

UNEMPLOYMENT AND ITS IMPACT ON NIGERIAN ECONOMIC GROWTH: AN ARDL APPROACH, 1999–2025

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ABSTRACT

This study examines effect of unemployment in Nigeria's economic growth (1999–2025), anchored in Endogenous Growth Theory, which links human capital utilization to long-run growth. Real GDP (logged) is modelled as a function of unemployment, population, inflation, and government capital expenditure. Given mixed integration orders, the ARDL bounds-testing approach and Error Correction Model estimate short- and long-run dynamics. Cointegration is confirmed at the 10 percent level. Unemployment has a negative significant effect on output in both periods, with persistence across two lags reflecting labour-market shocks that erode human capital rather than dissipate quickly. Inflation and government capital expenditure are insignificant, while population is positive and significant in the long run. The error correction term (−0.7225) shows about 72 percent of short-run disequilibrium corrected within one period. Unemployment is a structural constraint on growth, warranting targeted employment-generating investment, efficient public capital allocation, skills development, and price-stabilising macroeconomic policy.

Keywords: Unemployment; Economic Growth; Endogenous Growth Theory; ARDL Bounds Test; Error Correction Model; Nigeria

1. INTRODUCTION

1.1 Background to the Study

Unemployment remains one of Nigeria's most persistent macroeconomic problems and a central concern for growth and development. The country's rapidly expanding working age population could, in principle, furnish a large productive labour force, but limited employment opportunities have instead produced substantial labour underutilisation, felt most acutely among young people.

The relationship between unemployment and growth matters analytically because unemployment is an inefficient use of a scarce resource. Persistent unemployment reduces household income, consumption and aggregate demand while leaving labour idle; more importantly, prolonged joblessness erodes skills and human capital, weakening productivity and the economy's capacity to sustain growth the analytical thread linking this study to Endogenous Growth Theory.

The relationship is commonly framed through Okun's Law(1962), which posits an inverse association between unemployment and output. It is important to be precise here: Okun's Law is an empirical regularity describing statistical co-movement, not a structural explanation of why unemployment should affect the growth rate. Endogenous Growth Theory supplies that mechanism, which is why it anchors this study. In Nigeria, the strength of the relationship in practice depends on the structure of the economy, human capital quality, investment and the wider macroeconomic environment, which is why the evidence reviewed in mixed rather than uniform.

Successive interventions the National Directorate of Employment (NDE), the National Poverty Eradication Programme (NAPEP) and YOUWIN have not resolved the problem, raising the question of whether the constraint lies in labour demand, labour supply quality, or the macroeconomic environment within which both interact.

1.2 Statement of the Problem

Evidence on the unemployment–growth relationship in Nigeria is not uniform: Obele (2019) and Muhammad (2023) find significant negative effects, yet Ayinla (2018) found that GDP did not decline despite rising youth unemployment over 2010–2016. This divergence suggests the relationship is conditional on sample period, technique, measurement and controls used a pattern the literature has not adequately reconciled. Three further gaps compound this: many studies use descriptive or correlation methods without testing the series' order of integration; many model unemployment in isolation from other relevant macroeconomic forces; and recent studies (e.g., Edeme, Emeka & Ogbuabor, 2024; Omebere et al., 2025) are constrained by datasets ending before 2022. This study addresses this threefold gap.

1.3 Objectives of the Study

The broad objective is to examine the effect of unemployment on economic growth in Nigeria (1999–2025) within an endogenous-growth framework. Specifically, the study seeks to:

1. examine the short-run and long-run effect of unemployment on real GDP;

2. determine the speed of adjustment of short-run disequilibrium toward long-run equilibrium; and

1.4 Research Hypotheses

H₀₁: Unemployment has no significant short-run effect on economic growth in Nigeria.

H₀₂: Unemployment has no significant long-run effect on economic growth in Nigeria.

H₀₃: No significant error-correction mechanism links short-run disequilibrium to the long-run relationship.

