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Revisiting Growth Accounting in Nigeria: The Role of Factor Accumulation versus Total Factor Productivity

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Abstract

This study revisits the proximate sources of Nigeria's economic growth by decomposing real GDP growth into the contributions of physical capital, labour, and total factor productivity (TFP) within a neoclassical growth-accounting framework for 1995–2024. It extends previous aggregate analyses by examining three policy regimes: the post-adjustment democratic transition (1995–2003), the oil-boom and reform-consolidation period (2004–2013), and the post-oil-shock era of structural reforms and exchange-rate realignment (2014–2024). The objective is to determine whether Nigeria's growth shifted from productivity-driven (intensive) to input-driven (extensive). Results indicate that real GDP grew by an average of 4.17% annually, with labour contributing 55% of total growth, TFP 36%, and capital 9%. However, regime-specific estimates reveal a significant structural shift. TFP accounted for 61% and 52% of growth during the first and second regimes, respectively, but turned negative (-1.26%) in 2014–2024, while labour became the dominant growth source. This reversal in the Solow residual coincided with declining dollar-denominated per capita income, suggesting that recent growth weakness reflects falling productive efficiency rather than insufficient factor accumulation. Sustained growth therefore requires reforms that strengthen institutions, improve resource allocation, enhance human capital, raise investment quality, and diversify the productive base.

Keywords: Growth Accounting, Total Factor Productivity, Factor Accumulation, Solow Residual, Structural Transformation.

Jel Code: O40, **O47**, **D24**, **E23**, **O14**

1. Introduction

Nigeria presents a striking economic paradox. Although the economy has continued to record positive real GDP growth in most years, living standards have deteriorated markedly. Between 2014 and 2024, Nigeria's real output remained positive on average, yet gross domestic product (GDP) per capita in current US dollars declined by roughly 70%, from over US$3,200 to below US$900 (International Monetary Fund [IMF], 2024). During the same period, the country fell from being Africa's largest economy to the fourth largest (World Bank, 2024). This divergence between aggregate output growth

and declining living standards raises an important question about the nature and sustainability of Nigeria's recent economic performance. The puzzle is not unique to Nigeria. Across sub-Saharan Africa, total factor productivity (TFP), the efficiency with which labour and capital are transformed into output, has weakened over several decades. In Nigeria, the productivity index declined from 1.44 in 1980 to 0.65 by 2014 (Adegoke et al., 2023).

The distinction between input accumulation and productivity growth is central to understanding long-run economic performance. Output can increase either through greater use of productive inputs, such as labour and capital, or through improvements in the efficiency with which those inputs are utilised. The former represents extensive, or factor-driven, growth, while the latter reflects intensive, productivity-led growth. This distinction is fundamental because factor accumulation is ultimately constrained by diminishing returns, whereas sustained improvements in productivity provide the principal source of long-run increases in output and living standards (Solow, 1957; Young, 1995).

Nigeria's recent growth experience also departs from conventional patterns of structural transformation. Standard development theory predicts that, as economies develop, labour gradually shifts from low-productivity agriculture into higher-productivity manufacturing, thereby raising aggregate productivity (McMillan et al., 2014). Instead, Nigeria has experienced a pattern more consistent with premature deindustrialisation, characterised by the movement of labour from agriculture and manufacturing into predominantly informal, low-productivity services (Rodrik, 2016). Although sectoral labour reallocation has generated productivity gains in some African economies, these gains have been uneven and frequently offset by labour-market disruptions (Mensah et al., 2023). Consequently, expanding employment need not translate into higher productivity if workers are absorbed into activities with limited scope for efficiency gains.

Recent macroeconomic reforms introduce a further dimension to this debate. The stabilisation programme initiated in 2023, including the removal of fuel subsidies, exchange-rate unification, and tighter monetary policy, was intended to restore macroeconomic stability. However, the exchange-rate depreciation associated with these reforms may impose short-run productivity costs. Edy-Ewoh (2025) finds that exchange-rate depreciation exerts a significant and persistent negative effect on Nigeria's TFP, with causality running from exchange-rate movements to productivity. The country's dependence on oil revenues further complicates the growth process. While oil booms can stimulate output in the short run,

their long-run effects depend critically on institutional quality. Where governance and public investment institutions are weak, resource revenues may fail to generate lasting productivity improvements (Olayungbo & Adediran, 2017; Balogun et al., 2024). Under such conditions, favourable headline growth may conceal a gradual deterioration in productive efficiency.

