capital formation led to a 6.93 increase in the real gross domestic product level in the current year. This indicates a positive and significant correlation between government expenditure on education and the current real gross domestic product level, as shown in the result.

The first difference of government expenditure on Health [D (GVHLTH)] had a positive impact on the inequality level, which supports the a priori sign expectation; this impact was found to be significant at the 1 percent level of significance. The estimated value of its coefficient implies that a 1 unit increase in government expenditure on Health translates to a 2.44 unit increase in real gross domestic product level. Overall, it means that a positive and significant relationship was held between the government expenditure on Health and the real gross domestic product level in Nigeria. However, the government expenditure on Health in the previous year has a negative and significant impact on the current real gross domestic product level at a 1 percent level of significance with an estimated value of its coefficient -7.09, which implies a 1 unit increase in government expenditure on Health in the previous year translates to a 7.09 unit decrease in real gross domestic product level.

Moreover, the population growth rate [D(UNEMPLT)] in the first difference had a positive, significant coefficient at the 1 percent level. The estimated value of 4.6 shows that, on average, a 1 unit increase in unemployment rate led to a 4.6 unit increase in real gross domestic product level during the period 1981 to 2024. This suggests that a significant, positive relationship was observed between the unemployment rate and the real gross domestic product level during the period considered.

Government expenditure on Agriculture [D(GVAGRIC)] in its first difference had a positive, but insignificant, estimated coefficient at the 5 percent level. The sign expectation of the variable was correctly held. The estimated value of 5.08 indicated that, holding all factors constant, a unit

increase in Government expenditure on Agriculture would translate into a 5.08-unit increase in real gross domestic product during the period. This showed that an insignificant and positive relationship was held between government expenditure on Agriculture and the real gross domestic product level in Nigeria within the period.

Lastly, Government expenditure on Agriculture [D(GVAGRIC (-1)] in the previous year had a positive, significant coefficient at the 1 percent level. The coefficient value of 6.12 showed that, holding all other factors constant, a unit increase in Government expenditure on Agriculture would result in a 6.12 unit increase in the real gross domestic product level. This suggested that a direct relationship existed between Government expenditure on Agriculture and the real gross domestic product level in the previous year, in accordance with the a priori expectation during the period under study.

Estimated Coefficient of the Long Run Model

Having analyzed the short-run dynamics of the Error Correction Model, we proceed to estimate the associated long-run model using the ARDL approach. The results are presented below.

Table 8 Long Run Model for Inequality [D(RGDP)]

Case 2: Restricted Constant and No Trend (ARDL: 1,1,2,0,1,2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(UNEMPLT)	1.062195	0.167530	6.340339	0.0000
D(GVAGRIC)	-0.325663	0.151529	-2.149182	0.0404
D(GVEDU)	-0.085739	0.129064	-0.664314	0.5119
D(GVHLTH)	0.028214	0.021712	1.299473	0.0044
D(RGDP)	-0.143933	0.066399	-2.167697	0.0388
C	37.22146	16.22993	2.293383	0.0341

Source: *Authors' computation using Eviews 10 (2025)*

The estimated long-run result of the model presented in Table 8. The estimated coefficient of the unemployment rate (UNEMPLT) was positive and significant at the 1 percent level of significance. The estimated value of its coefficient implies a 1 unit increase in the unemployment rate would translate to a 1.06 unit increase in the real gross domestic product level of the current year. Overall, it indicated that a positive and significant relationship existed between the unemployment rate and the current income real gross domestic product level in Nigeria.

Moreover, government expenditure on Agriculture (GVAGRIC) had a negative estimated coefficient that was significant at the 5 percent level. The estimated value of -0.325663 showed that on average, a 1 unit increase in government expenditure on Agriculture led to a 0.325663 unit increase in the real gross domestic product level during the period 1986 to 2024. This suggested that a significant and negative relationship was held between government expenditure on Agriculture and the real gross domestic product level in the period considered.

