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DRIVERS OF ECONOMIC PROSPERITY IN SUB-SAHARAN AFRICA: EMPIRICAL CONSIDERATIONS OF INSTITUTIONS, INVESTMENT, AND MACROECONOMIC POLICY

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Abstract
The primacy of economic prosperity as the catalyst, predictor, and moderator of success in other realms of life has justified the disproportionate attention given to it by development scholars and practitioners. This study explores the key drivers of economic prosperity in Sub-Saharan Africa (SSA), emphasising the influence of institutional quality, investment, and macroeconomic policy. Using a panel data set from 2000 to 2024, and the two-step system Generalized Method of Moments (GMM) estimator, the analysis controls endogeneity and unobserved heterogeneity, with diagnostic tests confirming model validity. Results reveal strong growth persistence, indicating that past prosperity reinforces future performance. Foreign direct investment significantly promotes prosperity, while government spending impedes it, reflecting fiscal inefficiencies and governance gaps. Institutional quality shows a positive but insignificant effect, and weak institutions amplify fiscal mismanagement. Inflation exhibits a weak positive association, whereas life expectancy negatively relates to prosperity, likely due to demographic pressures. The findings highlight the importance of prudent fiscal management, institutional strengthening, and policies that attract productive investment while addressing structural and demographic constraints to achieve sustained economic advancement across SSA.

Keywords: Economic Prosperity; Institutional Quality: Economic Quality: Governance: Growth Dynamics

1. Introduction

Incessant headwinds of development in Sub-Saharan Africa (SSA) seem bogged down in never-ending development challenges, notwithstanding a series of reform agendas and considerable external assistance. The swelling population growth in SSA, averaging 2.5% per year, is nearly triple that of the world at 0.95% per year, and it offers a demographic advantage to SSA, but this rise in the population seems to be mounting pressure on the limited facilities, stretching infrastructure, educational, and health systems (Tessema, 2022; Anowor, Ichoku, Onodugo, Ochinanwata, Uzomba, 2023; Kassouri, 2023; Bello, Yushau, Musa, & Abba, 2025). Thus, leaving more than forty percent of the inhabitants below the poverty threshold of $2.15 per day (World Bank, 2023; UNDP, 2022). The prefigured Africa rising narrative at the beginning of the twenty-first century was initially sustained by the surge in commodity prices and improved macroeconomic management. Incidentally, it has, over the years, been weighed down by consecutive external shocks, particularly the 2008 global financial meltdown, the 2014 collapse of oil prices, and the 2020 COVID-19 pandemic, accompanied by rapidly escalating debt vulnerabilities.

Unfortunately, intractable inflationary pressure, reaching as high as 15 per cent on average in 2022, exchange rate instability, fiscal instability, and strong reliance on exports of the main product have continuously undermined macroeconomic stability, particularly in SSA (IMF, 2023). Along with that, there are deep-rooted weak institutions that are marked by systemic corruption, unstable governance, and ineffective regulatory systems; these further limit the competence of policy implementation (Kaufmann, Kraay, & Mastruzzi, 2023; Acemoglu & Robinson, 2012;

North, 1990). Particularly, investment is still shallow, asymmetrical, and unattractive, but foreign direct investment (FDI) inflows were growing to $54 billion in 2024 compared to $10 billion in 2000; this is highly concentrated in resource enclaves with minimal productivity spillovers, and public spending usually favors recurrent expenditures over capital expenditures (UNCTAD, 2022; AfDB, 2022). These dynamics are indicative of a great need to urgently re-evaluate the way to go regarding how institutions, investment flows, and macroeconomic policies coalesce in defining the future of output per capita and the broader trajectory of prosperity in SSA.