Existing studies have identified many of these transmission channels, including exchange-rate movements, oil dependence, institutional quality, and human capital constraints (Jibir et al., 2023), but have largely examined them independently. Consequently, relatively little is known about how these factors combine to shape the overall sources of Nigeria's economic growth or whether the balance between productivity growth and factor accumulation has changed over time. Moreover, the limited growth-accounting evidence for Nigeria largely predates the country's recent macroeconomic adjustments, with most studies ending before 2019 (Nkoro & Uko, 2019). As a result, there is little empirical evidence establishing, within a consistent growth-accounting framework, whether the pronounced decline in dollar-denominated income after 2014 coincided with a fundamental deterioration in productivity performance.

This study addresses this gap by decomposing Nigeria's real GDP growth into the contributions of physical capital, labour, and total factor productivity over the period 1995-2024 using the neoclassical growth-accounting framework. Unlike previous studies, the analysis distinguishes three policy regimes corresponding to major phases of economic reform and structural change. By examining how the relative contributions of factor accumulation and productivity evolved across these regimes, the study identifies whether, and when, Nigeria's growth transitioned from an intensive, productivity-led process to an extensive, input-driven one. In doing so, it provides an integrated assessment of the proximate sources of Nigeria's growth and offers new evidence on the role of productivity in shaping the country's recent economic performance.

2. Literature Review

Conceptual and Theoretical Review

Modern growth theory distinguishes between two fundamental sources of economic growth: factor accumulation and productivity improvement. Extensive growth arises from increasing the quantities of

productive inputs, principally physical capital and labour, whereas intensive growth results from improvements in total factor productivity (TFP), the efficiency with which those inputs are transformed into output (Solow, 1956; Barro & Sala-i-Martin, 2004). This distinction is central to long-run growth theory because diminishing marginal returns imply that sustained increases in output cannot be achieved indefinitely through factor accumulation alone. As capital and labour expand, their incremental contributions to output gradually decline, causing growth in output per capita to slow unless accompanied by continuing productivity improvements. Consequently, sustained gains in living standards ultimately depend on growth in TFP rather than on the continued accumulation of inputs. For developing economies such as Nigeria, this distinction is particularly important because output may continue to expand through labour-force growth even when workers are increasingly concentrated in low-productivity activities, limiting improvements in productivity and living standards (Todaro & Smith, 2015).

The theoretical foundation for measuring these proximate sources of growth is provided by the Solow-Swan growth model. In its standard form, aggregate output is represented by a constant-returns-to-scale Cobb-Douglas production function combining physical capital and labour with a technology parameter that captures production efficiency (Solow, 1956). The model demonstrates that while capital accumulation influences the transition towards the steady state, long-run growth in output per worker depends entirely on technological progress. Expressing the production function in growth-rate form yields the growth-accounting identity developed by Solow (1957), which decomposes observed output growth into the weighted contributions of capital accumulation, labour growth, and a residual commonly interpreted as TFP growth. This residual, known as the Solow residual, should not be interpreted as a measure of technology alone. Rather, it reflects the combined effects of technological change, resource allocation, institutional quality, capacity utilisation, organisational efficiency, and other influences not directly captured by measured factor inputs (Hall & Jones, 1999). In empirical applications, it is therefore more appropriately viewed as an indicator of the overall efficiency with which an economy transforms productive resources into output.

A recognised limitation of the Solow framework is its treatment of technological progress as exogenous. Endogenous growth models developed by Lucas (1988) and Romer (1990) address this limitation by explaining productivity growth as the outcome of purposeful investment in human capital, innovation, research and development, and knowledge spillovers. These models underscore the role of public policy in shaping long-run growth through investments in education, technological capability, and innovation

systems. Such insights are relevant for Nigeria, where improvements in human capital and institutional quality are widely recognised as prerequisites for sustained productivity growth. Nevertheless, the empirical application of endogenous growth models is constrained in economies where formal research systems, technological innovation, and knowledge-intensive production remain relatively underdeveloped. Given Nigeria's continued reliance on natural resources and a large informal service sector, the Solow growth-accounting framework provides a more suitable empirical approach for identifying the proximate sources of growth. At the same time, the interpretation of the Solow residual adopted in this study is informed by endogenous growth theory, recognising that productivity is shaped not only by technological progress but also by institutions, human capital, and the broader policy environment.

Empirical Review

The empirical growth-accounting literature has repeatedly challenged the assumption that fast growth signals rising efficiency. The studies reviewed below illustrate both what is already known about Nigeria's productivity performance and what remains unexamined, the gap this study addresses.

Nkoro and Uko (2019) examined the sources of Nigeria's economic growth by decomposing real GDP into the contributions of capital, labour, and total factor productivity from 1980 to 2015. Employing the neoclassical Solow growth-accounting framework with a fixed capital-income share, the study found that factor accumulation, rather than productivity, was the dominant driver of Nigerian growth over the sample. However, the study terminated before the 2016 recession, the post-2019 productivity slowdown, and the post-2023 reforms, leaving Nigeria's most recent and arguably most consequential decade undocumented. The present study extends the decomposition to 2024 and, unlike Nkoro and Uko (2019), segments the sample into policy-defined regimes to identify precisely when the productivity profile changed.

