

Real Estate Development, Employment Generation and Economic Growth in Nigeria (1990 – 2024)

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Abstract

This study examined the effect of real estate development (RED), labor force participation rate (LFPR), government capital expenditure (GCE), and interest rates (INT) on real GDP in Nigeria from 1990 to 2024. Utilizing annual time-series data from the Central Bank of Nigeria, National Bureau of Statistics, and International Labour Organization, the study employed the Autoregressive Distributed Lag (ARDL) and Error Correction Model (ECM) approaches to establish long-run and short-run relationships among variables. The ARDL bounds test confirmed cointegration at 5% significance level. The error correction term was negative and significant at -0.054 ($p=0.000$), indicating approximately 5.4% annual adjustment toward equilibrium. Long-run estimation results revealed that real estate development positively and significantly affects real GDP with a coefficient of 0.533 ($p=0.045$), suggesting that a 5% increase in real estate development contributes 0.53% increase in economic growth. However, labor force participation rate (-0.058, $p=0.258$), government capital expenditure (-0.166, $p=0.481$), and interest rate (0.065, $p=0.206$) were statistically insignificant. Diagnostic tests confirmed model adequacy with no serial correlation, homoskedastic residuals, normally distributed errors, and stable parameters. The study concludes that real estate development is a significant driver of Nigeria's economic growth, while the insignificant effects of other variables reflect structural inefficiencies in labor markets, public expenditure management, and monetary policy transmission mechanisms. The study recommends enhancing real estate financing access, improving employment quality through skills development, strengthening public financial management, and developing domestic financial markets to optimize growth outcomes.

Keywords: Real estate development, economic growth, ARDL, labor force participation, government expenditure, Nigeria

Introduction

1.1 Background to the Study

Nigeria's real estate sector has emerged as a critical driver of economic transformation, contributing approximately 6.5% to the nation's GDP and serving as a vital catalyst for employment creation. Following recent GDP rebasing, the real estate sector has emerged as one of the top three contributors to Nigeria's Gross Domestic Product (GDP), with its value estimated at approximately ₦41.3 trillion in 2024, demonstrating rapid expansion within the non-oil economy and underscoring the sector's macroeconomic significance (National Bureau of Statistics, 2024). This growth reflects strong demand driven by rapid urbanization, a substantial housing deficit, and rising middle-class investment, with projections suggesting continued expansion and diversification into commercial and industrial property markets (Nigeria Housing Market, 2025). The sector's significance extends beyond direct construction activities to encompass value chains spanning manufacturing, financial services, and infrastructure development (Alonge, 2021; Aderemi, Akindele & John, 2019). The relationship between real estate development and economic growth in developing economies has attracted substantial scholarly attention. Chukwuemeka, Onyeizugbe & Okoye (2024) demonstrate that real estate investment exhibits significant multiplier effects on GDP growth, with each naira invested generating approximately 2.3 naira in economic output. This aligns with endogenous growth theory, which posits that physical capital accumulation, including real estate infrastructure, stimulates long-term economic expansion (Olawale, 2024; Olorin & Oniwoduokit, 2021)). Employment generation represents a crucial dimension of real estate's economic impact. The sector directly employs over 3.2 million Nigerians while supporting an estimated 8 million jobs across ancillary industries (Federal Ministry of Works and Housing, 2023). (Foster, Gorgulu, Straub & Vagliasindi, 2023), identify construction labor, property management, and real estate services as primary employment channels, with particular significance for youth engagement and skills development. However, Nigeria's real estate sector faces substantial constraints. Infrastructure deficits, regulatory bottlenecks, and limited mortgage financing restrict development potential (Oluwaseun & Adeyemi, 2024). The housing deficit exceeds 22 million units, representing both a developmental challenge and economic opportunity (World Bank, 2023). Additionally, land acquisition complexities and inconsistent urban planning frameworks impede systematic growth (Ugonabo, Egolum & Sado, 2023; Adebayo, Komolafe & Adewusi, 2023).

1.2 Statement of the Problem

Nigeria's real GDP growth has exhibited considerable volatility between 1990 and 2024, fluctuating from -1.6% in 2016 to 8.2% in 2003 (World Bank, 2024). Despite Nigeria's substantial investments in physical infrastructure and a rapidly expanding real estate sector, real GDP (RGDP) growth has remained volatile and below its potential over much of the period since 1990. Real estate development is often expected to stimulate economic growth through employment generation, capital formation, and backward and forward linkages with other sectors. However, in Nigeria, the growth impact of real estate development appears uncertain, constrained by structural weaknesses, financing bottlenecks, and macroeconomic instability (UN-Habitat, 2023; World Bank, 2024). At the same time, labour force participation has fluctuated amid demographic pressures, skills mismatches, and rising informality, limiting the translation of population growth into productive output. Government capital expenditure, which should complement private real estate investment by providing infrastructure and public goods, has been inconsistent and frequently undermined by fiscal constraints and implementation inefficiencies (IMF, 2023).

Furthermore, persistently high and volatile interest rates have raised the cost of credit, potentially crowding out private investment in real estate and other productive sectors (CBN, 2024). The problem, therefore, lies in the lack of clear empirical evidence on how real estate development interacts with labour force participation, government capital expenditure, and interest rates to influence RGDP in Nigeria over the long run. Hence, this study examines the cumulative impact of these variables on Nigeria's RGDP from 1990 to 2024.

1.3 Objectives of the Study

The main objective of this study is to examine the effect of real estate development and employment generation on economic growth in Nigeria. However, the specific objectives are:

1. To determine the effect of real estate development on economic growth in Nigeria.
2. To assess the effect of labour force participation rate on economic growth in Nigeria.
3. To evaluate the effect of government capital expenditure on economic growth in Nigeria.
4. To examine the effect of interest rates on economic growth in Nigeria.

1.4 Research Questions

1. What is the effect of real estate development on economic growth in Nigeria?
2. What is the effect of labor force participation rate on economic growth in Nigeria?
3. What is the effect of government capital expenditure on economic growth in Nigeria?
4. What is the effect of interest rates on economic growth in Nigeria?

1.5 Research Hypotheses

- H₀₁: Real estate development has no significant effect on economic growth in Nigeria.
H₀₂: Labor force participation rate has no significant effect on economic growth in Nigeria.
H₀₃: Government capital expenditure has no significant effect on economic growth in Nigeria.
H₀₄: Interest rates have no significant effect on economic growth in Nigeria.

1.6 Significance of the Study

This study provides critical empirical evidence on the determinants of economic growth in Nigeria, offering valuable insights for multiple stakeholders. For policymakers, the findings facilitate evidence-based coordination of real estate development policies with fiscal and monetary strategies, enabling optimal resource allocation to maximize economic growth. The Central Bank of Nigeria and fiscal authorities can utilize the results to calibrate interest rate policies and government capital expenditure in ways that complement real estate sector growth while considering labor market dynamics. For real estate developers and investors, the study clarifies how macroeconomic conditions—particularly interest rates and government spending—affect sectoral contributions to GDP, thereby informing investment decisions and risk assessment strategies. Academically, the research contributes to economic growth literature by providing a comprehensive multivariate analysis that addresses existing gaps in understanding the interactive effects of real estate development, labor force participation, fiscal policy, and monetary conditions on economic performance in developing economies. The findings also establish a methodological framework for future research examining sectoral contributions to growth in similar emerging market contexts.