Sub-Saharan Africa's route to economic development continues to be substantially hampered by continued and deeply rooted productivity gaps vis-à-vis other regions in the world in terms of economic prospects for inclusive prosperity. There is scarcely any real difference in the value of labour output: in 2025, the average amount of output per hour of labour is estimated by the ILO (2025) to be around US $ 4.5 (25 per cent of the world average of US$ 18.0) in purchasing power parity (PPP) terms. By contrast, in East Asia and Latin America, respectively, the comparable values were US$20.2 and US$16.2 compared with more than US$55 for the advanced economies. Labour productivity, by contrast, stagnated between 2022 and 2024 in sharp contrast to the rebound to 1.5 per cent at the global level in 2024 and to notably strong growth of 3.2 per cent in East Asia. These structural widening gaps translate into a GDP per capita of approximately US$1,930 (OECD, 2025); in other words, about an eighth of the global mean. Total factor productivity (TFP) growth in Sub-Saharan Africa has averaged very modestly at 1.2 per cent, compared with East Asia's historical experience of growth in the range of 4 to 5 per cent. The elasticity of poverty reduction versus GDP growth in Sub-Saharan Africa, which is as low as a 1 per cent decline in poverty for a 1 per cent increase in growth, according to a 2024 UNDP report, contrasts with a figure of 2 to 2.5 per cent that is more typical in other regions of the world. With a workforce estimated to represent 25 per cent of the global total by 2050, institutional structure, investment, and macroeconomic reforms are key to any real convergence.

Sub-Saharan Africa's (SSA) growth debate remains focused to date on the fundamental importance of institutional quality, investment, and macroeconomic policy as determinants of long-term growth. Poor governance and failure to control corruption are empirically recognized to be poor institutional environments (Acemoglu & Robinson 2012; IMF, 2023); and are unequivocally identified as a crucial institutional tonic for economic success and sound allocation of resources in economic activities (Anowor, Kalu, Odo, & Okorie, 2025; Kaba, 2022; Towah, 2019). From the empirical point of view, the efficiency of private investment in essential infrastructure as well as the efficiency of public investment, FDI and capital expenditures therefore crucially depend on the existence of quality institutions, which also represent a credible, stable, transparent and predictable environment that encourages investor confidence (Agbarakwe, Anowor, & Ikue, 2018; Adegboye et al. 2020; IMF, 2025; Todaro & Smith, 2009). Moreover, sound macroeconomic policies, including fiscal prudence and monetary stability (inflation management), are essential prerequisites of creating the right conditions for sustainable growth in view of vulnerabilities due to external shocks and high risks of debt distress (Ghazanchyan & Stotsky, 2013; Onodugo, Nwonye, Anowor, & Ofoegbu, 2019; World Bank, 2024).

Despite extensive research on Africa’s growth dynamics (Bloom, Kuhn, & Prettner, 2016; Ugwunna, & Obi, 2023; Nwonye et al, 2023; Osei, & Kim, 2024), the empirical understanding of what truly drives economic prosperity in Sub-Saharan Africa (SSA) remains fragmented and inconclusive. This study seeks to provide a robust empirical inquiry into the underlying determinants of prosperity by examining how institutional quality, investment behaviour, and macroeconomic policy frameworks collectively shape economic performance in the region.

Specifically, it pursues three interrelated objectives: first, to evaluate the extent to which institutional quality influences economic prosperity in SSA; second, to assess the impact of domestic and foreign investment flows within the prevailing institutional and policy context; and third, to investigate the mediating role of macroeconomic policy variables, such as fiscal prudence, monetary stability, and exchange rate management, in linking institutional quality and investment to prosperity outcomes.

Correspondingly, the study addresses the following research questions: (1) How does institutional quality affect economic prosperity in SSA? (2) What is the nature and magnitude of the contribution of investment to growth within existing institutional and policy frameworks? (3) To what extent do macroeconomic policies condition or amplify the effects of institutions and investment on prosperity?

The current paper contributes to the literature by filling three key gaps. First, it bridges the conceptual gap arising from studies that have examined institutions, investment, and macroeconomic policy in isolation (Acemoglu et al., 2003; Rodrik et al., 2004; Nguyen, Saito, & Towfighian, 2021; Tessema, 2022) rather than as interconnected mechanisms influencing prosperity. Second, it addresses a methodological gap by combining Principal Component Analysis (PCA) and two-step system Generalized Method of Moments (GMM), an approach rarely applied in the SSA context, to ensure both dimensional reduction and robust causal inference (Flannery & Hankins, 2013). Third, it responds to an empirical gap by offering contemporary, region-specific evidence that moves beyond conventional growth proxies to capture structural and policy-based determinants of prosperity (Asongu & Odhiambo, 2020; Fosu, 2019). Through this integrated framework, the study advances a more comprehensive understanding of the institutional and macroeconomic foundations of sustained economic prosperity in Sub-Saharan Africa.