Onwiodiokit and Otolorin (2022) investigated the impact of capital formation on Nigeria's economic growth using a Dynamic Ordinary Least Squares (DOLS) technique on annual data from 1981 to 2018, incorporating infrastructure, health, and skills-competitiveness indices as proxies for physical and human capital. The findings revealed that gross fixed capital formation and total labour force were negatively associated with growth, while human-capital formation and interest rates were positively associated with it. However, the study relied on a single-equation econometric estimation rather than an

arithmetic decomposition of growth, and it did not examine whether the balance between capital, labour, and TFP shifted across policy regimes, a gap the present growth-accounting approach directly closes. Jibir et al. (2023) examined whether human capital influences labour productivity using firm-level data from Nigerian manufacturing and service enterprises. Employing a panel estimation technique, the study found that human-capital stocks and investment exert a significant, positive effect on labour productivity at the firm level. However, the study's micro-level, firm-based scope does not speak to the aggregate, economy-wide balance between factor accumulation and TFP, nor does it situate its findings within a historical decomposition of national growth, a linkage the present study supplies at the macro level.

Adegoke et al. (2023) examined the relationship between health and total factor productivity in selected sub-Saharan African countries, including Nigeria, using quadratic and threshold modelling on panel data. The findings revealed that health outcomes exert a significant, non-linear effect on TFP, with productivity gains accelerating once health indicators cross a threshold. However, the cross-country panel design averages over Nigeria-specific dynamics and does not decompose Nigeria's own growth trajectory into capital, labour, and TFP contributions across distinct policy regimes, the specific task the present study undertakes.

Mensah et al. (2023) examined the contribution of structural change to labour-productivity growth across sub-Saharan Africa, including Nigeria, using decomposition methods applied to sectoral employment and output data. The findings revealed that structural change has at times contributed materially to African productivity growth, but unevenly, and often amid labour-market turbulence that limits its efficiency-enhancing potential. However, the regional, cross-country focus does not isolate Nigeria's own regime-specific productivity trajectory, nor does it connect structural change to an updated national growth-accounting decomposition extending to 2024, as the present study does.

Balogun et al. (2024) examined the effects of oil revenue and institutional quality on economic growth in Nigeria using an Autoregressive Distributed Lag (ARDL) approach on annual time-series data. The findings revealed that the effect of oil revenue on growth is conditional on institutional quality: oil rents raise growth in the short run, but the effect deteriorates over longer horizons where institutions are weak. However, the study modelled economic growth directly as the dependent variable and did not decompose that growth into its underlying capital, labour, and TFP contributions, so the productivity channel through which oil rents ultimately operate remains implicit rather than directly measured, as it is in the present study.

Abdullahi and Hamid (2024) examined the effect of total factor productivity and trade openness on economic growth in Nigeria from 1980 to 2023 using the ARDL model. The findings revealed that both TFP and trade openness exert positive and significant effects on economic growth. However, the study estimated TFP as an explanatory regressor derived from a separate production-function residual rather than presenting a transparent, regime-segmented growth-accounting decomposition, and it did not examine whether the relative weight of TFP versus factor accumulation changed across Nigeria's distinct policy eras, the precise question the present study answers. Orisdare and Olofin (2024) examined the effect of exchange-rate volatility on productivity in Nigeria using empirical time-series analysis. The findings revealed that exchange-rate volatility exerts a significant adverse effect on productivity, consistent with the depreciation–productivity channel documented elsewhere in the Nigerian literature. However, the study's focus on volatility as a single driver of productivity does not situate its findings within a broader accounting of how much of Nigeria's growth is, in the aggregate, attributable to productivity versus factor accumulation, nor across which historical regimes the exchange-rate channel has mattered most, gaps the present study's regime-segmented decomposition addresses.

Touray (2024) measured and analysed total factor productivity trends for fourteen ECOWAS countries, including Nigeria, from 2016 to 2022, using Data Envelopment Analysis (DEA). The findings revealed that Nigeria recorded the highest TFP within the ECOWAS bloc over the period and was the only country optimally utilising its factors of production, although regional productivity overall remained low and volatile. However, the DEA approach measures relative efficiency rather than decomposing observed output growth into capital, labour, and TFP contributions over time, and its short 2016–2022 window cannot speak to the longer-run regime shifts the present study identifies from 1995 to 2024.