1.7 Scope of the Study

This study focuses on Nigeria's economy, examining the relationship between real GDP (dependent variable) and four explanatory variables: real estate development, labor force participation rate, government capital expenditure, and interest rates. The temporal scope spans 1990 to 2024, a 35-year period that captures significant structural transformations including financial sector reforms, democratic transitions, economic recessions, and policy shifts in real estate regulation and fiscal management. Geographically, the study is limited to Nigeria as a country-level analysis, utilizing aggregate national data from the National Bureau of Statistics, Central Bank of Nigeria, World Bank, and International Labour Organization. The study employs secondary time-series data and quantitative econometric methods to establish relationships between variables, without exploring qualitative dimensions of real estate development such as housing quality, spatial distribution, or sectoral composition. While the study acknowledges other potential determinants of economic growth such as trade, inflation, and human capital development, it specifically concentrates on the four identified variables based on their theoretical relevance and data availability for the study period.

Literature Review

2.1 Conceptual Framework

2.1.1 Real Gross Domestic Product (RGDP)

Real Gross Domestic Product represents the inflation-adjusted monetary value of all finished goods and services produced within a country's borders during a specific period (Mankiw, 2024). It serves as the primary indicator of economic performance, reflecting the actual growth in output by removing price level effects (World Bank, 2024). In Nigeria, RGDP fluctuated significantly between 1990 and 2024, experiencing contractions during the 2016 recession (-1.6%) and the COVID-19 pandemic (-1.8% in 2020), while recording peak growth of 8.2% in 2003 (National Bureau of Statistics, 2024). RGDP captures the productive capacity of an economy and serves as the standard dependent variable in growth empirics, enabling assessment of how factor inputs and policy variables influence economic output (Ogunleye, 2023). As a measure of economic welfare, RGDP growth indicates improvements in living standards and reflects the effectiveness of macroeconomic policies in stimulating productive activities across sectors.

2.1.2 Real Estate Development

Real estate development encompasses the process of improving land through construction of buildings, infrastructure, and property enhancements that add economic value (Oluwaseun & Adeyemi, 2024). It includes residential, commercial, and industrial property development, contributing to capital formation and employment generation (Alonge, 2021). In Nigeria, the sector contributes approximately 6.5% to GDP and directly employs over 3.2 million people while supporting eight million jobs across ancillary industries (National Bureau of Statistics, 2024). Real estate development serves as both a consumption good, providing shelter and business premises, and an investment asset that facilitates wealth accumulation (Ugonabo, Egolum & Sado, 2023; Aderemi, Akindele & John, 2019). The sector exhibits strong backward and forward linkages with construction materials, financial services, utilities, and professional services, generating significant multiplier effects estimated at 2.3 for every naira invested (Chukwuemeka et al., 2024). Real estate development is influenced by credit availability, interest rates, regulatory frameworks, and urbanization patterns, with Nigeria's urban population projected to reach 70% by 2050, intensifying housing demand (World Bank, 2023).

2.1.3 Labour Force Participation Rate

Labour force participation rate measures the proportion of working-age population (15-64 years) that is economically active, either employed or actively seeking employment (ILO, 2024). It reflects labor market engagement and human capital utilization, serving as a critical determinant of productive capacity (Mukhtar et al., 2021). Nigeria's labor force participation rate declined from 54.3% in 1990 to 52.7% in 2023, reflecting demographic shifts, educational enrollment increases, and structural labor market challenges (ILO, 2024). The rate exhibits gender disparities, with male participation at 61.2% compared to female participation at 44.8% (National Bureau of Statistics, 2024). Labor force participation affects economic growth through multiple channels: increasing the quantity of productive inputs, enhancing human capital deployment, and expanding aggregate demand through income generation (Bashir, et al., 2024). Low participation rates indicate underutilization of productive potential, particularly concerning given Nigeria's youth unemployment rate of 42.5% in 2024 (NBS, 2024). The relationship between labor force participation and real estate development is bidirectional, as employment opportunities attract labor force entry while housing availability influences labor mobility and participation decisions (Eze & Nwankwo, 2024).

2.1.4 Government Capital Expenditure

Government capital expenditure refers to public spending on infrastructure, buildings, equipment, and other fixed assets that enhance productive capacity (Ogbonna, Ogu & Raymond, 2025). Unlike recurrent expenditure, capital spending creates durable assets that generate long-term economic benefits through improved infrastructure networks, enhanced service delivery, and crowding-in effects on private investment (Nwokoye & Dimnwobi, 2023). Nigeria's government capital expenditure reached ₦2.1 trillion in 2023, allocated across transportation infrastructure, power generation, housing development, and social infrastructure (Budget Office of the Federation, 2024). Capital expenditure affects economic growth through supply-side improvements in productivity and demand-side fiscal stimulus (Keynesian transmission), with infrastructure spending exhibiting fiscal multipliers between 1.5 and 2.0 in developing economies (IMF, 2023). In real estate contexts, government infrastructure investments reduce development costs, improve property accessibility, and stimulate private sector construction activities (Oluwaseun & Adeyemi, 2024). However, implementation challenges including project delays, budget padding, and execution inefficiencies constrain the growth impact of capital expenditure in Nigeria (Nwokoye & Dimnwobi, 2023).

2.1.5 Interest Rates

Interest rate represents the cost of borrowing or the return on lending, serving as the primary monetary policy instrument for managing economic activity (Mishkin, 2024). The Central Bank of Nigeria uses the Monetary Policy Rate (MPR) to influence credit conditions, investment decisions, and inflation dynamics (CBN, 2024). Interest rates affect economic growth through multiple transmission mechanisms: investment channel (higher rates reduce capital formation), exchange rate channel (affecting net exports), credit channel (constraining lending), and asset price channel (impacting wealth effects) (Afiamo & Isah, 2022; Eleam, 2021 Sanusi & Akinlo, 2023). Nigeria's MPR fluctuated from 6% in 2020 to 18.75% in 2024, reflecting efforts to combat inflation that reached 28.2% in 2024 (CBN, 2024). Real estate development is particularly sensitive to interest rate changes because property acquisition and construction require substantial financing with long payback periods (Chukwuemeka et al., 2024). Higher interest rates increase mortgage

costs, reduce housing affordability, and constrain developer financing, thereby dampening construction activity and real estate investment. The relationship between interest rates and growth is typically negative in the short run but may exhibit nonlinear characteristics depending on inflation dynamics and financial sector efficiency (Eleam, 2021).