1.5 Significance and Scope of the Study

Theoretically, the study extends Endogenous Growth Theory more commonly applied to innovation-driven growth in advanced economies to labour underutilisation in a developing, resource dependent economy. Methodologically, it applies ARDL bounds testing to a longer, more recent series (1999–2025) than most comparable Nigerian studies, jointly modelling unemployment with population, inflation and government capital expenditure to reduce omitted variable bias. Practically, the findings are intended to inform policy on employment creation, human capital development and labour productivity. The study is delimited to Nigeria, 1999–2025, using annual data on RGDP, unemployment, population, inflation and government capital expenditure, without disaggregating unemployment by age, gender or region.

2. Literature review

Conceptual Review

Unemployment is conventionally decomposed into frictional unemployment (the normal lag between jobs), structural unemployment (a skills mismatch) and cyclical unemployment (insufficient aggregate demand). This matters because the human capital erosion mechanism operates mainly through structural and prolonged cyclical unemployment; the aggregate rate used in this study does not distinguish among these categories. Economic growth is measured, as is standard, by the percentage change in real GDP.

Theoretical literature

The study is anchored on Endogenous Growth Theory (Romer, 1986; Lucas, 1988), which departs from Solow's (1956) model in an analytically important way. In Solow's framework, technological progress the ultimate source of sustained per capita growth is exogenous, unaffected by decisions about investment, education or labour utilisation. Endogenous Growth Theory instead treats knowledge accumulation and productivity improvement as outcomes of deliberate economic decisions, so that how fully the labour force is employed can permanently alter the growth rate, not merely the level of output. This is why the theory, rather than a purely statistical relationship such as Okun's Law, anchors a study concerned with whether unemployment causally constrains growth.

Human capital is central to this framework: a skilled, productively engaged labour force accelerates technology adoption, encourages innovation and raises the efficiency of other inputs. Unemployment therefore carries implications beyond the immediate income loss to the unemployed individual when workers remain outside productive employment for extended

periods, their skills tend to depreciate (a hysteresis effect), reducing aggregate productivity even after employment recovers.

A simplified endogenous production relationship is $Y = A K^{\alpha} H^{\beta} L^{\gamma}$, where Y is output, A is technology, K is physical capital, H is human capital and L is labour. Labour contributes to growth through H and L jointly, so high unemployment is an underutilisation of both a static output loss compounding into a dynamic loss of accumulated skill. The theory accommodates feedback from growth to employment, but the central expectation tested here is that unemployment constrains growth, consistent with the inverse relationship anticipated by Okun's Law. This is especially relevant to Nigeria's large, expanding labour force: matched with productive investment and skills development it is a potential growth engine; where a substantial share remains unemployed, the economy forfeits the productive dividend of its own human-capital base the proposition formalised and tested.

Empirical Review

Empirical research on the unemployment growth relationship in Nigeria shows a broadly, but not fully, consistent inverse relationship. A first cluster of studies using descriptive or correlation-based methods generally reports a negative relationship: Ifejiorfor (2014), using Pearson correlation, found that unemployment impeded Nigeria's economic development, while Ayinla (2018), studying youth unemployment over 2010–2016, found that GDP did not decline despite rising youth unemployment illustrating that the effect depends on which segment of unemployment and which sub-period is examined. Neither study formally tests the time-series properties of its data, limiting the strength of causal inference.

A second cluster applies more rigorous techniques and more consistently finds a negative effect. Obele (2019) estimated that a 1 percent rise in unemployment reduced GDP by 11.56 percent, while identifying a need for studies incorporating employed labour, capital formation and job vacancies. Muhammad (2023) confirmed a significant negative relationship consistent with Okun's Law but focused narrowly on unemployment and GDP alone, leaving the role of other macroeconomic variables open. A related study using unemployment categories similarly found high unemployment associated with negative GDP growth, though without adequate controls for inflation, exchange rate or government expenditure.

A third, most recent cluster extends the data and controls used but remains temporally constrained. Edeme, Emeka and Ogbuabor (2024) found negative short- and long-run effects of unemployment and global uncertainty on growth, but their sample ends in 2020. Adekoya, Magaji and Ismail (2025) found negative short- and long-run effects; Adewale, Sadiq and Onodingene (2025) found a negative but insignificant short-run effect alongside a negative and significant long-run effect, suggesting the adverse consequences of unemployment may intensify over time. Omebere et al. (2025) found a significant negative effect of unemployment on growth, but their data end in 2022, missing more recent developments.

