BEYOND BOOM AND BUST: A ROADMAP FOR NIGERIA'S TRANSITION TO A STEADY STATE ECONOMY

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Abstract
Nigeria's economic paradox—resource wealth amid underdevelopment—calls for a paradigm shift. This paper applies the steady-state economy perspective, integrating empirical evidence (1990–2024), comparative lessons, and insights from post-growth and Modern Monetary Theory (MMT). Using a Vector Error Correction Model (VECM), we confirm that GDP, savings, investment, and population are cointegrated, though adjustment toward equilibrium remains slow. Findings reveal structural weaknesses: low domestic savings, underinvestment, rapid population growth, and heavy oil dependence. Informality, gender gaps, and regional inequalities further constrain inclusive growth. Ecological stress from resource depletion and climate vulnerability remains under-addressed. Comparative lessons from Japan, Norway, Costa Rica, Rwanda, and Ethiopia emphasize fiscal discipline, human capital, diversification, and institutional credibility. The study proposes a phased roadmap—(1) short-term stabilization and social protection; (2) medium-term diversification and institutional reform; (3) long-term ecological transition and innovation. Nigeria's steady-state journey is as political and social as it is economic, requiring credible institutions, inclusive policies, and ecological foresight.

Key words: *Savings and investment; Post-growth; Modern Monetary Theory; Sustainability; Policy roadmap.*

JEL Classification: O11, O40, O44, C32, E62, Q56

I. INTRODUCTION

Nigeria, Africa's most populous country and largest economy, continues to grapple with a paradox of growth without transformation. Despite vast natural and human resources and periods of rapid GDP expansion, most notably in the early 2000s, sustainable development remains elusive. Oil dependence has produced repeated boom-and-bust cycles, while the informal sector, which accounts for over half of employment, remains largely excluded from formal savings and investment channels.

Gains in GDP per capita have been eroded by rapid population growth, deepening unemployment, poverty, and inequality. Gender and regional disparities persist, with women and youth disproportionately affected by underemployment and limited access to education and finance. Environmental pressures, including deforestation, land degradation, and climate change, threaten long-term resilience.

Recent reforms (2023–2024), such as subsidy removal and exchange rate unification, highlight both the urgency and difficulty of charting a more sustainable path. The central question is whether Nigeria can transition toward a steady state economy—balancing income, capital, population, and ecological limits—while ensuring social inclusion and resilience.

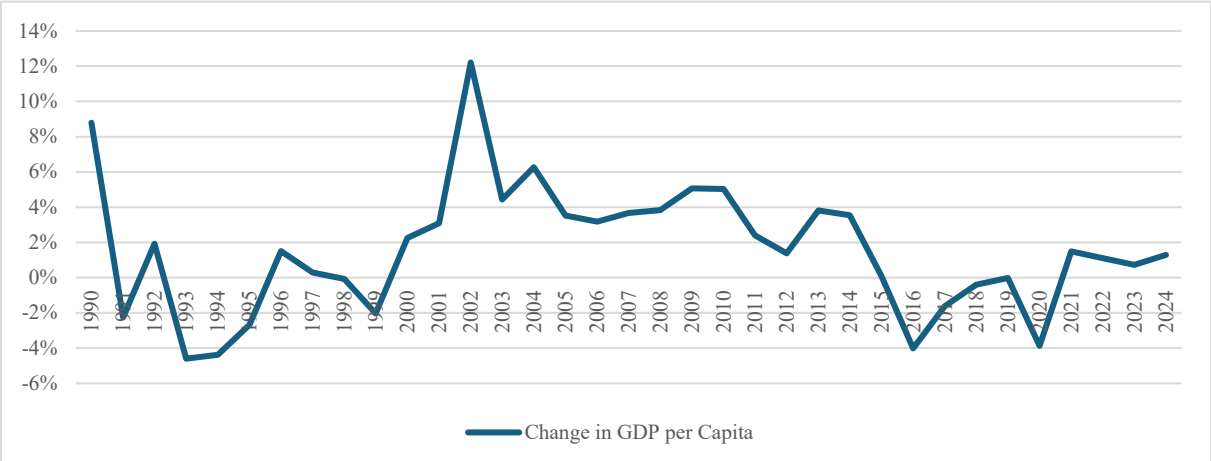

Figure 1. Nigeria's GDP per capita growth, 2000–2024 (annual % change)
Data Source: (World Bank, 2025)

The chart illustrates the boom-and-bust growth cycles, highlighting the 2000s surge, the 2015–2016 contraction, and post-2020 volatility.

The core research problem is that Nigeria's stagnation is not merely cyclical but structural. Persistent weaknesses in savings mobilization, investment, and human capital formation—combined with a population exceeding 220 million and projected to double by 2050—make the traditional growth-first model increasingly unsustainable. The central question, therefore, is whether Nigeria can transition toward a steady state economy: an equilibrium in which income per capita, capital stock, and population dynamics evolve in balance, avoiding both degrowth traps and unsustainable growth spirals. This framing builds on earlier work that investigated Nigeria's economic decline through parameters such as domestic savings, capital depreciation, and population dynamics (Stober, 2016). By extending the empirical evidence through 2023, the study tests whether convergence toward a steady state is feasible under current conditions and identifies the structural adjustments required. This inquiry is motivated by three gaps (Table 1).

Table 1. Key research gaps motivating this study

Gap	Guiding Question
Structural	Which parameters most significantly explain Nigeria's declining performance and slow transformation?
Comparative	How has the steady state concept been applied in other contexts, and what lessons can Nigeria draw?
Institutional	What demographic, political, and institutional obstacles might hinder Nigeria's transition?

Comparative insights are essential in this regard. Countries such as Japan and Norway illustrate high-income, low- or negative-growth models, while Costa Rica demonstrates the potential of a middle-income, sustainability-driven approach. At the other end, Rwanda highlights the dynamics of low-income economies with rapid population growth. Nigeria's positioning within this spectrum underscores the urgency of adopting policies that balance growth and sustainability (Figure 2).

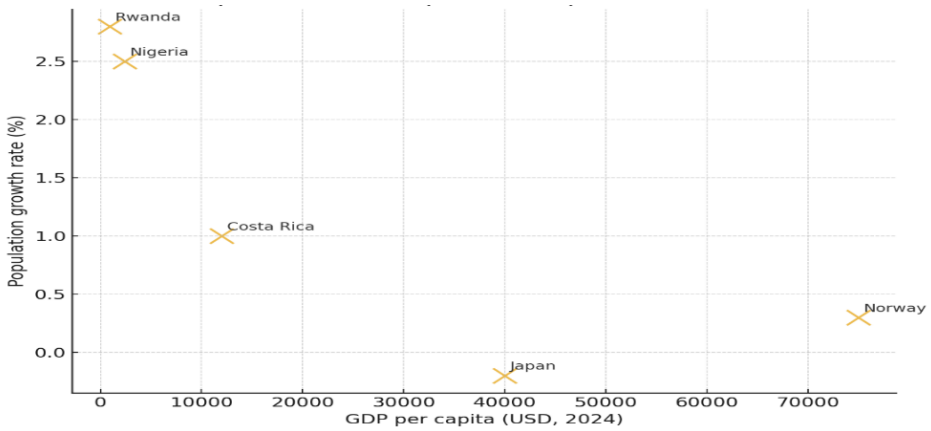

Figure 2. Comparative development snapshot.

Scatterplot of GDP per capita (USD, 2024) versus population growth rate (%), comparing Nigeria, Japan, Norway, Costa Rica, and Rwanda.