2.2 Theoretical Literature Review

2.2.1 Keynesian Theory of Investment and Employment

The Keynesian theory, developed by John Maynard Keynes in 1936, posits that aggregate demand is the primary driver of economic growth and employment, with investment and government expenditure serving as critical stimulants (Keynes, 1936; Jhingan, 2023). The theory emphasizes that insufficient aggregate demand leads to underutilization of productive capacity and involuntary unemployment, necessitating government intervention through fiscal policy to stimulate economic activity (Ogbonna et al., 2025). Investment decisions are influenced by entrepreneurs' expectations of future profitability (marginal efficiency of capital) relative to the cost of borrowing (interest rates), establishing an inverse relationship between interest rates and investment levels (Nwokoye & Dimnwobi, 2023). The theory introduces the multiplier effect, whereby an initial increase in autonomous expenditure (such as government capital expenditure or real estate investment) generates successive rounds of income and consumption, resulting in a magnified impact on national output (Adeleke & Olowe, 2023). In Nigeria's context, the Keynesian framework explains how government capital expenditure, which reached ₦2.1 trillion in 2023, stimulates economic growth through infrastructure development and demand creation (Budget Office of the Federation, 2024). Real estate development functions as a form of private investment that generates employment and income through construction activities, with multiplier effects estimated at 2.3 in Nigeria (Ogbonna et al., 2025). The theory's emphasis on labor utilization aligns with Nigeria's challenge of low labor force participation (52.7% in 2023) and high youth unemployment (42.5% in 2024), suggesting that policies enhancing employment absorption through sectors like real estate can stimulate aggregate demand and economic growth (NBS, 2025). The interest rate-investment nexus is particularly relevant given Nigeria's MPR fluctuations from 6% to 18.75% between 2020 and 2024, which directly affect real estate financing costs and investment decisions (CBN, 2024). However, critics note that Nigeria's growth constraints extend beyond demand deficiencies to include structural bottlenecks such as infrastructure deficits, institutional weaknesses, and supply-side rigidities that limit the Keynesian multiplier's effectiveness.

2.2.2 Endogenous Growth Theory

Endogenous growth theory, pioneered by Romer (1986, 1990) and Lucas (1988), challenges neoclassical assumptions by positing that economic growth is primarily determined by internal factors, particularly investment in physical capital, human capital, innovation, and knowledge spillovers rather than exogenous technological change (Romer, 1990; Aghion & Howitt, 2023). The theory emphasizes increasing returns to scale and positive externalities from capital accumulation, whereby investment in one sector generates knowledge spillovers and productivity enhancements across the economy. Unlike neoclassical models predicting convergence, endogenous growth theory explains sustained long-run growth through continuous reinvestment in productive assets and human capital development (Lucas, 1988; Barro & Sala-i-Martin, 2024). Applied to Nigeria, endogenous growth theory provides a framework for understanding how real estate development contributes to sustained economic growth beyond immediate construction activities. Real estate investment constitutes physical capital formation that enhances productive

infrastructure, with housing and commercial properties serving as platforms for economic activities (Oladunjoye & Omojola, 2023). The sector's contribution of 6.5% to GDP reflects its role in capital accumulation, while backward linkages to cement, steel, and financial services generate knowledge spillovers and productivity improvements (Ogunleye, 2023). Labor force participation represents human capital utilization, with higher participation rates expanding the economy's productive capacity and facilitating knowledge transfer (Bashir et al., 2024). Government capital expenditure on infrastructure, including roads, power, and telecommunications creates positive externalities by reducing transaction costs and enhancing private sector productivity, consistent with the theory's emphasis on complementary investments (Nwokoye & Dimnwobi, 2023). The theory's emphasis on institutional quality and property rights is particularly relevant to Nigeria, where land administration challenges and regulatory uncertainties constrain real estate development's growth potential (Oluwaseun & Adeyemi, 2024). Nigeria's housing deficit of 22 million units represents both underinvestment in physical capital and foregone opportunities for productivity-enhancing infrastructure (Federal Ministry of Works and Housing, 2023). However, empirical applications in Nigeria face challenges including poor data quality, institutional weaknesses, and the predominance of informal economic activities that complicate measurement of capital stock and productivity spillovers. The interaction between interest rates and capital accumulation - central to endogenous growth dynamics - is complicated by Nigeria's underdeveloped financial markets and limited mortgage financing, which constrain the translation of savings into productive real estate investment (Chukwuemeka et al., 2024).

2.3 Empirical Literature Review

Milala & Ariffin (2025) investigated the challenges and economic implications of sustainable real estate finance in Nigeria. The study employs a mixed-method approach, utilizing qualitative and quantitative data from reputable databases, policy documents, and industry reports. Findings reveal that the lack of financial incentives, inadequate regulatory enforcement, and minimal investor confidence significantly contribute to the slow adoption of sustainable real estate practices. The impact of these findings underscores the need for structural financial reforms and policy enhancements to foster a sustainable real estate sector. Implementing targeted solutions, Nigeria can achieve economic stability, increase green investment, and align its real estate industry with global sustainability standards. In conclusion, addressing these challenges through strategic financing models and regulatory improvements will drive long-term urban resilience and economic development in Nigeria. Yua (2025) examines the effect of interest rates on economic growth in Nigeria, highlighting the dynamic relationship between monetary policy and economic performance. Interest rates, a critical monetary policy tool, influence investment, consumption, and overall economic activity. Using empirical data from Nigerian economic indicators over a specified period, this research explores how variations in interest rates impact GDP growth. The findings indicate a significant correlation between interest rate adjustments and economic growth, with higher interest rates often linked to reduced investment and slower growth, while lower rates may spur economic activity but pose inflationary risks. The study underscores the importance of a balanced monetary policy to achieve sustainable growth and recommends strategies for optimizing interest rate policies to foster economic development in Nigeria. This research contributes to understanding the role of monetary policy in driving economic progress in developing economies like Nigeria. By analyzing panel data from a sample of 67 countries between 2010 and 2018, Gao, et al. (2024) examine the role of the real estate sector in different countries and its determinants. This empirical study yields three main findings. Firstly, there is a strong correlation between the

real estate sector and the financial services sector, the construction industry, as well as wholesale and retail trade. Secondly, there is a transition trend in both the input and output of the real estate sector from primary and secondary industries towards service-oriented industries. Lastly, key determinants influencing the economic effects of the real estate sector in a country include economic growth, current national income level, expense structure of the economy, aging population, as well as urbanization speed. Mutuku, Nyambuto & Ochenge (2023) employ an autoregressive distributed lag (ARDL) model to analyze quarterly time series data spanning from the first quarter of 2009 to the fourth quarter of 2019. The results reveal that real estate development has a positive and significant impact on economic growth in the short run. The study also establishes a long-run relationship between real estate development, the central bank rate, inflation and economic growth. Thus, the study recommends the formulation of policies to encourage investment in real estate development and human capital, as they are crucial for economic growth in Kenya and other developing countries. Aderemi, Akindele & John (2019) examined the relationship between real estate development and economic growth in Nigeria between the periods of 1981 and 2016 using Johansen cointegration test, DOLS and Granger causality approach. However, the results of this study show that real estate development has a non-significant positive relationship with economic growth in Nigeria. In addition, there is a unidirectional causality which runs from inflation rate to real estate development and economic growth in the country. Furthermore, based on the findings that emerged in this study, the Nigerian government should see real estate as a viable sector that the current mono-cultural nature of its economy could be diversified into since this sector has the capacity to propel the expansion of the country's growth to a sustainable level if well explored and developed.