Government expenditure on Education (GVEDU) had a negative estimated coefficient that was insignificant at the 5 percent level. The sign expectation of the variable was correctly held. The estimated value of -0.09 indicated that, holding all factors constant, a unit increase in Government expenditure on Education would translate into a 0.09 unit decrease in the inequality level in the current year during the period. This showed that there was an insignificant, negative relationship between Government expenditure on Education in the previous year and the real gross domestic product level in the current year in Nigeria during the period.

However, Government expenditure on Health (GVHLTH) had a positive, significant coefficient at the 5 percent level. This, however, contradicts the a priori expectation from literature. The coefficient value of 0.03 implied that, ceteris paribus, a unit increase in Government expenditure on Health led to a 0.03 unit increase in the current real gross domestic product level. Therefore, a significant positive relationship existed between Government expenditure on Health and the current real gross domestic product level in Nigeria.

Real gross domestic product (RGDP) had a negative estimated coefficient that was significant at the 5 percent level. The estimated value of -0.14 indicated that, holding all factors constant, a unit increase in income inequality would translate into a 0.14 unit decrease in the real gross domestic product level in the current year during the period. This showed that a significant negative relationship existed between real gross domestic product in the previous year and real gross domestic product in the current year in Nigeria during the period.

Post Diagnostic Test

Post-diagnostic tests were also conducted to assess the validity of the estimated models. Tests such as the Breusch-Godfrey Lagrange Multiplier test for serial correlation, the autoregressive conditional heteroscedasticity test, the Ramsey regression specification error test, and the stability test were conducted. The results are presented below;

Table 9: Post estimation Test for (RGDP)

Test	F Stat	DF	Prob.
Breusch-Godfrey Serial Correlation LM Test	0.229942	(2,16)	0.7972
Heteroskedasticity Test: Breusch-Pagan-Godfrey	0.315880	(14,18)	0.9832
Ramsey RESET Test	2.995329	(1, 17)	0.1016

Source: *Author's computation using Eviews 10 (2025)*

Table 9 contained the diagnostic results of estimation with income inequality as the dependent variable. The result showed that there was no threat of serial correlation in the estimated model since the Breusch-Godfrey Serial Correlation LM Test F-statistic value of 0.229942 was not significant. There was also no heteroskedasticity problem in the estimated as the Breusch-Pagan-Godfrey F-statistic value 0.315880 was not significant.

Furthermore, the estimated model was adequately specified, as indicated by the Ramsey RESET F-statistic, which was not significant, suggesting model stability. The error terms obtained from the model estimation were normally distributed. It follows, therefore, that all the underlying assumptions of the regression analysis were not violated. Hence, the model's estimates are reliable for decision-making.

Test for Hypotheses

The null hypotheses stated earlier in this study were evaluated in this section. The evaluations were based on the results obtained and presented above.

H01: Government expenditure on Health has no significant effect on economic development in Nigeria.

The estimated results show that the impact of government expenditure on Health was positive and significant at a 5 percent level in the short-run, while the impact of government expenditure on Health was negative and not significant at a 5 percent level in the long-run. The null hypothesis was therefore rejected in the short run and accepted in the long run, thus the impact of government expenditure on Health was positive and significant at a 5 percent level in the short-run and a non-significant impact on economic development in the long run period in Nigeria.

H02: Government expenditure on Education has no significant impact on economic development in Nigeria.

The estimated results show that the impact of government expenditure on Education has no significant effect on economic development in Nigeria, which was positive and significant at the 5 percent level in both the short- and long-run. The null hypothesis was therefore rejected in favour of the alternative hypothesis in Nigeria.

H03: There is no relationship between the unemployment rate and economic development in Nigeria.

The estimated results show that the unemployment rate was positive and significant at a 5 percent level in both the long and short run. The null hypothesis was rejected in the short and long-run periods in Nigeria.