2. Literature Review

Endogenous growth theory basically postulates that ongoing growth in Sub-Saharan Africa stems from human capital, innovation, knowledge diffusion, and returns to scale, rather than external shocks. These internal mechanisms depend on strong institutions, investment, and a stable macro-economic policy. The theory lends support to the hypothesis that investment in physical capital, human capital, and institutions, interact with institutional quality and the macroeconomic environment in spurring long-run prosperity, which is supported by recent studies of SSA (Fosu,2013; Ghosh, & Saha, 2025). First, institutional dimensions attained to promote investment in addition to regulatory quality and democracy have statistically significant impacts on growth (Hussen, 2023). Second, human capital development is a powerful predictor of growth, controlling for the impact of inflation and macro-economic stability (Abu Alfoul et al., 2024; Anowor et al 2023). Third, the efficacy of institutions on growth may insist on threshold levels of institutional quality before impacts are attained (Chomen, 2022).

Institutional economics positions governance as the central determinant of economic prosperity by shaping incentives, reducing transaction costs, and influencing the effectiveness of investment and macroeconomic policy. North (1990) conceptualizes institutions as the “rules of the game” that structure human interaction, while Acemoglu, Johnson, and Robinson (2001) argue that inclusive institutions promote innovation, investment, and growth, unlike extractive ones that entrench stagnation. Empirical evidence from Sub-Saharan Africa (SSA) supports these propositions: improvements in governance quality significantly enhance private investment returns and moderate the efficiency losses of public investment (Abdulai, Ustarz, & Boakye,

2024); education and human capital contribute meaningfully to growth only under strong institutional environments (Abu Alfoul et al., 2024); and institutional effectiveness raises output by over 3 percent for each unit gain in governance quality (Şit, 2024). Further, studies link financial inclusion, corruption control, and regulatory quality to higher macroeconomic stability and productivity (Mohammed, 2023; World Bank, 2024). These findings affirm that governance is not a background condition but a catalytic mechanism that amplifies the impact of investment and macroeconomic policy.

Demographic transition theory posits that declining fertility, increasing life expectancy, and expanding working-age populations can generate a demographic dividend that enhances productivity and economic growth. However, this potential is realized only when strong institutions, sound macroeconomic policies, and productive investments transform population growth into gainful employment and higher output. Empirical evidence from Sub-Saharan Africa (SSA) presents mixed outcomes: while improvements in life expectancy and youth cohorts expand labour supply, weak governance, low investment in education, and inadequate infrastructure hinder productivity gains (Tchekounteu et al., 2023; Adegboye & Arodoye, 2023; Woldegiorgis, 2023). Projections by the UN and IMF indicate that SSA's working-age population will continue to grow rapidly, requiring substantial job creation to avert rising unemployment and underemployment (UN, 2022; IMF, 2024; ILO, 2024). As noted by Garenne (2023) and May and Guengant (2023), realizing this dividend depends critically on policies that strengthen human capital, improve governance, and sustain macroeconomic stability. Consequently, this paper conceptualizes demographic dynamics as interacting forces with institutional quality, investment, and macroeconomic policy in driving long-run prosperity across SSA.

Macroeconomic stabilization theory underscores that maintaining price stability is fundamental to achieving sustainable economic growth, as stable and predictable inflation fosters investment confidence, financial planning, and resource efficiency, whereas excessive and erratic inflation distorts markets, reduces productivity, and weakens purchasing power. Empirical evidence from SSA demonstrates a nonlinear inflation–growth relationship: moderate inflation supports growth, but rates exceeding 6–9% significantly constrain output and macroeconomic stability (AfDB, 2017; Onodugo, Anowor, & Ofoegbu, 2018; Olaoye et al., 2023). Recent panel studies further reveal that persistent inflation above the 4–6% threshold undermines the effectiveness of fiscal and monetary policies, discourages private investment, and amplifies economic volatility (Séraphin & Valery, 2022; Prao & Valery, 2021). Consequently, within SSA's policy environment, macroeconomic stabilization must balance inflation management with pro-growth strategies to foster durable economic prosperity.