Edy-Ewoh (2025) examined the relationship between exchange rate and total factor productivity in Nigeria from 1981 to 2022 using an ARDL model applied to World Development Indicators and FRED data. The findings revealed that exchange-rate fluctuations significantly and persistently reduce Nigerian TFP in both the long and short run, with causality running from the exchange rate to productivity. However, the study estimated TFP as a single time series without decomposing aggregate growth into its capital, labour, and TFP components, and did not test whether the productivity-eroding effect of currency depreciation coincided with a broader, regime-level shift from productivity-led to input-led growth, the precise link the present study establishes.

Taken as a whole, the empirical literature on Nigeria yields three broad conclusions. First, both factor accumulation and total factor productivity (TFP) have contributed to economic growth, although their relative importance has varied over time (Nkoro & Uko, 2019; Onwiodiokit & Otolorin, 2022). Second, a range of structural factors, including exchange-rate movements, oil dependence, institutional quality, and human capital, have been shown to influence productivity through distinct transmission channels (Edy-Ewoh, 2025; Balogun et al., 2024; Adegoke et al., 2023; Jibir et al., 2023). Third, despite broader productivity challenges across sub-Saharan Africa, Nigeria's productivity performance compares relatively favourably within the West African sub-region (Touray, 2024).

Despite these advances, an important gap remains. Existing studies have examined the proximate sources of growth, the determinants of productivity, or the relationship between TFP and output largely in isolation. Growth-accounting analyses for Nigeria generally do not extend beyond the period preceding the country's recent macroeconomic adjustments (Nkoro & Uko, 2019), while studies of exchange rates, oil rents, human capital, and structural transformation identify the determinants of productivity without decomposing aggregate output growth (Edy-Ewoh, 2025; Balogun et al., 2024; Mensah et al., 2023). Similarly, studies that model TFP as an explanatory variable for economic growth (Abdullahi & Hamid, 2024) do not examine how the relative contributions of productivity and factor accumulation have evolved across successive policy regimes or whether Nigeria's growth has shifted from an intensive to an extensive pattern.

This study addresses this gap by integrating these complementary strands of evidence within a unified, regime-specific growth-accounting framework covering the period 1995-2024. By decomposing output growth across three distinct policy regimes, it identifies when the principal driver of growth shifted from productivity improvements to factor accumulation, thereby providing an updated and comprehensive assessment of the changing nature of Nigeria's economic growth.

3. Methodology

This study adopts a quantitative growth-accounting (decomposition) design rather than an econometric estimation design. This distinction is important because the objective is not to estimate causal relationships among variables, as would typically require regression-based approaches such as the autoregressive distributed lag (ARDL) model or cointegration techniques. Instead, the study decomposes observed output growth into the contributions of physical capital, labour, and total factor productivity

(TFP) using the growth-accounting identity derived from the neoclassical production function. This approach is well established in the growth-accounting literature (Solow, 1957; Young, 1995; Bosworth & Collins, 2003; Nkoro & Uko, 2019) and is particularly appropriate because the research questions are concerned with quantifying the relative contributions of factor accumulation and productivity and examining how these contributions evolved across successive policy regimes, rather than identifying causal effects. Although the analysis is descriptive in its empirical implementation, it is firmly theory-driven. The decomposition is not a purely statistical exercise but an application of the neoclassical growth model, with the accounting identity directly derived from the theoretical production function presented in the preceding section.

Theoretical and Analytical Framework

The study is anchored in the neoclassical growth-accounting framework of Solow (1956, 1957). Aggregate output is represented by a constant-returns Cobb–Douglas production function in which physical capital and labour are augmented by a Hicks-neutral efficiency term:

$$Y = A \cdot F(K, L) = AK^{\alpha}L^{1-\alpha} \dots\dots\dots\dots\dots\dots\dots\dots\dots 1$$

where Y denotes real output, K is the stock of physical capital, L is labour input, A is the level of total factor productivity, and α is the output elasticity of capital, with $0 < \alpha < 1$. Output therefore depends not only on the accumulation of capital and labour but on the effectiveness with which those inputs are combined, captured by A. Taking the total derivative of the production function and expressing the result in growth rates yields the growth-accounting identity that anchors this study:

$$\frac{dY}{Y} = \frac{dA}{A} + \alpha\frac{dK}{K} + (1-\alpha)\frac{dL}{L} \dots\dots\dots\dots\dots\dots\dots\dots\dots 2$$

$$g_Y = \alpha \cdot g_K + (1-\alpha) \cdot g_L + g_A \dots\dots\dots\dots\dots\dots\dots\dots\dots 3$$

In which g denotes a growth rate. Observed output growth is thus partitioned into the contribution of capital accumulation, the contribution of labour-force growth, and TFP growth. The last is unobservable and is recovered as the residual:

$$g_A = g_Y - \alpha g_K - (1-\alpha)g_L \dots\dots\dots\dots\dots\dots\dots\dots\dots 4$$

This Solow (1957) residual captures efficiency gains, technological progress, institutional quality, capacity utilisation, and measurement error not otherwise modelled, and is interpreted here as an index of productive efficiency rather than as autonomous technology (Hall & Jones, 1999).