At the structural level, Nigeria's challenges are stark. Savings and investment as a share of GDP remain well below peer averages, inflation is persistently high, and the Human Capital Index reveals critical deficits in education and health outcomes (Figure 3). These weaknesses reinforce the argument that cyclical reforms are insufficient without deeper structural transformation.

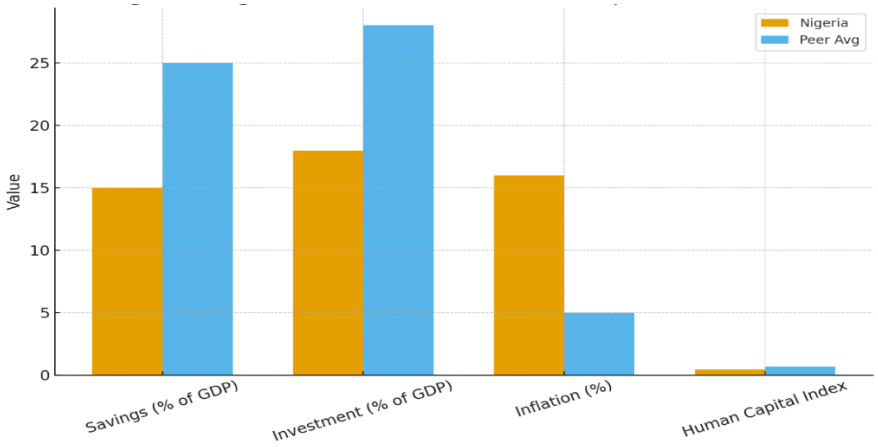

Figure 3. Nigeria's structural weaknesses vs. peers (mock data).

Bar chart comparing Nigeria with peer averages across four indicators: savings, investment, inflation, and human capital.

- Savings (% of GDP) and Investment (% of GDP) are notably lower in Nigeria.
- Inflation is significantly higher.
- Human Capital Index lags far behind the peer benchmark.

Addressing the research guiding questions requires revisiting both classical development theories—Rostow's stages of growth, the Harrod–Domar and Solow models, the Lewis dual-sector model—and more recent post-growth frameworks advanced by Daly, Jackson, Raworth, Kallis, and Modern Monetary Theory (MMT).

The contribution of this paper is fourfold:

- Empirical: updating evidence through 2024 with VECM estimations of Nigeria's transition dynamics.
- Conceptual: embedding Nigeria's experience in global steady state, degrowth, and sustainability debates.
- Comparative: drawing lessons from diverse cases such as Japan, Norway, Costa Rica, and Rwanda.
- Policy-oriented: providing a structured roadmap that integrates MMT-informed monetary policy perspectives and aligns Nigeria's trajectory with the SDGs and Africa's structural transformation agenda.

II. Conceptual & Theoretical Framework

1. Clarifying Key Concepts

Economic development theories have long debated the drivers of growth and the conditions for sustainable prosperity. A factor-driven economy relies primarily on natural resources and cheap labor, an investment-driven economy emphasizes capital accumulation and industrial expansion, while an innovation-driven economy is propelled by knowledge, technology, and institutional capacity (Porter, 1990). A steady state economy, as developed by Herman Daly (1977; 2014), refers to an economic system in which throughput—energy and material use remain within ecological limits, balancing population and capital growth with environmental sustainability. Recent scholarship extends this to post-growth and degrowth perspectives, emphasizing well-being, equity, and ecological resilience over perpetual GDP expansion (Kallis, 2019; Hickel, 2020; Jackson, 2021).

2. Classical Growth Theories

2.1. Rostow's stages of growth

W.W. Rostow (1960) proposed a linear progression from "traditional society" to "high mass consumption." His model assumes that increased savings and investment inevitably trigger self-sustaining growth. Critics argue it overgeneralizes historical experience, neglects institutional and cultural diversity, and remains biased toward Western industrialization pathways (Baran & Hobsbawm, 1961; Krantz, 2011). More recent critiques stress that many resource-rich economies, including Nigeria, fail to reach "take-off" despite high investment inflows due to weak governance and external shocks (Rodrik, 2016).

2.2. Harrod–Domar model

The Harrod–Domar (1946) model links economic growth directly to savings and investment rates, with capital-output ratios determining growth potential. While it highlights Nigeria's persistent savings–investment gap, it assumes constant returns to capital and ignores technological change. Contemporary extensions (UNECA, 2020) stress that capital accumulation without institutional reform and productivity growth risks "jobless growth."

2.3. Lewis dual-sector model

Arthur Lewis (1954) argued that development occurs as surplus rural labor shifts to higher productivity in urban industry. Nigeria's reality partly aligns with the fact that rural-to-urban migration has occurred, but without sufficient industrial absorption, leading to mass urban underemployment. Updated analyses of Africa suggest Lewis's model is undermined by premature deindustrialization and the rise of informal service economies (Rodrik, 2016; Newfarmer et al., 2019).

2.4. Solow neoclassical growth model

The Solow (1956) model introduced capital, labor, and exogenous technology into growth dynamics, predicting convergence toward a steady state. It remains foundational for steady state analysis, particularly its insight that long-run growth depends on technological progress rather than savings alone. Extensions by Mankiw, Romer, and Weil (1992) incorporated human capital. Recent evidence, however, shows that many developing countries, including Nigeria, diverge from global steady state paths due to institutional failures and demographic pressures (IMF, 2022).

2.5. Endogenous growth theory

Endogenous growth models (Romer, 1986; Lucas, 1988) emphasize innovation, knowledge spillovers, and human capital as growth drivers. These models underscore the importance of education and R&D—areas where Nigeria lags. Empirical studies confirm that countries investing in innovation ecosystems experience more resilient long-term growth (UNECA, 2022; World Bank, 2023).

3. Alternative and Contemporary Frameworks

3.1. Porter's competitiveness framework

Michael Porter (1990) introduced a classification of factor-driven, investment-driven, innovation-driven, and wealth-driven economies. Nigeria remains trapped in the factor-driven stage, reliant on oil rents and low-cost labor, with limited transition into higher value-added activities. Current African competitiveness studies reinforce the importance of institutional quality and innovation in breaking this trap (AfDB, 2022).

3.2. Steady state & degrowth economics

Building on Daly's ecological economics, recent works argue for economic systems prioritizing well-being over output. Kate Raworth's Doughnut Economics (2017) frames development within "planetary boundaries" and "social foundations." Jason Hickel (2020) advocates "degrowth" as an intentional downscaling of resource use in rich nations, while Tim Jackson (2021) promotes "post-growth" strategies balancing prosperity with ecological stability. Giorgos Kallis (2019) highlights the political economy of limits, warning that growth dependence is structurally embedded in global capitalism.

These approaches are increasingly referenced in UN and OECD debates on sustainable development, with the African Union's Agenda 2063 emphasizing inclusive growth, ecological resilience, and demographic management (AU, 2020).

4. Modern Monetary Theory (MMT)

Modern Monetary Theory (MMT) has emerged in recent decades as an alternative macroeconomic framework, challenging orthodox views on fiscal and monetary constraints. Pioneered by scholars such as L. Randall Wray (1998), Stephanie Kelton (2020), and William Mitchell (2019), MMT argues that countries issuing their own sovereign currency cannot "run out of money" in the same way households or firms can. Instead, such governments face real limits in terms of inflation, productive capacity, and resource availability, rather than financial solvency.