3. Methodology

Research Design and Data

The study adopts an ex-post facto, quantitative time-series design, appropriate because the variables real GDP, unemployment, population, inflation and government capital expenditure are

macroeconomic aggregates that have already occurred and cannot be manipulated by the researcher. It relies entirely on secondary annual data spanning 1999–2025: real GDP and government capital expenditure from the CBN Statistical Bulletin; unemployment and population from the National Bureau of Statistics; and inflation from the World Bank's World Development Indicators. Reliance on multiple sources reflects standard practice in Nigerian macroeconomic research, as no single agency maintains a complete series for all variables required.

Model Specification

Following Okun's Law and the endogenous growth framework, and adapting specifications used by Obele (2019) and Muhammad (2023), real GDP is expressed as $RGDP = f(UNEMP, POP, INFL, GEXP)$. $RGDP$, POP and $GEXP$ are transformed into natural logarithms so their coefficients read as elasticities, while unemployment and inflation already rates are retained in levels. The estimating equation is:

$$\ln RGDP_t = \beta_0 + \beta_1 UNEMP_t + \beta_2 \ln POP_t + \beta_3 INFL_t + \beta_4 \ln GEXP_t + \mu_t$$

where β_0 is the intercept, β_1 – β_4 are the coefficients of the explanatory and control variables, μ_t is the error term, and t denotes time. Unemployment is expected to relate negatively to $RGDP$ (Okun's Law / human-capital underutilisation); population positively (labour force and market size, though this could weaken if population growth outpaces absorptive capacity); inflation negatively (price instability discourages investment); and government capital expenditure positively (productive public investment supports technological progress under the endogenous growth framework).

Estimation Technique

Because Nigerian macro series are frequently non-stationary at levels, the analysis begins with unit root tests (ADF and PP) to establish each variable's order of integration and confirm none exceeds $I(1)$ a precondition for ARDL validity. The ARDL bounds-testing approach (Pesaran, Shin & Smith, 2001) is then applied, preferred because it accommodates a mixture of $I(0)$ and $I(1)$ variables, performs well in small samples typical of Nigerian annual data, and jointly estimates short-run and long-run relationships together with an Error Correction Model quantifying the speed of adjustment toward long-run equilibrium.

Results and discussion

Unit Root Test

Stationarity was assessed using the Augmented Dickey-Fuller test, since ARDL estimation is valid only when no series is integrated above order one.

Variable	Level/1st Diff.	T-statistic	1%	5%	10%	Prob.
D_RGDP	I(1)	-3.2995	-3.6793	-2.9678	-2.6229	0.0242
UNEMP	I(1)	-3.0483	-3.6793	-2.9678	-2.6229	0.0421
INF	I(0)	-8.5893	-3.6793	-2.9678	-2.6229	0.0000
D_LOG_GEXP	I(1)	-5.5104	-3.6793	-2.9678	-2.6229	0.0001

Source: Author's Computation (2026).

Inflation is stationary at level, I(0); the remaining series are stationary after first differencing, I(1). Since none is integrated of order two, the pre-condition for ARDL estimation is satisfied.

ARDL Bounds Test for Cointegration

F-statistic	10% I(0)	10% I(1)	5% I(0)	5% I(1)	1% I(0)	1% I(1)
4.2713	2.790	3.586	3.230	4.306	4.290	5.610

Source: Author's Computation (2026).

The F-statistic (4.2713) exceeds the 10 percent upper bound (3.586) but falls slightly short of the 5 percent bound (4.306), supporting cointegration at the 10 percent level, consistent with a stable long-run relationship rather than a purely transient association.