To implement the growth-accounting framework, the output elasticity of capital (α) must be specified. Following standard practice in the growth-accounting literature on developing countries (Bosworth & Collins, 2003; Gollin, 2002), α is assumed to be 0.30, implying a labour share (1−α) of 0.70, consistent with the typical range of factor-income shares documented across developing economies once self-employment income is correctly reallocated between capital and labour (Gollin, 2002). This assumption is defended on three grounds: (1) cross-country evidence places capital shares in developing countries between roughly 0.30 and 0.40 (Gollin, 2002); (2) sensitivity checks reported in the literature show that, within this range, the qualitative direction of TFP growth, whether the residual is rising or falling, is robust to the precise value chosen (Bosworth & Collins, 2003); and (3) data limitations preclude the precise, time-varying estimation of Nigeria's factor shares over a thirty-year sample. With the assumed α, TFP growth in year t is computed as:

$$g_{\{A,t\}} = g_{\{Y,t\}} - 0.30g_{\{K,t\}} - 0.70g_{\{L,t\}} \dots\dots\dots\dots\dots\dots\dots\dots\dots 5$$

Annual growth rates are calculated as log differences of the respective variables. The growth decomposition is computed for the full sample period (1995–2024) and for each of the three policy sub-periods, using period-specific average growth rates.

Data Sources and Measurement

The analysis is based on internationally comparable secondary data, consistent with the macroeconomic focus of the growth-accounting framework. Three variables are required: real output, physical capital, and labour input. All series were obtained from version 11.0 of the Penn World Table (Feenstra et al., 2015), from which Nigeria's annual observations for 1995–2024 were extracted. Real output is measured as GDP at constant national prices, physical capital as the real capital stock at constant national prices using the Penn World Table's perpetual-inventory estimates, and labour input as the number of persons engaged. The perpetual-inventory measure of capital is preferred to investment flows because it approximates the accumulated stock of productive assets available for production rather than annual capital expenditure.

To enhance data reliability, the real GDP growth series was cross-validated against the World Bank's *World Development Indicators* and the National Bureau of Statistics' (2025) *Nigerian Gross Domestic Product Report (Q4 2024).* The three sources exhibited closely comparable growth rates over their common coverage period, with only minor differences attributable to revisions and methodological variations. For consistency, however, all variables used in the decomposition were retained from the Penn World Table, ensuring that the growth-accounting exercise was based on a single internally consistent dataset.

The study covers the period 1995-2024, providing thirty annual observations. This period was selected because consistent data for all variables are available from 1995 onward and because it encompasses three distinct phases of Nigeria's economic and policy development. In line with the second objective of the study, the sample is partitioned into three policy-relevant regimes whose boundaries correspond to major episodes of macroeconomic reform and structural change, as summarised in Table 1.

Table 1. Policy-regime classification, 1995–2024

Regime	Years	Policy environment
I	1995–2003	Post–Structural Adjustment Programme and democratic transition
II	2004–2013	Oil boom and reform consolidation (banking reform, debt relief, telecommunications expansion)
III	2014–2024	Post-oil-shock structural reform (exchange-rate unification, COVID-19 recession, subsidy removal)

Source: *Authors' classification, 2026*

4. Findings and Discussion

Over the study period, Nigeria’s real output expanded at an average annual rate of 4.17%. As shown in Table 2, this growth was driven primarily by labour, which contributed 2.30 percentage points, accounting for 55% of total output growth. Total factor productivity (TFP) followed, contributing 1.51 percentage points (36%), while capital accumulation made a comparatively modest contribution of 0.36 percentage points (9%). Overall, the growth pattern was predominantly extensive, with more than half of the total growth arising from increased labour input rather than improvements in the efficiency with which productive factors were utilised. Although TFP accounted for a substantial 36% of growth, the predominance of factor accumulation exposes the economy to the diminishing returns predicted by

neoclassical growth theory and foreshadows the structural fragilities revealed by the regime-specific decomposition reported in Table 3.