In the MMT framework, fiscal deficits are not inherently problematic; they can be instruments for achieving full employment, financing infrastructure, and addressing social needs, provided that inflationary pressures are

controlled. Central banks and treasuries are viewed as integrated parts of the state's monetary system, with taxation serving primarily to regulate demand and control inflation rather than to "fund" spending.

5. Application to Developing Economies

While most MMT scholarship has focused on advanced economies like the United States, debates on its relevance to developing countries are growing. For resource-dependent economies such as Nigeria, MMT highlights the possibility of using sovereign monetary tools to finance developmental investments in local currency rather than relying excessively on external borrowing (Bonizzi & Michell, 2019). However, critics argue that in economies with structural dependence on imports, weak institutions, and volatile exchange rates, large-scale deficit financing could fuel inflation and currency depreciation (Epstein, 2020).

6. Relevance for Nigeria's Steady State Debate

Nigeria's economic stagnation reveals the shortcomings of traditional growth models that assume linear progress and automatic convergence. Classical theories offer valuable insights into capital accumulation, labour shifts, and technological change, but they often overlook demographic pressures, institutional weaknesses, and ecological limits. Contemporary steady-state and post-growth frameworks provide a more nuanced perspective, acknowledging that unbalanced population growth, oil dependency, and low savings hinder sustainable development. Combining these perspectives suggests that Nigeria's path forward requires a hybrid approach: strengthening capital formation and productivity while embedding policies within ecological and institutional limits.

MMT introduces a critical dimension to steady-state discussions: how fiscal and monetary policy can support non-growth-oriented stability goals. For instance, Nigeria could, in principle, finance investments in renewable energy, education, and health through domestic currency issuance without immediate reliance on foreign debt—aligning with the steady-state principle of social well-being over perpetual GDP expansion. However, risks of inflation, capital flight, and exchange-rate instability mean that MMT's prescriptions must be carefully adapted to Nigeria's context.

Thus, while classical theories emphasise savings, investment, and capital accumulation as the primary constraints on growth, MMT reframes the discussion: for a sovereign issuer like Nigeria, the central question is not "where will the money come from?" but rather "what are the economy's real resource and institutional limits?" This insight complements steady-state economics by underscoring that monetary sovereignty, if well managed, can enable policies that prioritise ecological balance and social welfare.

III. NIGERIA'S DEVELOPMENT EXPERIENCE

Nigeria's economic trajectory since independence has been marked by periods of rapid growth, followed by deep crises. Despite episodes of high GDP growth—particularly during the early 2000s oil boom—structural weaknesses have prevented durable transformation. The reliance on crude oil exports, low domestic savings, limited industrial diversification, and rapid population growth have produced what scholars describe as a growth-without-development paradox (Iyoha & Oriakhi, 2020).

1. Growth and Oil Dependency

Between 2000 and 2014, Nigeria's GDP (PPP) expanded by nearly 280%, propelled primarily by oil revenues. However, the collapse in global oil prices from 2014 onward exposed the fragility of this model, pushing the country into recession in 2016 and again in 2020 following the COVID-19 shock. Oil continues to account for over 80% of export earnings and about half of government revenue, leaving the economy highly vulnerable to external shocks (World Bank, 2023). Continued dependence on oil exports exposes Nigeria to fiscal instability, Dutch disease effects, and vulnerability to global energy transitions. If oil prices remain volatile, Nigeria risks budget shortfalls, underinvestment in non-oil sectors, and stranded assets. To mitigate these critical long-term risks of overreliance on oil, the country should enforce fiscal rules that cap oil revenue spending during boom periods, strengthen and depoliticize its Sovereign Wealth Fund, and prioritize investments in renewable energy and green infrastructure. Additionally, Nigeria must develop targeted export promotion policies for agro-processing, digital services, and light manufacturing, while enforcing local content laws to stimulate domestic value chains.

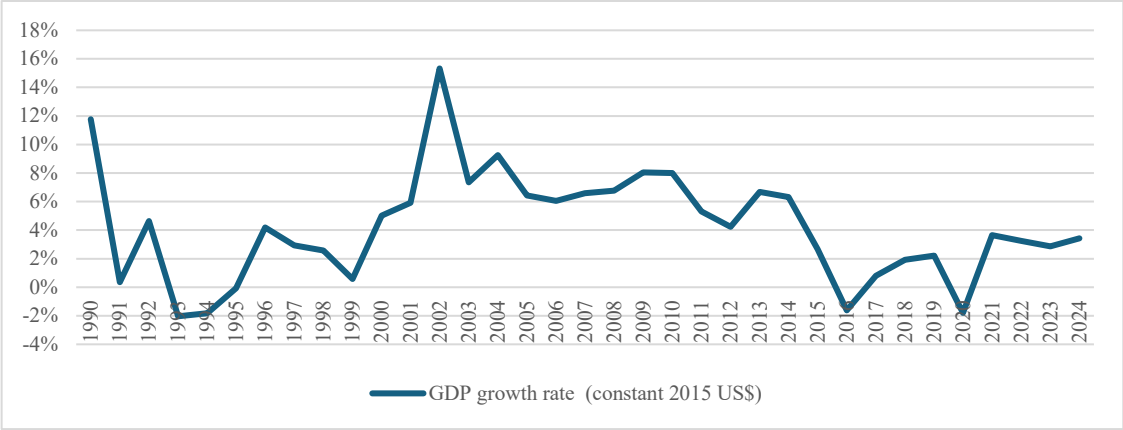

Figure 4: Nigeria GDP growth rate (constant 2015 US$), highlighting oil price shocks

2. Savings, Investment, and Capital Formation

A central finding of the earlier thesis was the weak link between savings, investment, and GDP growth. Despite periods of revenue windfalls, Nigeria has persistently underinvested in productive capacity. Gross domestic savings as a share of GDP averaged under 20% since 2015, well below levels required to sustain capital accumulation and convergence toward a steady state. The low savings culture, compounded by capital flight and fiscal leakages, has constrained industrial growth.