Empirical research consistently underscores the pivotal role of institutional quality in shaping economic prosperity across Sub-Saharan Africa (SSA), although findings present a nuanced picture. A significant body of recent literature confirms that robust governance indicators, specifically rule of law, control of corruption, and government effectiveness, exert a positive and statistically significant impact on Gross Domestic Product (GDP) growth (Ebaidalla, 2014; Suhaibu et al., 2022). For instance, studies employing the System Generalized Method of Moments (GMM) on panel data for SSA nations have found that improvements in institutional quality are strongly associated with higher economic output (Onwuka et al., 2025). Moreover, institutional quality has been shown to significantly affect components of aggregate demand: it exhibits a positive and significant effect on private investment, as better enforcement of property rights reduces the risk premium for investors, but sometimes shows a negative association with public investment, potentially by exposing inefficiencies and rent-seeking activities (Nwosu et al.,

2024). Contrasting evidence, however, highlights that some institutional dimensions, such as political stability, may show only mixed or weak correlation with growth, suggesting that the effectiveness of institutions is highly dependent on their specific form and interaction with other factors like human capital and sound macroeconomic policies (Ugwunna & Obi, 2023).

Empirical evidence on foreign direct investment (FDI) and government expenditure in Sub-Saharan Africa (SSA) reveals a complex relationship with economic growth, characterized by non-linearities and conditional effects. Many studies, often using Panel ARDL or System GMM, confirm that aggregate FDI inflows generally exert a positive and significant long-run impact on GDP per capita, consistent with its role in technology transfer and capital formation (Gani et al., 2022; Oppong et al., 2023). However, this positive effect is often found to be conditional on a threshold of high institutional quality or human capital (Ghosh & Saha, 2025; Suhaibu et al., 2024), with some studies reporting negligible or even negative short-run effects. Conversely, the impact of government expenditure is highly heterogeneous: productive spending on sectors like education and health demonstrates a robust positive effect on income growth (Onoja et al., 2025), while aggregate government final consumption expenditure has been quantitatively linked to a decline in GDP per capita growth, suggesting public sector inefficiencies and crowding-out effects (Bello et al., 2025). This duality necessitates that macroeconomic policy in SSA focuses on enhancing the absorptive capacity to maximize FDI spillovers and reallocating public resources towards high-return capital and human development projects.

Empirical studies on inflation and macroeconomic instability in SSA highlight their detrimental effects on economic prosperity, often driven by fiscal imbalances and external shocks. For instance, public debt accumulation fuels inflation, with a unit increase in domestic borrowing raising inflation by 0.14% while reducing growth by 0.06%, as shown in a system GMM analysis of 45 SSA countries from 2005 to 2022 (Sumba et al., 2024). Fiscal policy exacerbates inflation, with public debt showing a positive coefficient of 0.053 on inflation rates, intensifying beyond a 60.59% GDP threshold and optimal growth-limiting inflation at 4% (Olaoye et al., 2023). Inflation uncertainty disrupts labour markets, negatively affecting employment above a 6.07% threshold, though marginal positive effects occur below 0.75% in 26 SSA nations from 1996–2017 (Kassouri, 2023). In South Africa, rising inflation uncertainty amplifies macroeconomic instability across regimes from 1970 to 2022 (van der Westhuizen & van Eyden, 2023). Macroeconomic volatility, including exchange rate and inflation fluctuations, deters investment, correlating negatively with growth in 31 SSA countries (Osei & Kim, 2024). Fiscal dominance over monetary policy worsens exchange rate depreciation and inflation, with average inflation at 12.5% excluding outliers from 1980 to 1993 (Nguyen et al., 2021). These findings emphasize the need for coordinated policies to enhance stability.