Table 2. Aggregate growth decomposition, 1995-2024

Component	Value
Average real GDP growth (gY)	4.17%
Capital contribution (α·gK)	0.36% (9% of growth)
Labour contribution ((1−α)·gL)	2.30% (55% of growth)
TFP growth (gA)	1.51% (36% of growth)

Source: *Authors' computation, 2026*

The aggregate averages mask a pronounced structural transformation in the sources of Nigeria's economic growth. As reported in Table 3, output expanded at an average annual rate of 4.67% during the first regime (1995-2003). Total factor productivity (TFP) was the dominant driver, contributing 2.83 percentage points (61% of total growth), while labour and capital contributed 1.50 and 0.34 percentage points, respectively. Growth during this period was therefore predominantly intensive, reflecting efficiency gains associated with market-oriented reforms and the reduction of longstanding economic distortions. The productivity gains also coincide with the institutional improvements following the 1999 democratic transition. The relatively small contribution of capital suggests that expansion relied primarily on more efficient utilisation of existing productive resources rather than on substantial new investment.

As further shown in Table 3, the second regime (2004-2013) recorded the highest average growth rate in the sample at 6.51%. TFP remained the principal source of expansion, contributing 3.38 percentage points (52% of total growth), compared with 2.87 percentage points from labour and only 0.26 percentage points from capital. That productivity continued to account for the largest share of growth despite favourable oil market conditions suggests that the expansion was driven less by capital accumulation than by structural improvements, including banking-sector consolidation, debt relief, the rapid diffusion of mobile telecommunications, and the reallocation of resources toward more productive sectors. The persistence of productivity-led growth across the first two regimes establishes a clear benchmark against which the subsequent period represents a marked departure.

The third regime (2014-2024) marks a decisive structural break. Average annual output growth slowed sharply to 1.64%, while the contribution of TFP turned negative, subtracting 1.26 percentage points and

accounting for -77% of total growth. In contrast, labour contributed 2.43 percentage points (148% of total growth), more than offsetting the productivity decline and preventing aggregate output from contracting. Capital's contribution increased modestly to 0.46 percentage points (28%), but remained too small in absolute terms to compensate for deteriorating productivity. The arithmetic is revealing rather than incidental: positive output growth was sustained solely through continued expansion of labour input despite declining production efficiency. Consequently, growth during this period was overwhelmingly extensive, characterised by increasing factor utilisation alongside persistent productivity deterioration.

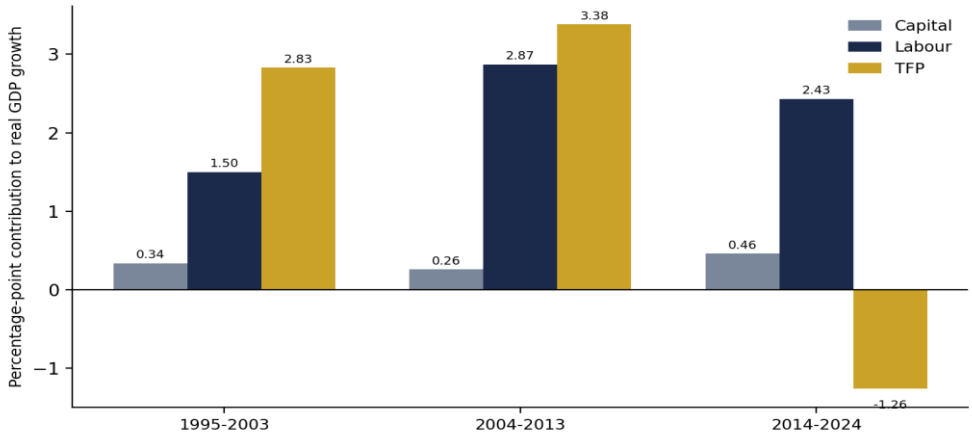
Table 3. Growth decomposition across policy regimes

Regime	GDP growth	Capital	Labour	TFP	Dominant source
1995–2003	4.67	0.34 (7%)	1.50 (32%)	2.83 (61%)	TFP
2004-2013	6.51	0.26 (4%)	2.87 (44%)	3.38 (52%)	TFP
2014-2024	1.64	0.46 (28%)	2.43 (148%)	−1.26 (−77%)	Labour

Source: *Authors' computation, 2026*

Figure 1 visualises the same three-way decomposition reported in Table 3 and makes the regime break immediately legible: capital's contribution remains slight and roughly flat across all three regimes, labour's contribution rises steadily, and TFP swings from the largest positive contributor in Regimes I and II to the only negative contributor in Regime III.

Figure 1. Contribution of Capital, Labour, and TFP to Real GDP Growth by Policy Regime, Nigeria 1995-2024



Source: *Authors' construction (2026), based on Table 3.*

Table 4 synthesises the regime-specific growth accounting results presented in Table 3 by classifying each period according to its dominant growth driver, the prevailing growth pattern (intensive or extensive), the sign of total factor productivity (TFP), and the corresponding policy environment. Considered together, Tables 3 and 4 reveal a clear structural transition from a productivity-led to an input-driven growth model. The most striking feature of this shift is the reversal in TFP, whose contribution declined from a positive 3.38 percentage points during the oil-boom regime to −1.26 percentage points in the subsequent period—a deterioration of approximately 4.6 percentage points. This productivity reversal accounts for the larger share of the decline in average output growth from 6.51% to 1.64%, underscoring that the post-2014 slowdown was driven primarily by weakening efficiency rather than insufficient factor accumulation. Within the neoclassical growth framework, this finding is particularly significant because TFP captures improvements in the efficiency with which labour and capital are transformed into output. A persistently negative productivity contribution therefore implies not merely slower growth but a deterioration in the economy's productive efficiency, rendering sustained long-run convergence unattainable regardless of continued increases in labour or capital inputs.