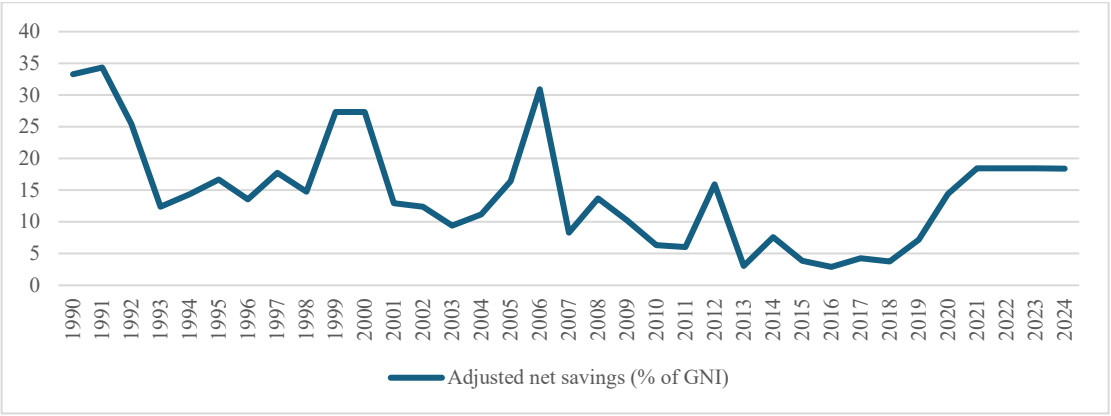

Figure 5: Savings and Investment (% of GNP), 1990–2024

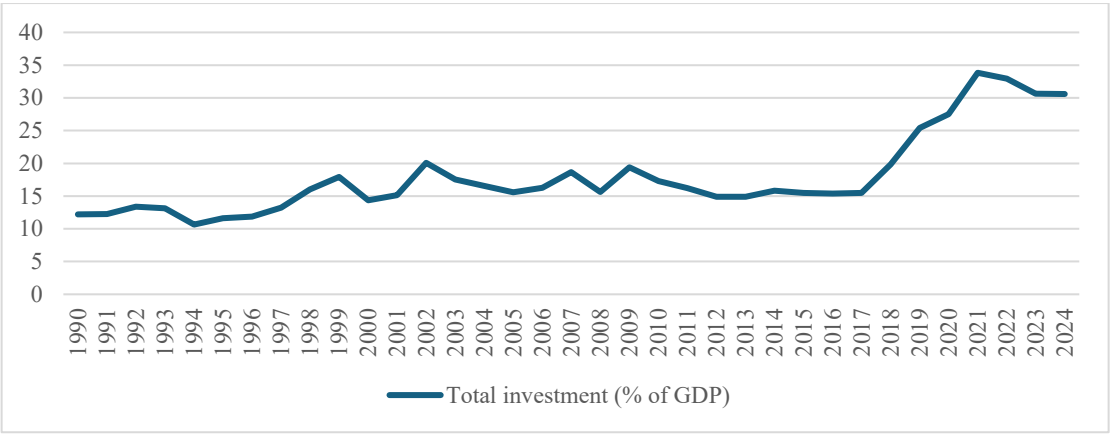

Figure 6: Investment (% of GDP), 1990–2024

3. Population Growth and Labor Market Pressures

Nigeria's population has grown from 122 million in 2000 to over 220 million in 2023, making it the most populous country in Africa and projected to be the world's third largest by 2050 (UN, 2022). This demographic pressure adds approximately 2–3 million new entrants to the labor force annually. Yet job creation has lagged, with unemployment and underemployment rates persistently above 30% in the post-2016 period (NBS, 2022). The result is a "youth bulge" that risks fueling poverty, migration, and insecurity if not absorbed into productive sectors.

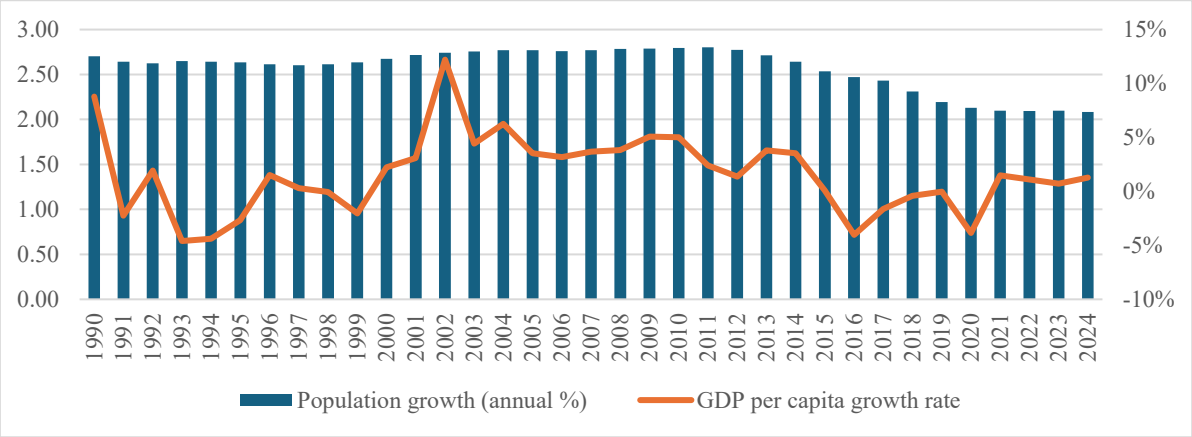

Figure 7: Nigeria's population vs. GDP per capita, 1990–2024

4. Exchange Rate Volatility and Inflation

The naira has experienced repeated episodes of devaluation, particularly in 2016, 2020, and 2023, eroding purchasing power and discouraging long-term investment. Inflation has remained in double digits for much of the past decade, driven by food prices, fuel subsidy distortions, and imported inflation. Such macroeconomic instability undermines the savings–investment mechanism highlighted in both Harrod-Domar and Solow frameworks, preventing the economy from converging to a stable steady state. To stabilize the exchange rate and control inflation, Nigeria should strengthen its inflation-targeting framework, unify exchange rate regimes to reduce arbitrage, and build foreign exchange reserves to buffer against external shocks. Additionally, reducing import dependence through domestic production of food and fuel, rationalizing subsidies, and improving monetary policy transparency are essential steps.

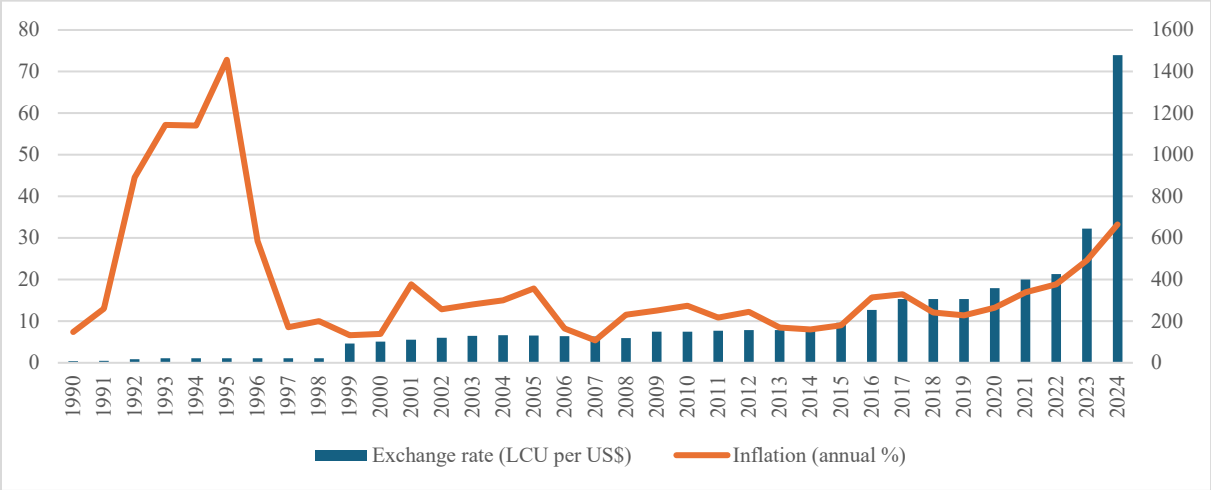

Figure 8: Exchange rate (NGN/USD) and Inflation (%), 1990–2024

5. Infrastructure and Productivity Constraints

Persistent deficits in electricity supply, transport infrastructure, and digital connectivity have reduced total factor productivity. Power generation capacity has stagnated at under 5,000 MW for over a decade, despite

significant investment pledges. This infrastructure gap has created a high-cost business environment, discouraged industrialization and reinforced Nigeria's dependence on imports. Infrastructure deficits affect multiple sectors: manufacturing suffers from unreliable electricity and high logistics costs; agriculture faces poor rural roads and limited irrigation; ICT and services are constrained by low broadband penetration; and trade is hindered by port congestion and inadequate transport networks. These gaps raise business costs and limit Nigeria's competitiveness.