ARDL Short-Run Estimates

The short-run model, selected by AIC as ARDL(1,2,0,0), is reported below.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D_RGDP(-1)	0.2775	0.2023	1.3717	0.1840
UNEMP	-2.73E+10	6.12E+09	-4.4604	0.0002
UNEMP(-1)	3.06E+10	1.12E+10	2.7286	0.0123
UNEMP(-2)	-1.69E+10	7.41E+09	-2.2858	0.0323
INF	-8.02E+07	3.92E+08	-0.2045	0.8398
D_LOG_GEXP	4.20E+09	5.80E+09	0.7230	0.4773
C	6.52E+10	1.93E+10	3.3812	0.0027

$R^2 = 0.6246$ | $Adj. R^2 = 0.5222$ | $F = 6.1000$ ($p = 0.0007$) | $DW = 2.0656$

Source: Author's Computation (2026).

Unemployment has a negative and significant short-run effect ($p = 0.0002$) that remains significant across two lags, indicating that labour market shocks propagate rather than dissipate within a single period consistent with the human capital erosion mechanism. Inflation and government capital expenditure are statistically insignificant, consistent with the implementation lags typically associated with Nigerian public capital spending. The model is jointly significant ($F = 6.10$, $p = 0.0007$), and the Durbin–Watson statistic indicates no first-order serial correlation.

Error Correction and Long-Run Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CointEq(-1)	-0.7225	0.2065	-3.4990	0.0017

Source: Author's Computation (2026).

The error correction coefficient is negative and significant at 1 percent, confirming a valid adjustment mechanism toward long-run equilibrium and corroborating the cointegration finding in Section 5.2. The coefficient (-0.7225) indicates that about 72 percent of short-run disequilibrium is corrected within a single year a relatively rapid, though not instantaneous, adjustment. In the long run, unemployment continues to exert a negative and significant effect on real GDP confirming that its short-run impact persists into the steady state growth path while population is positive and significant. Government capital expenditure (positive) and inflation (negative) remain statistically insignificant, suggesting that over this sample neither has been a decisive independent driver of growth relative to the labour-utilisation channel.

Diagnostic Checks

Test	P-value
Breusch–Godfrey Serial Correlation LM	0.6224
Breusch–Pagan–Godfrey Heteroskedasticity	0.0618
Obs*R-squared (BPG)	0.0750

Source: Author's Computation (2026).

All reported probabilities exceed 0.05, indicating the model is free from serial correlation and heteroskedasticity at the 5 percent level, supporting the adequacy of the specification.

4. Discussion of Findings

The results support Endogenous Growth Theory's human-capital channel: the persistence of unemployment's effect across lags and into the long run indicates a structural, not merely cyclical, drag on growth. The rapid errorcorrection speed suggests Nigeria's growth path returns toward equilibrium after labour market shocks, but the shocks recur with sufficient frequency to constitute a persistent constraint. The insignificance of government capital expenditure implies that public investment, at its current scale and implementation, has not been a sufficiently strong counterweight to unemployment a gap the recommendations in Section 6 address. These findings reconcile the mixed evidence in Section 3: the negative effect aligns with Obele (2019) and Muhammad (2023), while Ayinla's (2018) contrary finding is plausibly explained by its shorter, youth-specific sample rather than a rejection of the underlying mechanism.

5. Conclusion and recommendations

Conclusion

This study examined whether unemployment constrains economic growth in Nigeria (1999–2025) within a framework grounded in Endogenous Growth Theory. The ARDL bounds test establishes a long-run relationship among unemployment, population, inflation, government capital expenditure and real GDP at the 10 percent level. Unemployment exerts a negative and significant effect on output in both the short and long run, and the significant error-correction coefficient (-0.7225) confirms a relatively fast return to equilibrium following short-run disturbances. Inflation and government capital expenditure are insignificant throughout, while population is positive and significant in the long run. All three null hypotheses are therefore rejected: unemployment has significant short-t and long-run effects on growth, and a significant adjustment mechanism links the two. Unemployment is best understood as a structural constraint

on Nigeria's growth, operating principally through the underutilisation and gradual erosion of human capital.

Recommendations

1. Government should prioritise employment-generating programmes in agriculture, manufacturing, SMEs and other labour-intensive sectors, to expand output through fuller utilisation of the labour force.
2. Skills-development and vocational training programmes should be expanded, directly targeting the human-capital erosion mechanism linking unemployment to slower growth.
3. Macroeconomic policy should sustain price stability alongside an investment-friendly environment, supporting the productivity channels through which endogenous growth is generated.

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