Demographic factors significantly shape economic prosperity in Sub-Saharan Africa (SSA), with life expectancy as a key human capital indicator. A dynamic panel GMM analysis of 30 SSA countries (1995–2014) shows a 10% rise in GDP per capita increases life expectancy by 0.4%, boosting productivity through health and education synergies (Chewe & Hangoma, 2020; Anowor, Ichoku, & Onodugo, 2020). However, in 40 SSA nations (1980–2005), lagged life expectancy's effect on GDP growth was insignificant due to low baseline health (Ogunleye, 2014). Population growth has mixed effects: a 1% increase raises GDP per capita by 0.497% in 43 SSA countries (1990–2019) via larger labour markets (Tessema, 2022), but high fertility reduces GDP by straining resources (Ezebunwa et al., 2024). High dependency ratios hinder growth ($r = -0.188$) across 46 SSA countries (1950–2019). Fertility declines could add 0.5–1% to annual growth, emphasizing health and family planning investments (Bloom et al., 2016).

3. Methodology

The theoretical foundation of this study integrates the Endogenous Growth theory with the New Institutional Economics framework. This fusion posits that while investment in physical and human capital together with technological innovation are essential for the sustenance of long-run economic success (Romer, 1986; Romer 1994), the efficacy of this investment is basically conditional on the quality of both formal and informal institutions (North, 1990: Acemoglu & Robinson, 2012). Thus, economic prosperity in SSA is hypothesized not exclusively as a function of capital accumulation and sound macroeconomic policies, but fundamentally as a product of the positive interaction, as advanced by Acemoglu et al (2005), where strong institutions amplify the returns and impact of both investment and policy stability. Correspondingly, macroeconomic stability theory draws attention to the significance of prudent fiscal, monetary, and exchange rate policies in fostering investment confidence and sustainable growth (Barro, 2013; Aghion & Howitt, 2009).

3.1 The Model

Economic prosperity (Prosp) is prevalent when there is a sustained increase in the standard of living. This is characterized by rising real per capita income, equitable wealth distribution, and consistent access to opportunities, driven by efficient resource allocation, innovation, and inclusive institutions. Comparatively, the *Real Gross Domestic Product (RGDP) per capita growth rate* is an appropriate proxy for economic prosperity because it measures the average economic output per person, adjusted for inflation, capturing expansion in living standards through higher incomes and consumption possibilities. This reflects productivity gains, technological progress, and resource efficiency, which drive sustained improvements in welfare.

The *RGDP per capita* is captured as $y_t = \frac{\mathrm{Yt}}{Pt}$ ..... (1)

Where Y_t is Real Gross domestic Product (total economic output adjusted for inflation) at time t, P_t is the population at time t.

The growth rate of *RGDP per capita* is the percentage change in y_t over time. Using the logarithmic approximation for small changes, the growth rate (g_y) is:

$$g_y = \frac{d\ lnyt}{dt} = \frac{d \ln Yt}{dt} - \frac{d \ln Pt}{dt} = gY - gP \quad \text{..... (2)}$$

Where gY is the growth rate of RGDP, and gP is the population growth rate.

Economic prosperity reflects sustained increases in the standard of living captured by higher real income per person. Thus, RGDP per capita growth (g_y) directly measures the rate at which average economic output per capita increases, accounting for inflation and population growth. This is demonstrated below.

RGDP (Y_t) is derived from the production function: $Y_t = A_t K_t^{\alpha} L_t^{1-\alpha}$ ..... (3)

Where A_t is total factor productivity (TFP), K_t is capital, L_t is labour, and α is the elasticity of the function.

Therefore *per capita output* is:

$$y_t = \frac{\mathrm{Yt}}{Pt} = A_t \left(\frac{Kt}{Pt}\right)^{\alpha} \left(\frac{Lt}{Pt}\right)^{1-\alpha} \quad \text{..... (4)}$$

Assuming $L_t \approx P_t$ (labour force proportional to population), we simplify:

$$y_t \approx A_t k_t^{\alpha} \quad \text{.....(5)}$$

where $k_t = Kt/Pt$ is the capital per capita.