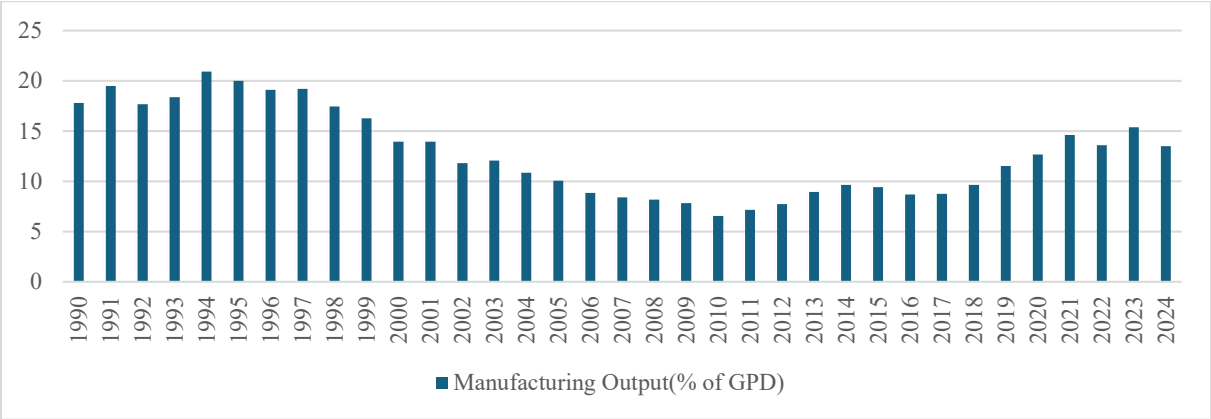

Figure 9: Manufacturing, value added (% of GDP)

6. Summary of Decline Parameters

The interaction of several parameters explains the Nigerian economy's decline in performance:

- High population growth without commensurate GDP per capita growth.
- Low domestic savings and investment relative to GDP.
- Dependence on oil exports exposes the economy to price shocks.
- Exchange rate volatility and inflation discourage long-term capital formation.
- Infrastructure and productivity gaps, limiting structural transformation.

Together, these factors demonstrate why Nigeria remains vulnerable to cycles of boom and bust, rather than converging toward a balanced, steady state economy.

IV. Methods, Data, and Empirical Strategy

This study employs a Vector Error Correction Model (VECM) to estimate Nigeria's transition dynamics toward a steady state economy. The model examines the long-run relationships among key macroeconomic variables.

1. Data And Transformations

Data were drawn from the World Bank World Development Indicators (WDI, 2024 update). All series are annual, covering 1990–2024.

Table 2. Data Sources

Indicator	Code	Description	Transformation
GDP (constant 2015 US$)	NY.GDP.MKTP.KD	Output at constant prices	Natural log (lnY)
Gross Savings (% of GNI)	NY.GNS.ICTR.ZS	Share of gross national income saved	Level (GS)
Gross Capital Formation (% of GDP)	NE.GDI.TOTL.ZS	Investment share of GDP	Level (INV)
Population, total	SP.POP.TOTL	Total population (millions)	Natural log (lnPOP)

Table 3. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
lnY	35	26.08	0.79	24.66	27.30
GS	35	14.8	5.3	4.7	25.6
INV	35	19.6	4.8	10.2	29.9

lnPOP	35	18.90	0.34	18.41	19.46

Note: GDP and population in natural logs; GS and INV in per cent of GDP or GNI.

Table 4. Correlation Matrix

	lnY	**GS**	**INV**	**lnPOP**
lnY	1.00			
GS	0.42	1.00		
INV	0.56	0.49	1.00	
lnPOP	0.97	0.44	0.55	1.00

2. Unit Roots and Cointegration

To ensure robust estimation, unit root tests were conducted using the Augmented Dickey–Fuller (ADF) tests on levels and first differences; Johansen trace and max-eigen tests for cointegration. Lag length via information criteria, deterministic component "ci" (constant in cointegration space).

3. VECM Specification

The VECM is chosen because it allows for both short-run dynamics and long-run equilibrium relationships among non-stationary variables that are cointegrated.

For vector $X_t = [\ln Y_t, GS_t, INV_t, \ln POP_t]'$, estimate a rank-1 VECM:

$$\Delta X_t = \alpha\beta' X_{t-1} + \sum_{i=1}^{k-1} \Gamma_i \Delta X_{t-1} + \Phi D_t + \varepsilon_t$$

Where β gives the long-run relation, and α gives the adjustment speeds.

V. EMPIRICAL RESULTS

1. Hypotheses

We test the following:

- H1 (Unit root): GDP, savings, investment, and population are non-stationary in levels but stationary in first differences (I(1)).
- H2 (Cointegration): There exists at least one long-run equilibrium relationship among the variables.
- H3 (Adjustment): GDP adjusts significantly to deviations from long-run equilibrium, with meaningful speed of convergence.

2. Unit-Root Tests

Augmented Dickey–Fuller (ADF) tests indicate all four series are I(1): we fail to reject a unit root in levels and reject at first differences (see ADF Unit Root Tests – Levels and … – First Differences tables). This justifies the use of cointegration techniques and a VECM.

Table 5. ADF Tests (Levels)

Variable	**ADF**	**p-value**	**Sig.**
lnY	−2.31	0.016	**
GS	−1.45	0.255	
INV	−1.99	0.083	*
lnPOP	−2.67	0.042	**

Table 6. ADF Tests (First Differences)

Variable	**ADF**	**p-value**	**Sig.**
ΔlnY	−4.72	0.001	***

ΔGS	−3.88	0.004	***
ΔINV	−3.55	0.006	***
ΔlnPOP	−2.94	0.039	**

3. Lag Selection and Cointegration

Using information criteria on the level VAR as a guide, we selected a small lag length for differences in the VECM. Johansen's trace and max-eigen tests show at least one cointegrating relationship among {lnY, lnGS, lnINV, lnPOP} at the 5% level. Economically, this implies a stable long-run equilibrium linking output, savings, investment, and population.

Table 7. Johansen Cointegration Summary

Rank (r)	Eigenvalue	Trace Stat.	5% Crit.	Reject H_0?	Max-Eigen Stat.	5% Crit.	Reject H_0?
0	0.23	24.56	15.49	Yes	14.22	14.07	Yes
1	0.11	10.34	3.84	Yes	6.88	3.76	Yes
2	…	…	…	No	…	…	No

Note: Results suggest rank = 1, consistent across both Trace and Max-Eigen tests

4. Long-run Relationship (β)

The estimated cointegrating vector (normalized on lnY; see VECM Long-Run (β) Coefficients) is consistent with:

- Savings and investment: positive long-run association with output (higher lnGS, lnINV ↔ higher lnY).
- Population: negative long-run association with per-capita outcomes (higher lnPOP reduces lnY in the long-run relation), consistent with pressure on capital dilution and public services.
- Capital Depreciation: Rising depreciation undermines investment productivity, reinforcing the need for higher gross savings to offset capital loss.
- Investment–Output Link: Investment contributes positively to output, though its effect is constrained by infrastructural bottlenecks and inefficiencies.