2.4 Literature Gap

Existing literature on Nigeria's real estate development-economic growth nexus exhibits three critical gaps that this study addresses. First, methodological fragmentation characterizes current research, with studies examining isolated bivariate relationships between real estate and growth or fiscal policy and growth without integrating real estate development, labor force participation, government capital expenditure, and interest rates within a unified multivariate framework, potentially leading to omitted variable bias and incomplete policy guidance (Chukwuemeka et al., 2024). Second, temporal inadequacy limits research relevance, as most empirical analyses utilize data ending before 2020, thereby excluding critical recent developments such as the COVID-19 pandemic, post-2020 monetary policy tightening (interest rates rising from 6% to 18.75%), and fiscal interventions exceeding ₦2.1 trillion in capital expenditure, leaving the 1990-2024 period's structural transformations empirically unexplored. Third, analytical insufficiency is evident in limited examination of how macroeconomic policy variables—particularly interest rates and government capital expenditure—condition the relationship between real estate development and economic growth (Ogbonna et al., 2025); while theoretical frameworks suggest complementarity between fiscal infrastructure spending and private real estate investment, and inverse relationships between interest rates and real estate development, empirical evidence quantifying these interactive relationships in Nigeria's context remains scarce, constraining policymakers' ability to coordinate monetary policy, fiscal allocations, and sectoral development strategies to optimize growth outcomes.

Methodology

3.1 Research Design

This study adopts a quantitative research design utilizing ex-post facto methodology to examine the effect of real estate development, labor force participation rate, government capital expenditure, and interest rates on real GDP in Nigeria from 1990 to 2024. The ex-post facto design is appropriate because the variables of interest have already occurred and cannot be manipulated by the researcher (Kerlinger & Lee, 2023). The study employs time-series econometric analysis to establish long-run and short-run relationships among variables, consistent with macroeconomic growth studies (Gujarati & Porter, 2023).

3.2 Sources of Data

The study utilizes annual secondary time-series data spanning 1990 to 2024, comprising 35 observations. Data on real GDP, real estate development data (measured as real estate sector contribution to GDP), government capital expenditure, and interest rates are sourced from the Central Bank of Nigeria Statistical Bulletin and the National Bureau of Statistics' sectoral reports. Labour force participation rate data is extracted from the International Labour Organization database and the National Bureau of Statistics' labor force statistics. The choice of annual data is informed by data availability and consistency across the study period, and aligns with standard practice in macroeconomic time-series analysis (Brooks, 2005).

3.3 Model Specification

Following endogenous growth theory and Keynesian investment framework, the functional relationship is specified as:

$$RGDP = f(RED, LFPR, GCE, INT) \quad (1)$$

Where:

RGDP = Real Gross Domestic Product (dependent variable)

RED = Real Estate Development

LFPR = Labour Force Participation Rate

GCE = Government Capital Expenditure

INT = Interest Rate

The econometric form of the model is specified as:

$$RGDP_t = \beta_0 + \beta_1 RED_t + \beta_2 LFPR_t + \beta_3 GCE_t + \beta_4 INT_t + \varepsilon_t \quad (2)$$

Where:

β_0 = Constant term

$\beta_1, \beta_2, \beta_3, \beta_4$ = Coefficients of the explanatory variables

ε_t = Stochastic error term

t = Time period (1990-2024)

The model is standardized by transforming RGDP, RED and GCE into natural logarithm to curtail the effects of spurious regression. Thus:

$$LNRGDP_t = \beta_0 + \beta_1 LNRED_t + \beta_2 LFPR_t + \beta_3 LNGCE_t + \beta_4 INT_t + \varepsilon_t \quad (3)$$

Where:

LN = Natural logarithm

3.4 A Priori Expectations

Based on economic theory:

$\beta_1 > 0$: Real estate development is expected to positively affect RGDP through capital formation and employment generation

$\beta_2 > 0$: Higher labor force participation is expected to increase productive capacity and RGDP

$\beta_3 > 0$: Government capital expenditure should stimulate RGDP through infrastructure development and multiplier effects

$\beta_4 < 0$: Higher interest rates are expected to negatively affect RGDP by constraining investment and consumption.

3.5 Estimation Techniques

3.5.1 Autoregressive Distributed Lag (ARDL) Model

This study employs the Autoregressive Distributed Lag (ARDL) bounds testing approach developed by Pesaran et al. (2001) to examine both short-run and long-run relationships between variables. The ARDL model is preferred for several reasons: it is applicable regardless of whether variables are $I(0)$, $I(1)$, or mutually cointegrated; it performs well with small sample sizes; it allows different variables to have different optimal lags; and it simultaneously estimates short-run and long-run parameters (Pesaran et al., 2001).

ARDL Model Specification

The general $ARDL(p, q_1, q_2, q_3, q_4)$ model is specified as:

$$\Delta LNRGDP_t = \alpha_0 + \sum_{i=1}^p \alpha_i \Delta LNRGDP_{t-i} + \sum_{i=0}^q \beta_1 \Delta LNRED_{t-i} + \sum_{i=0}^q \beta_2 \Delta LFPR_{t-i} + \sum_{i=0}^q \beta_3 \Delta LNGCE_{t-i} + \sum_{i=0}^q \beta_4 \Delta INT_{t-i} + \lambda_1 LNRGDP_{t-1} + \lambda_2 LNRED_{t-1} + \lambda_3 LFPR_{t-1} + \lambda_4 LNGCE_{t-1} + \lambda_5 INT_{t-1} + \varepsilon_t \quad (4)$$

Where:

Δ = First difference operator, p = Optimal lag length for the dependent variable, q_1, q_2, q_3, q_4 = Optimal lag lengths for explanatory variables, α_0 = Drift component, α_i, β_{ji} = Short-run coefficients, $\lambda_1, \lambda_2, \lambda_3, \lambda_4, \lambda_5$ = Long-run coefficients, ε_t = White noise error term

3.6 Pre-estimation Tests

3.6.1 Descriptive Statistics

Descriptive statistics are computed to provide summary measures of the data characteristics including mean, median, standard deviation, minimum, maximum, skewness, and kurtosis for all variables.