Table 4. Summary of structural shifts in the sources of growth

Regime	Dominant driver	Growth type	TFP sign	Policy environment
1995–2003	TFP	Intensive	Positive	Reform initiation, democratic transition
2004–2013	TFP	Intensive	Positive	Oil boom, consolidation, peak growth
2014–2024	Labour	Extensive	Negative	Oil shocks, instability, weak productivity

Source: *Authors' computation, 2026*

The growth-accounting decomposition provides an integrated perspective that the channel-specific studies reviewed in Section 2.2 cannot offer independently. The negative TFP contribution observed in the third regime is neither a statistical anomaly nor the consequence of a single adverse shock; rather, it represents the aggregate manifestation of several structural mechanisms previously identified only in isolation. Its emergence during the post-2014 period, characterised by successive exchange-rate depreciations, is consistent with the findings of Edy-Ewoh (2025) that currency depreciation reduces productivity and of Orisdare and Olofin (2024) that exchange-rate volatility exerts a similarly adverse

effect on TFP. The present analysis complements these studies by identifying the historical period during which these productivity losses became sufficiently large to dominate national growth performance.

The persistence of negative productivity growth is also consistent with evidence that the benefits of oil rents depend critically on institutional quality. As argued by Olayungbo and Adediran (2017) and Balogun et al. (2024), resource revenues contribute little to sustained growth when institutional capacity is insufficient to allocate them efficiently. Likewise, the productivity deterioration accords with evidence of premature deindustrialisation, whereby labour has increasingly shifted into low-productivity informal services rather than higher-productivity manufacturing (Mensah et al., 2023; Rodrik, 2016). This structural weakness is reinforced by the human capital constraints identified by Adegoke et al. (2023) and Jibir et al. (2023), which limit firms' capacity to adopt and utilise productive technologies. While Abdullahi and Hamid (2024) report a positive average relationship between TFP and economic growth over 1980-2023, the present decomposition adds an important qualification: that positive long-run association conceals a regime-specific reversal, with TFP becoming a significant drag on growth after 2013.

These findings have two important implications. First, the positive output growth recorded since 2014 masks a deterioration in underlying productive efficiency. Aggregate output continued to expand only because labour input increased sufficiently to offset declining TFP, implying that recent growth has been sustained through factor accumulation rather than productivity improvement. The simultaneous collapse in dollar-denominated per capita income reported by the IMF (2024) is therefore consistent with the economy's weakening productive capacity rather than being merely contemporaneous with it. Second, the consistently modest contribution of capital never exceeding 0.46% in any regime suggests that Nigeria's principal constraint is not the volume of investment but its efficiency and allocation. This interpretation accords with Onwiodiokit and Otolorin's (2022) finding that gross fixed capital formation has generated only limited growth effects. Where infrastructure deficiencies, institutional weaknesses, and resource misallocation persist, additional investment is unlikely to produce substantial output gains. Consequently, policies centred solely on expanding labour or capital inputs are unlikely to restore robust growth. Sustainable long-run growth requires reversing the decline in total factor productivity through reforms that improve resource allocation, strengthen institutions, enhance human capital, and create conditions that raise the efficiency with which existing factors of production are utilised.

5. Conclusion and Recommendations

This study revisited the proximate sources of Nigeria's economic growth within a neoclassical growth-accounting framework over the period 1995-2024, distinguishing three policy regimes. Over the full sample, real output grew at an average annual rate of 4.17%, driven primarily by labour (55% of total growth), followed by total factor productivity (TFP) (36%), while capital made only a modest contribution. The regime-specific decomposition, however, reveals a pronounced structural transformation. Productivity was the dominant source of growth during 1995-2003 and 2004-2013, contributing 61% and 52% of total growth, respectively. In contrast, during 2014-2024, the Solow residual turned negative, and economic expansion became overwhelmingly dependent on labour accumulation. Nigeria therefore transitioned from a predominantly intensive to an extensive growth regime. The coincidence of this productivity reversal with the sharp decline in dollar-denominated per capita income suggests that the country's recent growth challenge is fundamentally one of deteriorating efficiency rather than simply slower output expansion. From the perspective of neoclassical growth theory, such a pattern is unlikely to support sustained long-run growth unless productivity growth is restored.