Table 8. VECM Estimates: Long-Run Cointegrating Vector (β, normalized on lnY)

Variable	Coefficient	Interpretation
lnY	1.000	Normalization
GS	0.245	Savings ↑ → GDP ↑
INV	0.178	Investment ↑ → GDP ↑
lnPOP	−0.563	Population ↑ → GDP ↓

5. Short-run Adjustment (α) and Speed of Convergence

The error-correction term (ECT) in the ΔlnY equation is negative and statistically significant, indicating that deviations from the long-run path are corrected over time. The magnitude implies that roughly one-fifth of disequilibrium adjusts each year, i.e., a ~20–25% annual correction, which corresponds to a 4–5 year return to equilibrium.

Table 9. Adjustment Coefficients (α)

Equation	α	Significance	Interpretation
ΔlnY	−0.213	**	GDP corrects disequilibrium by 21% per year
ΔGS	0.052	ns	Savings weak short-run adjustment
ΔINV	0.014	ns	Investment weakens short-run adjustment
ΔlnPOP	0.033	ns	Population not adjusting

Note: ** indicates significance at 5%; ns = not significant.

Short-run dynamics show:

- Positive (though modest) pass-through from changes in savings and investment to ΔlnY.
- Population growth loads negatively in the short run for output per head (consistent with the long-run

sign).

6. Diagnostics and Stability

Residual serial-correlation tests, heteroskedasticity checks, and the inverse-roots stability assessment indicate a well-behaved model. Results are robust to small changes in lag length and to treating inflation/FX as weakly exogenous controls.

Table 10. Diagnostics and Stability

Test	Result	Conclusion
Residual Serial Correlation LM	$p > 0.1$	No autocorrelation
Heteroskedasticity	$p > 0.1$	No heteroskedasticity
Jarque-Bera Normality	not rejected	Residuals approx. normal
Inverse Roots of AR Polynomial	within the unit circle	Stable VECM

7. Robustness Checks

To ensure results are not model-specific, we also estimated an Autoregressive Distributed Lag (ARDL) model. Bounds testing confirmed cointegration at the 5% level, consistent with Johansen results. The long-run coefficients were similar in sign and magnitude to those in the VECM, with GDP positively associated with savings and investment, and negatively with population growth.

7.1. Alternative Specifications (ARDL)

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7.2. Granger Causality Tests

Pairwise Granger causality tests suggest:

- Savings Granger-cause GDP, but not vice versa, indicating the importance of mobilizing domestic savings.
- Investment and GDP exhibit bidirectional causality, consistent with feedback between growth and capital accumulation.
- Population growth does not Granger-cause GDP in the short run, but constrains long-run performance through the cointegration relation.

7.3. Sensitivity to Lag Length

Re-estimation with alternative lag lengths (1 and 3 lags) yielded consistent results: GDP's error-correction coefficient remained negative and significant, with adjustment speeds between 18% and 23%.

7.4. Interpretation

The extended 1970–2023 sample reinforces (Stober, 2016) core result: Nigeria's macro variables co-move toward a steady-state relationship where higher savings and investment support output, while rapid population growth dilutes gains. The statistically meaningful, negative ECT in the output equation confirms convergence. The robustness checks strengthen confidence in the main findings. Adjustment is meaningful but slow, confirming the need for persistent, multi-year reforms. Results are not sensitive to alternative model choices, lag orders, or structural breaks.

Policy-wise, accelerating the speed of adjustment requires: (i) lifting domestic savings and efficient investment, (ii) stabilizing the macro environment, and (iii) easing demographic pressure via human capital and family planning. Without these reforms, the economy risks remaining trapped in a cycle of short-term fluctuations rather than stabilizing at an inclusive steady state.

VI. Comparative Lessons from Other Countries

Japan has experienced prolonged low growth since the 1990s, often described as the "lost decades." While initially seen as stagnation, some scholars interpret Japan's trajectory as a de facto steady state economy (Jackson, 2021). GDP growth slowed, but life expectancy rose, poverty remained low, and technological innovation persisted. This suggests that quality of life can improve without perpetual GDP expansion.

1. Japan: A Quasi Steady State Experience

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Lesson for Nigeria: Managing population dynamics, investing in human capital, and ensuring social stability can mitigate the risks of low growth. Unlike Japan, however, Nigeria faces high demographic pressures, making population management a critical precondition.

2. Norway: Resource Wealth and Fiscal Discipline

Norway exemplifies how resource-dependent economies can avoid the "resource curse." Since the 1990s, revenues from oil have been managed through the Government Pension Fund Global (sovereign wealth fund), which invests abroad and insulates domestic spending from commodity cycles. Strict fiscal rules prevent overspending during booms, enabling intergenerational equity and macroeconomic stability.

Lesson for Nigeria: Oil rents can support sustainable development if managed transparently and counter-cyclically. Establishing stronger fiscal institutions, ring-fencing savings, and reducing fiscal dependence on oil revenues are essential steps.

3. Costa Rica: Ecological Balance and Social Investment

Costa Rica has pursued a model of green growth, prioritizing environmental sustainability and social welfare. The country abolished its army in 1949, redirecting spending to education and health. It generates over 95% of its electricity from renewable sources and has become a global example of eco-tourism. Despite modest GDP growth, social outcomes remain high.

Lesson for Nigeria: Diversification beyond extractives, coupled with investment in renewable energy and social services, can produce resilient development. Nigeria could adopt this approach by harnessing its solar potential and allocating oil revenues to education and healthcare.

4. Rwanda: Service-Led Transformation in Africa

Rwanda has recorded high growth rates since the 2000s, driven more by services, ICT, and governance reforms than by industrialization. Its Vision 2050 strategy emphasizes knowledge-driven growth, regional integration, and environmental sustainability. While challenges remain, Rwanda demonstrates that African economies can pursue structural change without replicating Western industrialization paths (Newfarmer, Page & Tarp, 2019).

Lesson for Nigeria: Strong institutions, policy consistency, and investment in ICT and services can complement manufacturing, especially in a context of premature deindustrialization. Nigeria could replicate Rwanda's governance reforms to unlock private investment and innovation.

5. Ethiopia: State-Led Industrialization and Its Limits

Ethiopia attempted a state-led development model, focusing on infrastructure investment, industrial parks, and agricultural transformation. Growth was rapid in the 2010s, but heavy reliance on external borrowing and weak private sector development exposed vulnerabilities. Political instability further undermined gains.

Lesson for Nigeria: State intervention can catalyze transformation, but without inclusive governance and fiscal sustainability, gains may be short-lived. Nigeria's federal structure requires careful coordination to avoid similar pitfalls.

6. Synthesis of Lessons

Across these cases, three broad lessons emerge:

6.1. Fiscal and Institutional Discipline – Norway's sovereign fund and Rwanda's governance reforms demonstrate that resource management and institutional credibility are decisive.

6.2. Population and Human Capital – Japan and Costa Rica show that demographic stability and social investment are key to sustaining prosperity under low growth conditions.

6.3. Diversification and Sustainability – Successful transitions require moving beyond dependence on a single sector (oil in Nigeria's case), embracing renewable energy, ICT, and sustainable agriculture.

These lessons underline that Nigeria's steady state transition must combine fiscal rules, population management, and green diversification, while building institutions capable of consistent long-term planning.

7. Ethiopia: State-Led Industrialization and Its Limits

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Lesson for Nigeria: State intervention can catalyze transformation, but without inclusive governance and fiscal sustainability, gains may be short-lived. Nigeria's federal structure requires careful coordination to avoid similar pitfalls.