DISCUSSION

The empirical findings of this study clarify the complex and paradoxical relationship between human capital investment and Nigeria's economic development, providing critical insights into the phenomenon of jobless growth that has characterized the country's trajectory from 1980 to 2024. The ARDL model results (Tables 7 and 8) reveal a persistent positive relationship between the unemployment rate (UNEMPLT) and real GDP per capita (RGDP) in both the short run (D(UNEMPLT) = 4.69E-08, $p<0.001$) and long run (D(UNEMPLT) = 1.062195, $p<0.001$). This counterintuitive result empirically confirms the paradox of jobless growth, indicating that Nigeria's economic expansion, which is heavily reliant on capital-intensive sectors such as oil and gas, has not generated sufficient productive employment (World Bank, 2023). Economic growth has largely excluded a significant portion of the labor force, revealing a fundamental structural flaw in which GDP increases are associated with rising, rather than declining, joblessness (AfDB, 2021). This finding aligns with concerns that growth has been concentrated in sectors with weak employment multipliers, failing to stimulate job creation in labour-intensive industries (ILO, 2022).

The analysis of human capital expenditures reveals a critical temporal and qualitative disconnect. In the short run, increases in government spending on education (D(GVEDU) = 6.93E-10, $p=0.0105$) and health (D(GVHLTH) = 2.44E-08, $p<0.001$) show significant positive impacts on economic growth. This suggests that these investments provide an immediate fiscal stimulus and can yield quick returns through improved workforce participation and productivity. However, the long-run picture is markedly different and more concerning. Government expenditure on education becomes statistically insignificant and negative (D(GVEDU) = -0.085739, $p=0.5119$), indicating that the long-term economic returns on educational investment are being undermined. This finding points directly to systemic issues of poor education quality, curriculum irrelevance, and a severe skills mismatch with labor market demands (UNESCO, 2023; Okeke & Eme, 2021). Merely increasing budgets without addressing these fundamental quality and relevance issues fails to translate into sustainable, human-capital-driven growth.

The dynamics of health expenditure are equally nuanced. While current health spending positively impacts growth, the significant negative coefficient of its one-year lag (D(GVHLTH(-1)) = -7.09E-09, $p<0.001$) in the short-run model suggests inefficiencies in implementation, such as delays in project execution, misallocation of funds, or corruption, which can cause short-term economic distortions. Nevertheless, health expenditure retains a positive and significant long-run relationship (D(GVHLTH) = 0.028214, $p=0.0044$), affirming that a healthy population is a foundational pillar for sustainable economic development, as it directly enhances labour productivity and cognitive capacity over time (WHO, 2023).

The analysis of agricultural expenditure offers a policy-relevant insight into timing and impact. Current-year spending is insignificant (D(GVAGRIC) = 5.08E-08, $p=0.3668$), but the previous year's expenditure shows a strong positive effect (D(GVAGRIC(-1)) = 6.12E-07, $p<0.001$) in the short run. This indicates that investments in agriculture, a major employer, yield their greatest economic returns with a one-year lag, underscoring the need for sustained, predictable funding. However, the long-run coefficient for agricultural spending is negative and significant

(D(GVAGRIC) = -0.325663, p=0.0404), which may reflect past patterns of misdirected or inefficient spending in the sector that failed to boost long-term productivity.

The highly significant and negative error correction term (CointEq(-1) = -1.064503, p<0.001) confirms a stable long-run equilibrium among the variables, with a rapid adjustment speed of over 100%, indicating the model quickly corrects any disequilibrium. Post-diagnostic tests (Table 9) confirm the model's robustness, showing no serial correlation, heteroscedasticity, or specification error, validating the reliability of the inferences drawn (Pesaran et al., 2001).

In conclusion, the discussion demonstrates that Nigeria's economic development path is constrained not by insufficient growth, but by the structure of that growth and the effectiveness of its human capital investments. The persistent jobless growth phenomenon and diminishing long-run returns to education spending underscore the urgent need for a dual policy shift. Policymakers should prioritize not only increased budgetary allocations but also strategic, efficient, and quality-focused investments in human capital, together with comprehensive structural reforms to diversify the economy toward more inclusive, job-creating sectors.

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