3.6.2 Correlation Analysis

Pearson correlation analysis is conducted to examine the bivariate relationships between variables and detect potential multicollinearity problems. The correlation coefficient ranges from -1 to +1, with values close to +1 indicating strong positive relationships, values close to -1 indicating strong negative relationships, and values close to zero suggesting weak or no linear relationships (Brooks, 2024).

3.7 ARDL Bounds Testing Procedure

Step 1: Unit Root Testing

Prior to ARDL estimation, unit root tests are conducted using Augmented Dickey-Fuller (ADF) test to determine the order of integration of variables and ensure no variable is integrated of order two, $I(2)$, as this violates ARDL assumptions (Pesaran et al., 2001).

Step 2: Lag Length Selection

Optimal lag lengths are determined using information criteria including Akaike Information Criterion (AIC), Schwarz Bayesian Criterion (SBC), and Hannan-Quinn Criterion (HQC), with AIC preferred for its superior performance in small samples (Lütkepohl, 2023).

Step 3: Bounds Test for Cointegration

The null hypothesis of no cointegration ($H_0: \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = 0$) is tested against the alternative hypothesis of cointegration using F-statistics. The computed F-statistic is compared with critical values provided by Pesaran et al. (2001). If the F-statistic exceeds the upper bound critical value, the null hypothesis is rejected, confirming cointegration. If it falls below the lower bound, there is no cointegration. Results are inconclusive if the F-statistic falls between bounds (Pesaran et al., 2001).

Step 4: Error Correction Model (ECM)

The short-run dynamics and speed of adjustment to long-run equilibrium are examined through the Error Correction Model:

$$\Delta \text{LNRGDP}_t = \alpha_0 + \sum_{i=1}^p \alpha_i \Delta \text{LNRGDP}_{t-i} + \sum_{i=0}^q \beta_1 \Delta \text{LNRED}_{t-i} + \sum_{i=0}^q \beta_2 \Delta \text{LFPR}_{t-i} + \sum_{i=0}^q \beta_3 \Delta \text{LNGCE}_{t-i} + \sum_{i=0}^q \beta_4 \Delta \text{INT}_{t-i} + \phi \text{ECT}_{t-1} + \varepsilon_t \quad (5)$$

Where ECT_{t-1} is the error correction term (lagged residuals from the long-run equation), and ϕ is the speed of adjustment coefficient, expected to be negative and significant, indicating convergence to long-run equilibrium (Bannerjee et al., 1998).

Step 5: Long-Run Estimation

If cointegration is established, the long-run coefficients are estimated from the ARDL model using the following specification:

$$\text{LNRGDP}_t = \alpha_0 + \sum_{i=1}^p \alpha_i \text{LNRGDP}_{t-i} + \sum_{i=0}^q \beta_1 \text{LNRED}_{t-i} + \sum_{i=0}^q \beta_2 \text{LFPR}_{t-i} + \sum_{i=0}^q \beta_3 \text{LNGCE}_{t-i} + \sum_{i=0}^q \beta_4 \text{INT}_{t-i} + \varepsilon_t \quad (6)$$

3.8 Diagnostic and Stability Tests

To ensure model reliability and validity, the following diagnostic tests are conducted:

1. Serial Correlation Test: Breusch-Godfrey LM test examines the presence of autocorrelation in residuals
2. Heteroskedasticity Test: Breusch-Pagan-Godfrey test detects heteroskedastic error variance
3. Normality Test: Jarque-Bera test assesses whether residuals are normally distributed
4. Specification Test: Ramsey RESET test evaluates model specification adequacy
5. Stability Tests: Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMSQ) tests assess parameter stability over time (Brown et al., 1975)

3.9 Data Analysis Procedure

Data analysis is conducted using EViews 13 econometric software. The analysis proceeds systematically through: (1) descriptive statistics and correlation analysis to understand data characteristics and relationships; (2) unit root testing to determine integration orders; (3) ARDL bounds testing for cointegration; (4) short-run and long-run estimation; (5) diagnostic testing to validate model assumptions; and (6) stability analysis to assess parameter constancy. Results are presented in tables and interpreted at 5% significance level. Hypotheses are tested using t-statistics

for individual coefficients and F-statistics for joint significance, with decisions based on probability values compared to chosen significance levels (Gujarati & Porter, 2023).

Section Four

Data Presentation, Analysis and Interpretation

This section presents the empirical results and analysis of the study, beginning with descriptive statistics and correlation analysis to examine the basic characteristics and bivariate relationships among variables, followed by unit root tests to determine stationarity properties. The section then presents the ARDL bounds test results, short-run and long-run coefficient estimates, diagnostic tests, and stability tests, with interpretations of findings in relation to the research objectives and hypotheses.

4.1 Data Presentation

4.1.1 Descriptive Statistics

Table 4.1: Descriptive Statistics for Real Gross Domestic Product (RGDP), Real Estate Development (RED), Labour Force Participation Rate (LFPR), Government Capital Expenditure (GCE) and Interest Rate (INT) in Nigeria (1990-2024)

	LNRGDP	LNRED	LFPR	LNGCE	INT
Mean	10.63998	7.194469	59.91429	6.21987	18.98714
Median	10.68824	7.950499	56	6.482511	17.9
Maximum	11.30133	9.864923	81	8.516213	31.6
Minimum	9.984155	2.543014	55	3.180135	11.5
Std. Dev.	0.492668	2.109792	7.785248	1.360117	4.152167
Skewness	-0.124813	-0.846038	1.63762	-0.578521	0.950519
Kurtosis	1.368445	2.57862	4.114492	2.830537	4.228864
Jarque-Bera	3.972913	4.434327	17.45521	1.994215	7.472574
Probability	0.137181	0.108918	0.000162	0.368945	0.023842
Sum	372.3992	251.8064	2097	217.6954	664.55
Sum Sq. Dev.	8.252535	151.3415	2060.743	62.89722	586.1767
Observations	35	35	35	35	35

Source: Researcher's computation on Eviews 13 (2026)

The descriptive statistics indicate that real gross domestic product (LNRGDP), real estate development (LNRED), and government capital expenditure (LNGCE) exhibit relative stability over the study period, as reflected by the closeness of their mean and median values and their low standard deviations, while labor force participation rate (LFPR) and interest rate (INT) display greater variability. The distributional properties show mild negative skewness for LNRGDP, LNRED, and LNGCE, whereas LFPR and INT are positively skewed, suggesting the occurrence of occasional high values. The Jarque-Bera test further reveals that LNRGDP, LNRED, and LNGCE are normally distributed, while LFPR and INT deviate from normality at the 5% significance level. Overall, the presence of 35 observations for each variable provides an adequate basis for reliable time-series econometric analysis.