The findings imply that the policy agenda should focus primarily on improving productivity rather than expanding factor inputs. Restoring positive TFP growth requires strengthening the institutional foundations of economic efficiency through improved governance, credible macroeconomic management, effective contract enforcement, and a stable regulatory environment. Equally important is improving the quality rather than the quantity of investment. Given the consistently modest contribution of capital across all three regimes, greater returns are likely to arise from more efficient project selection, reduced resource misallocation, and investments that relieve critical infrastructure bottlenecks in electricity, transport, and digital connectivity. Enhancing human capital is also essential because labour remains the principal source of growth. Policies should therefore prioritise improvements in learning outcomes, skills development aligned with industrial demand, and the creation of productive formal-sector employment capable of raising labour productivity. Finally, diversifying the productive base and maintaining macroeconomic stability would reduce vulnerability to oil-price and exchange-rate shocks while facilitating the expansion of higher-productivity activities in manufacturing, agribusiness, and modern services. Collectively, these measures address the efficiency margin identified by the decomposition as the principal constraint on Nigeria's long-run growth.

Several limitations should be acknowledged. First, the analysis assumes a constant capital elasticity of 0.30 throughout the sample, although factor shares may evolve with structural transformation. Future research could estimate time-varying factor shares where suitable data are available. Second, the growth-accounting exercise employs aggregate measures of labour and capital and therefore does not account explicitly for improvements in human capital or changes in capital quality. Incorporating quality-adjusted labour and disaggregated capital measures would provide a more refined decomposition. Third, because TFP is measured as a residual, it captures the combined effects of all omitted influences, including institutional quality, technological change, and natural-resource depletion. Future studies could therefore examine the determinants of TFP directly and incorporate measures of natural capital to improve inference in a resource-dependent economy. Finally, although the regime boundaries correspond to major policy episodes, they are imposed ex ante rather than estimated statistically. Applying endogenous structural-break techniques would provide an additional test of the timing and robustness of the productivity transition identified in this study.

This study contributes to the literature by integrating previously separate explanations of Nigeria's growth performance within a unified, regime-specific growth-accounting framework. By extending the analysis to 2024 and examining growth across distinct policy regimes, it demonstrates that Nigeria's recent slowdown reflects a fundamental shift from productivity-led to input-driven growth. The central finding is that the post-2013 deterioration in TFP, rather than a shortage of labour or capital, constitutes the principal proximate source of the country's weakening growth performance.

This decomposition provides an empirical benchmark against which the productivity effects of recent and future structural reforms can be assessed as additional data become available.

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Appendix

Table A1. Annual growth decomposition of Nigeria's real GDP, 1995-2024

Year	Total growth	Capital	Labour	TFP
1995	-0.0007	0.0027	0.0169	-0.0204
1996	0.0411	0.0034	0.0117	0.0261
1997	0.0289	0.0039	0.0098	0.0152
1998	0.0255	0.0039	0.0030	0.0186
1999	0.0058	0.0042	0.0181	-0.0164
2000	0.0489	0.0049	0.0196	0.0244
2001	0.0575	0.0014	0.0110	0.0452
2002	0.1426	0.0022	0.0349	0.1055
2003	0.0709	0.0043	0.0101	0.0565
2004	0.0885	0.0012	0.0284	0.0589
2005	0.0624	0.0014	0.0303	0.0307
2006	0.0588	0.0058	0.0266	0.0264
2007	0.0638	0.0021	0.0326	0.0292
2008	0.0655	0.0018	0.0347	0.0290
2009	0.0773	0.0029	0.0251	0.0493
2010	0.0770	0.0030	0.0369	0.0370
2011	0.0517	0.0021	0.0303	0.0193
2012	0.0414	0.0024	0.0225	0.0165
2013	0.0646	0.0036	0.0193	0.0417
2014	0.0612	0.0056	0.0307	0.0248
2015	0.0262	0.0057	0.0347	-0.0142
2016	-0.0163	0.0045	0.0267	-0.0474
2017	0.0080	0.0040	0.0434	-0.0393
2018	0.0190	0.0055	0.0202	-0.0067
2019	0.0218	0.0065	0.0163	-0.0010
2020	-0.0658	0.0050	0.0147	-0.0855
2021	0.0110	0.0043	0.0186	-0.0119
2022	0.0423	0.0046	0.0286	0.0091
2023	0.0327	0.0053	0.0333	-0.0058
2024	0.0398	0.0000	0.0000	0.0398

Source: Authors' computation (2026) using EViews 12 and Penn World Table 11.0. Figures are annual contributions in proportional (log-difference) terms; $\alpha = 0.30$.