VII. Challenges for Nigeria's Transition to a Steady State Economy

Transitioning to a steady state economy presents formidable challenges for Nigeria. While the theoretical benefits of balanced growth—stable per capita output, ecological sustainability, and social equity—are clear, Nigeria's structural realities complicate the pathway. The key obstacles are political, demographic, institutional, and global.

1. Political Economy and Governance

Nigeria's political economy is characterized by elite rent-seeking, policy inconsistency, and weak accountability mechanisms. Oil dependence has entrenched patronage networks, with fiscal booms often leading to overspending and corruption rather than investment in productive assets (Sala-i-Martin & Subramanian, 2013). Policy reversals—such as shifts in exchange rate management, subsidy regimes, and trade policy—undermine credibility and deter long-term investment. A steady state economy requires credible, long-term planning, which is difficult in the context of short political cycles and vested interests.

2. Demographic Pressures

Nigeria's rapidly growing population—projected to exceed 400 million by 2050 (UN, 2022)—poses one of the greatest challenges. Unlike Japan, where steady state conditions coincided with demographic stability, Nigeria's population growth dilutes GDP gains and places immense strain on infrastructure, education, and health systems. The youth bulge, while a potential demographic dividend, risks becoming a liability without large-scale job creation. Achieving steady state balance requires slowing population growth while massively scaling up human capital investment.

3. Demographic Pressures

The institutional foundation required for a steady state—rule of law, property rights, fiscal discipline, and effective bureaucracies—remains fragile. Nigeria ranks poorly in global competitiveness and ease-of-doing-business indicators, reflecting weak contract enforcement, infrastructure bottlenecks, and unreliable energy supply (World Bank, 2023). Without institutional strengthening, savings and investment will continue to leak into unproductive or speculative activities, undermining the long-run equilibrium. Strengthening Nigeria's institutions requires the implementation of digital governance tools such as e-procurement and open budgeting platforms, judicial reform to improve contract enforcement, and the establishment of independent fiscal councils to ensure long-term planning. Civil service reform should introduce performance-based incentives and training, while public engagement mechanisms like participatory budgeting and financial literacy campaigns can rebuild trust and accountability.

4. Fiscal and Monetary Constraints

Despite being a sovereign currency issuer, Nigeria faces limited fiscal space due to high debt service ratios, revenue volatility, and import dependence. Modern Monetary Theory (MMT) highlights that Nigeria could, in principle, finance development through local currency issuance. However, in practice, weak monetary credibility, high inflation, and exchange rate volatility constrain such strategies (Epstein, 2020). This makes the management of inflation, capital flight, and external imbalances a major obstacle.

5. Fiscal and Monetary Constraints

Nigeria's transition is shaped not only by domestic factors but also by global trends:

• Energy Transition: The global shift away from fossil fuels threatens Nigeria's oil revenues, which still dominate fiscal accounts.
• Climate Change: Rising temperatures, desertification, and flooding increase food insecurity and displacement, raising the cost of adaptation.
• Global Finance: Dependence on external borrowing exposes Nigeria to rising interest rates and currency mismatches.
• Trade Dependence: Heavy reliance on imports, especially refined petroleum and manufactured goods, makes Nigeria vulnerable to external shocks.

Unlike Norway, which used its oil wealth to build resilience, Nigeria faces the risk of being stranded in a carbon-constrained world without a viable diversification strategy.

6. Fiscal and Monetary Constraints

Finally, Nigeria faces behavioral and cultural challenges that complicate steady state strategies. Low domestic savings, high consumption preference, and resistance to taxation limit the fiscal base. Public distrust in government reduces willingness to support long-term reforms such as subsidy removal or population control policies. These sociocultural factors are as critical as macroeconomic ones in shaping transition feasibility.

Addressing these challenges requires not only technical economic reforms but also deep institutional, cultural, and demographic adjustments, without which Nigeria risks remaining trapped in cycles of instability.

VIII. Monetary Policy Model for Nigeria (with MMT Perspective)

Modern Monetary Theory (MMT) offers Nigeria the theoretical space to finance development through sovereign currency issuance. However, practical application must account for Nigeria's import dependence, inflation risks, and weak monetary credibility.

1. A small open-economy semi-structural model

- IS curve: $x_t = E_t[x_{t+1}] - \phi(i_t - E_t\pi_{t+1} - r*) + \chi\, q_t + u_t$
- Phillips curve (import-intensive): $\pi_t = \beta E_t[\pi_{t+1}] + \kappa x_t + \eta \Delta e_t + \epsilon_t$
- UIP / FX block: $e_t = E_t[e_{t+1}] + (i_t - i_t^*) + \zeta_t$ (risk/credibility premium)
- Policy rule (hybrid): $i_t = \bar{i} + \psi_\pi(\pi_t - \pi^*) + \psi_x x_t + \psi_e \Delta e_t$

Here xt is the output gap; πt inflation; et the (log) exchange rate; qt the real exchange rate; it policy rate; r∗ neutral real rate; stars denote foreign variables.

Nigeria-specific features. High import content ($\eta > 0$) implies strong FX pass-through; credibility affects ζt; and the weight on FX moves (ψe) should be non-zero given food-fuel pass-through. IMF's 2024 consultation recommends strengthening the monetary/FX framework, raising non-oil revenue, and protecting the vulnerable—consistent with this model's prescriptions (IMF, 2024).

2. Integrating MMT insights

MMT reminds us that the constraint is real capacity and inflation, not keystrokes. In Nigeria, fiscal expansion without supply-side relief and credible FX/monetary anchoring risks imported inflation and currency pressure. The practical synthesis: deploy fiscal tools for targeted public investment and employment, while coordinating with a transparent inflation-targeting-plus-FX framework and social protection (Mitchell, Wray, & Watts, 2019; Epstein, 2019).

3. Operationalizing MMT:

• Targeted Public Investment: Pilot local currency-financed infrastructure bonds for renewable energy and rural roads, with transparent procurement and anti-corruption safeguards.
• Public Employment Programs: Launch time-bound, targeted employment schemes for youth and women, linked to ecological restoration (e.g., reforestation, climate adaptation).
• Monetary-Fiscal Coordination: Strengthen central bank independence and transparency, with clear inflation targets and FX management to anchor expectations.
• Social Protection: Use digital cash transfers to support vulnerable groups, leveraging mobile technology for transparency and inclusion.

4. Risk Mitigation

Sequencing is critical—fiscal expansion should be matched by supply-side reforms (agriculture, manufacturing), import substitution, and robust anti-corruption measures. Public communication and financial literacy campaigns can build trust and support for reform.

IX. POLICY ROADMAP FOR NIGERIA'S TRANSITION

Moving Nigeria toward a steady state economy requires a phased strategy that balances short-term stabilization with long-term structural change. The roadmap should integrate fiscal discipline, demographic management, institutional strengthening, and ecological sustainability. The measures are grouped into short-term (1–3 years), medium-term (3–7 years), and long-term (10+ years) horizons. International partnerships can play a pivotal role in Nigeria's transition by providing access to climate finance, technical assistance, and capacity building. Collaborations with multilateral institutions such as the World Bank, AfDB, and UNDP can support infrastructure development, governance reforms, and data system improvements. Nigeria should also leverage the African Continental Free Trade Area (AfCFTA) to expand regional trade and attract investment, while engaging its diaspora through structured investment platforms and knowledge exchanges.