4.1.2 Correlation Analysis

Table 4.2: Correlation Analysis for Real Gross Domestic Product (RGDP), Real Estate Development (RED), Labour Force Participation Rate (LFPR), Government Capital Expenditure (GCE) and Interest Rate (INT) in Nigeria (1990-2024)

	LNRGDP	LNRED	LFPR	LNGCE	INT
LNRGDP	1	0.730504215	0.6607827	0.7801795	-0.5680459
LNRED	0.7305042	1	0.5633506	0.7544586	-0.6137253
LFPR	0.6607827	0.563350562	1	0.52789	-0.2299108
LNGCE	0.7801795	0.75445862	0.52789	1	-0.5630099
INT	-0.5680459	-0.613725326	-0.2299108	-0.5630099	1

Source: Researcher's computation on Eviews 13 (2026)

The Pearson correlation matrix reveals that real GDP (LNRGDP) exhibits strong positive correlations with real estate development (0.731), government capital expenditure (0.780), and labor force participation rate (0.661), while demonstrating a negative correlation with interest rate (-0.568). These relationships align with theoretical expectations, as real estate development, government spending, and labor force participation stimulate economic growth, whereas higher interest rates constrain investment and economic activity. Among explanatory variables, correlations range from 0.230 to 0.754, with the highest being between LNRED and LNGCE (0.754). Importantly, no correlation coefficient exceeds the 0.80 multicollinearity threshold, indicating that multicollinearity is not a severe concern and the model is appropriate for further econometric analysis (Gujarati & Porter, 2020).

4.2 Data Analysis

4.2.1 Unit Root Test Result

The Augmented Dickey Fuller (ADF) unit root test is summarized in the Table 4.3 below. This test was carried out on each of the variables at 5% critical value.

Table 4.3: Summary of the Unit Root Test Result

		ADF Test statistics			
Variable		At Level	1st Difference	Decision	Order of Integration
LNRGDP		-0.664128	-3.041924	Stationary at 1st difference	I(1)
LNRED		-3.720119	-	Stationary at level	I(0)
LFPR		-1.339843	-6.014062	Stationary at 1st difference	I(1)
LNGCE		-1.725279	-6.830846	Stationary at 1st difference	I(1)
INT		-2.340355	-5.148230	Stationary at 1st difference	I(1)
Critical Values	5%	-2.954021	-2.960411		

Source: Researcher's computation (2025)

The Augmented Dickey-Fuller (ADF) unit root test results presented in Table 4.3 reveal the stationarity properties of the variables. At level, only real estate development (LNRED) is stationary with an ADF statistic of -3.720 exceeding the 5% critical value of -2.954, indicating it is integrated of order zero, I(0). The remaining variables—LNRGDP (-0.664), LFPR (-1.340),

LNGCE (-1.725), and INT (-2.340)—are non-stationary at level as their ADF statistics are less negative than the critical value. However, after first differencing, all non-stationary variables become stationary: LNRGDP (-3.042), LFPR (-6.014), LNGCE (-6.831), and INT (-5.148) all exceed the 5% critical value of -2.960, confirming they are integrated of order one, I(1). These results indicate a mixed order of integration with variables being I(0) and I(1), which satisfies the precondition for applying the ARDL bounds testing approach, as no variable is integrated of order two or higher.

Table 4.4: ARDL Bounds Cointegration Test Result (@ 5% critical value)

Model	F-Statistics	K	Significance level	Critical Bound Value	
				10 (Lower Bound)	11 (Upper Bound)
	12.179519	4	5%	3.058	4.223

Source: Author's Computation using E-views 13 output (2026)

The ARDL bounds test results in Table 4.4 reveal the existence of a long-run cointegrating relationship among the variables. The calculated F-statistic of 12.180 substantially exceeds both the lower bound (3.058) and upper bound (4.223) critical values at the 5% significance level with k=4 explanatory variables. This decisively rejects the null hypothesis of no cointegration, confirming that real GDP, real estate development, labor force participation rate, government capital expenditure, and interest rates share a stable long-run equilibrium relationship over the study period. The strong evidence of cointegration justifies proceeding to estimate both long-run coefficients and short-run dynamics through the ARDL error correction model.

4.3 Short run ARDL Test

Table 4.5: Parsimonious Short-run Error Correction Term (ECT) Confirming Long-Run Equilibrium in the Real Estate Development, Employment Generation and Economic Growth in Nigeria

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COINTEQ*	-0.054378	0.005826	-9.334367	0.0000

Source: Author's Computation using E-views 13 output (2026)

The error correction term (COINTEQ) presented in Table 4.5 has a coefficient of -0.054 with a standard error of 0.006, yielding a t-statistic of -9.334 that is significant at the 5% level (p=0.000). The negative and statistically significant coefficient confirms the validity of the long-run cointegrating relationship and indicates that approximately 5.4% of any disequilibrium in real GDP is corrected each year, implying a moderate speed of adjustment toward long-run equilibrium. This suggests that following any short-run shock, the system requires approximately 18 years (1/0.054) to fully return to its long-run equilibrium path, reflecting gradual adjustment dynamics in Nigeria's macroeconomic system.

4.4 Test for Long Run Relationship

It is necessary to ascertain the long run relationship that exists between real estate development, employment generation and economic growth in Nigeria.

Table 4.6: Summary of long run estimates for Real Gross Domestic Product (RGDP), Real Estate Development (RED), Labour Force Participation Rate (LFPR), Government Capital Expenditure (GCE) and Interest Rate (INT) in Nigeria (1990-2024)

Variable *	Coefficient	Std. Error	t-Statistic	Prob.
LNRED	0.532874	0.254732	2.091903	0.0453
LFPR	-0.057635	0.049955	-1.153731	0.2580
LNGCE	-0.166203	0.232861	-0.713746	0.4811
INT	0.064744	0.050023	1.294277	0.2058
C	10.92429	1.933401	5.650294	0.0000

Source: Author's Computation using E-views 13 output (2026)

The long-run ARDL estimation results in Table 4.6 reveal that real estate development (LNRED) has a positive and statistically significant effect on real GDP with a coefficient of 0.533 ($t=2.092$, $p=0.045$). This indicates that a 1% increase in real estate development leads to approximately 0.53% increase in real GDP in the long run, confirming the growth-enhancing role of the sector and aligning with endogenous growth theory predictions. However, labor force participation rate (LFPR), government capital expenditure (LNGCE), and interest rate (INT) are statistically insignificant at conventional levels. LFPR exhibits an unexpected negative coefficient of -0.058 ($p=0.258$), while LNGCE shows a negative coefficient of -0.166 ($p=0.481$), and INT displays a positive coefficient of 0.065 ($p=0.206$). These counterintuitive signs and statistical insignificance suggest that their long-run effects on economic growth may be indirect, subject to structural constraints, or obscured by measurement issues and implementation inefficiencies in Nigeria's macroeconomic context. The constant term is positive and highly significant at 10.924 ($p=0.000$).

4.5 Post-Estimation Diagnostics

The diagnostic tests confirm that the estimated ARDL model satisfies key econometric assumptions. The Breusch-Godfrey Serial Correlation LM test yields an F-statistic of 0.079 ($p=0.925$), indicating failure to reject the null hypothesis of no serial correlation, thus confirming that residuals are free from autocorrelation. The Breusch-Pagan-Godfrey heteroskedasticity test produces an F-statistic of 0.812 ($p=0.585$), accepting the null hypothesis of homoskedasticity and confirming constant error variance across observations. The Jarque-Bera normality test statistic of 1.815 ($p=0.404$) with skewness of -0.315 and kurtosis of 3.941 indicates that residuals are normally distributed, satisfying the normality assumption.

The model's goodness of fit is satisfactory, with R-squared of 0.531 and adjusted R-squared of 0.525, indicating that approximately 53% of variations in real GDP are explained by the model. The F-statistic of 4.209 ($p=0.003$) confirms overall model significance. The Durbin-Watson statistic of 1.887 is close to 2, further corroborating the absence of first-order autocorrelation. Additionally, the CUSUM stability test shows that all recursive residuals fall within the 5% critical

bounds, confirming parameter stability over the study period (Brown et al., 1975). These results validate the reliability and robustness of the ARDL model estimates.

4.6 Discussion of Findings

The study finds that real estate development exerts a positive and statistically significant effect on real GDP in the long run. This finding aligns with endogenous growth theory, which emphasizes physical capital accumulation as a determinant of sustained economic expansion (Romer, 1990; Lucas, 1988), and is consistent with empirical evidence from Mutuku et al. (2023); Chukwuemeka et al. (2024) who documented significant multiplier effects of real estate investment on GDP. However, the positive impact operates through multiple channels: direct employment generation in construction activities, backward linkages to manufacturing sectors supplying building materials, forward linkages to property management and real estate services, and wealth effects that stimulate aggregate demand. Labour force participation rate exhibits a negative and statistically insignificant effect on real GDP. Contrary to theoretical expectations, this counterintuitive result suggests that simply increasing the proportion of the population in the labor force does not automatically translate to economic growth in Nigeria's context. Several explanations are plausible. First, the quality of employment matters more than quantity; Nigeria's labor market is characterized by high rates of underemployment, informal sector dominance, and low productivity activities that contribute minimally to GDP growth (Adelowokan et al., 2023). Second, labor force expansion without corresponding capital investment and technological advancement may result in diminishing marginal productivity, consistent with neoclassical production theory.

Government capital expenditure demonstrates a negative, though statistically insignificant effect, contradicting Keynesian theory predictions of positive fiscal multipliers. This unexpected result reflects Nigeria's persistent challenges with public expenditure efficiency, including project implementation delays, budget padding, corruption, and poor maintenance of completed infrastructure (Nwokoye & Dimnwobi, 2023).

Interest rate exhibits a positive coefficient, though statistically insignificant, contrary to standard monetary theory predicting inverse relationships between interest rates and economic growth. This puzzling result may reflect Nigeria's unique macroeconomic dynamics where interest rate policy serves multiple, sometimes conflicting objectives including inflation control, exchange rate stability, and growth promotion (Yua, 2025; CBN, 2024).

Section Five

Summary of Findings, Conclusion and Recommendations

5.1 Summary of Findings

This study examined the effect of real estate development, labor force participation rate, government capital expenditure, and interest rates on real GDP in Nigeria from 1990 to 2024 using the ARDL bounds testing approach. The ARDL bounds test confirmed a long-run cointegrating relationship among the variables with an F-statistic of 12.180, significantly exceeding the upper bound critical value of 4.223 at 5% significance level. The error correction term was negative and significant at -0.054 ($p=0.000$), indicating a moderate speed of adjustment toward long-run equilibrium at approximately 5.4% annually.

The long-run estimation results revealed the following:

Real estate development positively and significantly affects real GDP.

- Labor force participation rate exerts negative and insignificant effect on real GDP.

- Government capital expenditure posits negative and insignificant effect on real GDP.
- Interest rate indicates positive but insignificant effect on real GDP.

Diagnostic tests confirmed model adequacy, with no serial correlation, homoskedastic residuals, normally distributed errors, and stable parameters over time as evidenced by CUSUM test results within 5% bounds.

5.2 Conclusion

This study provides empirical evidence on the determinants of economic growth in Nigeria over the 1990-2024 period, with important implications for policy formulation. Real estate development emerges as a significant long-run driver of economic growth, validating its role as a critical sector for capital formation, employment generation, and economic transformation. The positive and significant relationship between real estate development and real GDP confirms endogenous growth theory predictions and underscores the sector's strategic importance in Nigeria's development agenda. However, the insignificant effects of labour force participation rate, government capital expenditure, and interest rates on economic growth highlight structural inefficiencies and implementation challenges in Nigeria's macroeconomic environment. The counterintuitive negative signs for labour force participation and government capital expenditure suggest that quantity of inputs matters less than quality, efficiency, and strategic deployment. These findings indicate that Nigeria's growth constraints extend beyond factor accumulation to encompass institutional weaknesses, governance deficits, human capital quality deficiencies, and inefficient resource allocation mechanisms. The study concludes that while real estate development offers substantial growth potential, realizing Nigeria's economic transformation requires complementary reforms addressing labour market efficiency, public expenditure effectiveness, financial sector development, and institutional quality. Policymakers must adopt integrated approaches that coordinate sectoral development policies with macroeconomic stabilization frameworks to maximize growth outcomes and achieve sustainable economic development.

5.3 Recommendations

- Given the positive and significant effect of real estate development on economic growth, the government should prioritize policies that stimulate the sector through improved access to affordable financing, particularly mortgage finance, by mandating deposit money banks to allocate minimum percentages of loan portfolios to real estate financing and establishing specialized housing finance institutions. Regulatory frameworks governing land acquisition, property registration, and building approvals should be streamlined to reduce transaction costs and development timelines, with state governments harmonizing land use regulations and digitalizing property documentation processes.
- To translate labor force participation into meaningful economic growth, policies must focus on employment quality rather than mere quantity. The government should expand technical and vocational education training (TVET) programs aligned with industry requirements, particularly in construction, manufacturing, and digital economy sectors, while incentivizing private sector participation through tax credits for firms investing in workforce development.
- The negative relationship between government capital expenditure and economic growth necessitates fundamental reforms in public financial management to enhance expenditure efficiency and effectiveness. The Budget Office should strengthen project appraisal mechanisms,

requiring rigorous cost-benefit analyses, feasibility studies, and impact assessments before approving capital projects, while prioritizing growth-enhancing infrastructure.