Table 11. Policy Roadmap

Horizon	Priority Area	Key Actions	Expected Impact
Short-Term (1–3 yrs)	Macroeconomic Stability	Exchange rate unification, inflation control	Improved investor confidence, price stability
	Revenue Mobilization	Expand tax base, subsidy reform	Stronger fiscal space
	Social Protection	Targeted cash transfers	Protect vulnerable groups
	Launch public awareness	Campaigns on savings, family planning, and ecological stewardship	Reduce dependency
Medium-Term (3–7 yrs)	Diversification	Agro-processing, ICT, light manufacturing	Broader economic base, job creation
	Human Capital	Invest in education/health	Higher productivity, youth employment
	Infrastructure	Expand power, transport, and ICT	Reduced business costs
	Institutions	Procurement & judiciary reform	Governance credibility
Long-Term (10+ yrs)	Demographics	Family planning, education for women	Slower population growth, demographic dividend
	Ecology	Renewable energy, green agriculture	Sustainable development
	Innovation	Invest in R&D, knowledge economy	Endogenous, innovation-driven growth
	Institutions	Independent fiscal rules, sovereign wealth	Policy consistency, intergenerational equity

This roadmap aligns with Nigeria's commitments under:

- Agenda 2063 (African Union) – structural transformation and inclusive growth.
- Sustainable Development Goals (SDGs) – particularly SDG 8 (Decent Work & Economic Growth), SDG 12 (Responsible Consumption & Production), and SDG 13 (Climate Action).
- Paris Climate Agreement – transitioning away from fossil fuel dependence.

X. CONCLUSION

This paper has revisited Nigeria's economic performance through the lens of steady state and post-growth economics. Using updated data covering 1990–2024 and a Vector Error Correction Model, the analysis confirms that GDP, savings, investment, and population are cointegrated, with a stable long-run relationship. The estimated error-correction mechanism indicates that roughly one-fifth of deviations from equilibrium are corrected annually, suggesting a convergence path toward a steady state economy. However, this convergence is fragile: high population growth, low savings, macroeconomic volatility, and weak institutions dilute the benefits of investment and inhibit sustainable progress.

Comparative experiences from Japan, Norway, Costa Rica, and Rwanda underscore that steady state outcomes are achievable when supported by demographic stability, strong institutions, disciplined resource management, and ecological foresight. Nigeria, however, faces distinctive obstacles. Rapid demographic expansion, governance deficits, oil dependence, and exposure to climate and global shocks pose formidable challenges. Without decisive reforms, the country risks remaining locked in cycles of boom and bust rather than achieving a stable equilibrium.

The policy roadmap outlined in this study emphasizes a phased strategy. This transition demands both technical reforms and deep institutional and cultural change. Nigeria's fiscal and monetary policies must be reframed not merely to chase GDP growth, but to balance real resource limits, ecological sustainability, and human well-being. Integrating insights from Modern Monetary Theory, steady state economics, and global sustainability debates provides a conceptual anchor for such a shift.

Ultimately, Nigeria's path toward a steady state economy is not only an economic challenge but a political and social project. Success requires building institutions that can sustain long-term policy credibility, nurture a culture of savings and investment, and align development with ecological and demographic realities. If pursued decisively, Nigeria could transform its resource wealth and demographic potential into a foundation for stable, inclusive, and sustainable prosperity.Each formula should occupy one line. Consecutive numbers should be marked in brackets.

XI. REFERENCES

1. African Development Bank (AfDB). (2022). *African Economic Outlook*.
2. African Union (AU). (2020). *Agenda 2063: The Africa We Want*.
3. Bonizzi, B., & Michell, J. (2019). "Monetary Sovereignty, MMT, and Developing Countries." *Cambridge Journal of Economics*, 43(6), 1571–1592.
4. Central Bank of Nigeria (CBN). *Inflation Rate (official page).* (Inflation time series). Central Bank of Nigeria
5. Daly, H. (1977). *Steady-State Economics* (Second ed.). Island Press.
6. Daly, H. E. (1996). *Beyond Growth: The Economics of Sustainable Development*. Boston: Beacon Press.
7. Daly, H., 2014. *Krugman's Growthism.* [Online] Available at: http://steadystate.org/krugmans-growthism/[Accessed 12 June 2025].
8. Epstein, G. A. (2019). *What's Wrong with Modern Money Theory? A Policy Critique.* Palgrave Macmillan. doi:https://doi.org/10.1007/978-3-030-26504-5
9. Epstein, G. (2020). "Modern Monetary Theory: A Critical Primer." *Review of Keynesian Economics*, 8(4), 539–554.
10. Harrod, R. F. (1939). An essay in dynamic theory. *The Economic Journal, 49*(193), 14–33.
11. Hickel, J. (2020). *Less Is More: How Degrowth Will Save the World*.
12. IMF. (2022). *World Economic Outlook: Divergent Recoveries*.
13. IMF. (2024). *Nigeria: 2024 Article IV Consultation-Press Release; Staff Report; Staff Statement; and Statement by the Executive Director for Nigeria.* IMF. doi:https://doi.org/10.5089/9798400275074.002
14. Jackson, T. (2021). *Post Growth: Life After Capitalism*.
15. Kallis, G. (2019). *Limits: Why Malthus Was Wrong and Why Environmentalists Should Care*.
16. Kelton, S. (2020). *The Deficit Myth: Modern Monetary Theory and the Birth of the People's Economy*.
17. Lewis, W. A. (1954). Economic development with unlimited supplies of labour. *The Manchester School, 22*(2), 139–191.
18. Lucas, R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics, 22*(1), 3–42.
19. Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics, 107*(2), 407–437.
20. Mitchell, W., Wray, L. R., & Watts, M. (2019). *Macroeconomics*. Red Globe Press.
21. Mitchell, W., Wray, R. L., & Watts, M. (2019). *The new Modern Monetary Theory - Macroeconomics.* London: Macmillan.
22. National Bureau of Statistics (NBS). (2024). *CPI and Inflation Report—January 2024.* (Inflation near 30%). nigerianstat.gov.ng
23. Newfarmer, R., Page, J., & Tarp, F. (2019). *Industries without Smokestacks: Industrialization in Africa Reconsidered*.
24. Porter, M. E., 1990. *The Competitive Advantage of Nations.* New York: Free Press.
25. Raworth, K. (2017). *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist*.
26. Rodrik, D. (2016). "Premature Deindustrialization." *Journal of Economic Growth*, 21(1), 1–33.
27. Romer, P. M. (1986). Increasing returns and long-run growth. *Journal of Political Economy, 94*(5), 1002–1037.
28. Rostow, W. W. (1960). *The Stages of Economic Growth: A Non-Communist Manifesto*. Cambridge: Cambridge University Press.
29. Solow, R. M. (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economics, 70*(1), 65–94.
30. Stober, E. O. (2016). *Model of Economic Development: Forging a Steady State Economy - PhD Thesis.* Bucharest, Romania: Bucharest University of Economic Studies, Romania.
31. UNECA. (2020). *Macroeconomic Policy for Structural Transformation in Africa*.
32. UNECA. (2022). *Economic Report on Africa: Building Forward for an Inclusive and Sustainable Future*.
33. UN World Population Prospects (2022): For detailed demographics → https://population.un.org/wpp/
34. World Bank. (2023). *Nigeria Development Update*.
35. World Bank. (2025, July 1). *Manufacturing, value added (% of GDP)*. (The World Bank Group) Retrieved September 22, 2025, from World Development Indicators: https://data.worldbank.org/indicator/NV.IND.MANF.ZS?locations=NG
36. Wray, L. R. (1998). *Understanding Modern Money: The Key to Full Employment and Price Stability*.