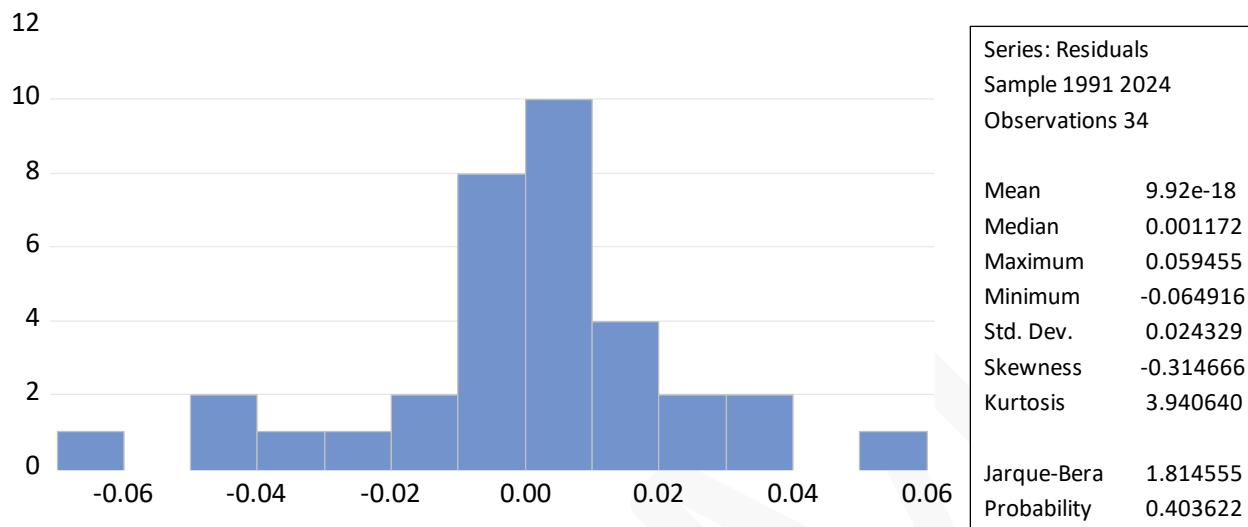
- Despite the insignificant effect of interest rates on economic growth, monetary policy must be carefully calibrated to balance inflation control with growth promotion. The Central Bank of Nigeria should adopt a flexible inflation targeting framework that considers growth implications of interest rate adjustments, particularly for investment-sensitive sectors like real estate.
- The CBN should implement differentiated interest rate policies including concessional rates for priority sectors such as housing, manufacturing, and agriculture, while maintaining market-based rates for general lending to preserve monetary policy credibility.

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APPENDICES

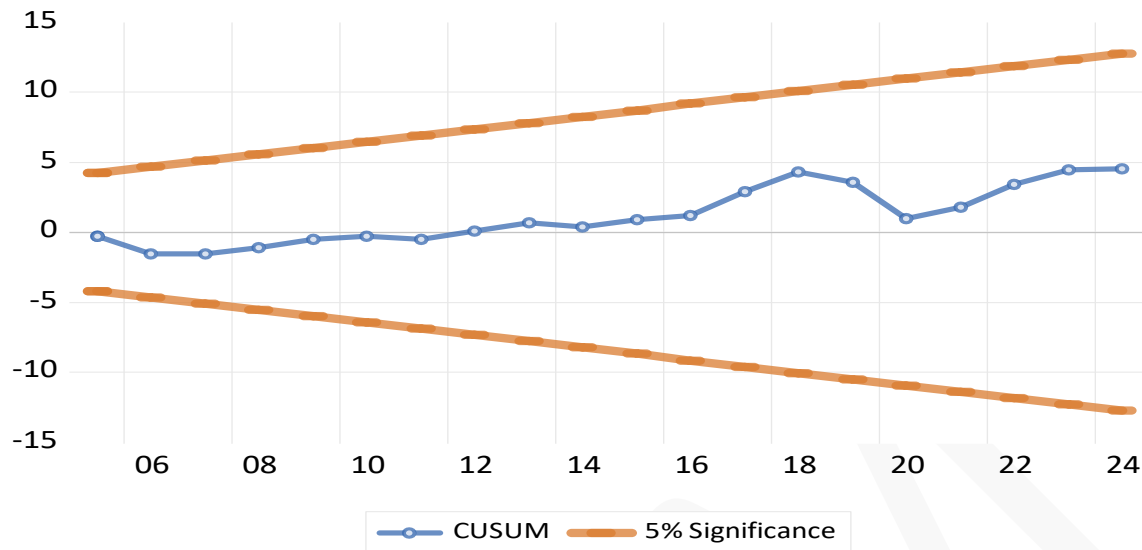


Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.078505	Prob. F(2,24)	0.9247
Obs*R-squared	0.220985	Prob. Chi-Square(2)	0.8954

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	0.812099	Prob. F(7,26)	0.5854
Obs*R-squared	6.100092	Prob. Chi-Square(7)	0.5281
Scaled explained SS	5.244899	Prob. Chi-Square(7)	0.6301



**DATA TABLE FOR REAL ESTATE DEVT & EMPLOYMENT GENERATION
VARIABLES IN NIGERIA (1990-2024)**

YEAR	RGDP	REAL ESTATE	LFPR	CAPITAL EXP.	INTR
1990	21,680.20	12.72	57	24.05	25.3
1991	21,757.90	15.60	55	28.34	20
1992	22,765.55	19.45	55	39.76	24.8
1993	22,302.24	30.41	55	54.5	31.6
1994	21,897.47	89.47	55	70.92	20.5
1995	21,881.56	150.73	55	121.14	20.2
1996	22,799.69	197.61	55	212.93	19.8
1997	23,469.34	219.71	55	269.65	17.8
1998	24,075.15	320.44	55	309.02	18.2
1999	24,215.78	433.52	55	498.03	20.3
2000	25,430.42	537.31	55	239.45	21.3
2001	26,935.32	604.83	55	438.7	23.4
2002	31,064.27	712.75	55	321.38	24.8
2003	33,346.62	945.48	55	241.69	20.7
2004	36,431.37	1,447.48	56	351.25	19.2
2005	38,777.01	2,216.00	56	519.47	17.9
2006	41,126.68	2,490.71	56	552.39	16.9
2007	43,837.39	2,836.99	56	759.28	16.9
2008	46,802.76	3,262.54	56	960.89	15.1
2009	50,564.26	3,718.45	56	1,152.80	19
2010	55,469.35	4,127.99	56	883.87	17.6
2011	58,180.35	4,584.96	60	918.55	16
2012	60,670.05	5,545.00	60	874.7	16.8
2013	63,942.85	6,677.10	60	1,108.39	16.7

2014	67,977.46	7,475.54	60	783.12	16.5
2015	69,780.69	8,187.55	72	818.35	16.8
2016	68,652.43	8,340.43	75	653.61	16.9
2017	69,205.69	8,591.54	76	1,242.30	17.6
2018	70,536.35	8,632.82	76	1,682.10	16.9
2019	72,094.09	8,997.60	59	2,289.00	15.4
2020	70,800.54	8,678.13	59	1,614.89	13.6
2021	73,382.77	9,249.65	59	2,522.47	11.5
2022	74,752.42	10,243.98	81	3,133.82	12.3
2023	77,936.10	10,503.07	59	4,486.21	18.75
2024	80,928.85	19,243.39	77	4,995.10	27.5