The growth rate becomes:

$g_y \approx g_A + \alpha g_k$ ..... (6)

Where g_A is TFP growth (innovation), and g_k is capital per capita growth. This shows g_y captures contributions from technological progress and capital accumulation, which are key drivers of prosperity. g_y integrates productivity (g_A), capital deepening (g_k), and demographic dynamics (gP), reflecting the ability to produce more goods and services per person. Higher y_t implies greater consumption possibilities, correlating with welfare improvement (via utility functions $U(c_t)$). As a standardized inflation-adjusted metric, g_y allows cross-country and temporal comparisons, unlike non-market indicators (eg, health, happiness) that are harder to quantify consistently. While g_y misses inequality or environmental factors, it strongly correlates with broader prosperity metrics like human capital, among others, and its simplicity outweighs composite indices for precision. From the foregoing, the real gross domestic product (RGDP) per capita growth rate presently fits the proxy for economic prosperity (*Prosp*), as it encapsulates the core drivers of sustained living standard improvements.

The model specification is fundamentally rooted in an augmented version of the endogenous growth models of Barro (1991) and Mankiw et al (1992). The augmented version was adapted to capture the dynamic and heterogeneous nature of economic progress across SSA countries.

The baseline model for investigating the drivers of economic prosperity (Prosp) across 34 (N) countries over 25 years (T) periods is specified as a dynamic linear equation, which explicitly includes the lagged dependent variable ($Prosp_{it-1}$) to account for persistence and convergence effects.

$Prosp_{it} = \beta_0 + \beta_1 Prosp_{it-1} + \beta_2 Inst_{it} + \beta_3 Inv_{it} + \beta_4 MacPol_{it} + \beta_5 \Sigma ó_j Control_{it} + \eta_i + \mu_t + \varepsilon_{it}$ ..... (7)

Where:

$Prosp_{it}$ = The proxy for economic prosperity (the logarithm of Real Gross Domestic Product per capita growth rate) for country *i* in year *t*. This captured welfare and growth.

$Prosp_{it-1}$ = the lagged dependent variable capturing the path dependency of economic prosperity (dynamic effect).

$Inst_{it}$ = A measure of institutional quality (a composite of specific indicators: Government effectiveness, Regulatory quality, Voice and accountability, Rule of law, Corruption control, Political stability, Property right and contract enforcement, Transparency and access to information, and Absence of violence/terrorism). These contribute to creating conducive environments for economic development, social trust, and effective governance.

Inv_{it} = A measure of Investment (foreign direct investment (FDI) as a ratio of GDP, and the ratio of government spending to GDP).

$MacPol_{it}$ = Macroeconomic policy variable is proxied by price stability (inflation control).

$Control_{it}$ = A vector of standard growth-covariates (human capital, population growth rate, regional dummies). Life expectancy is the proxy for human capital outcome, whereas population growth rate is the proxy for demographic tendency. Regarding the regional dummies, the empirical distinctions based on regional dummies among SSA countries add negligible analytical value because the region is structurally homogenous in its institutional, macroeconomic, and historical conditions (Acemoglu et al, 2001; Herbst, 2000); near absence of deep regional differentiation in policy and governance frameworks (UNECA, 2023; IMF, 2022); and shares common exposure to global and climatic shocks (Collier & O'Connell, 2007; Ndulu et al, 2008). Consequently, dummy variables representing SSA and its subregions will not capture systematic differences beyond what is already explained by country-specific or time-fixed effects.

η_i = The unobserved, time-invariant, country-specific fixed effects (e.g., geographical features, historical, among others) that captured country heterogeneity.
μ_t = Time-specific fixed effects, capturing common unobserved shocks affecting all countries (e.g. global recessions, commodity price booms, among others).
ε_{it} = The idiosyncratic error term.
Expanding (7), the general dynamic of (7) is presented thus in (8):

$$Prosp_{it} = \acute{\omega}_0 + \acute{\omega}_1 Prosp_{it-1} + \acute{\omega}_2 Inst_{it} + \acute{\omega}_3 FDi_{it} + \acute{\omega}_4 Gov_{it} + \acute{\omega}_5 Inf_{it} + \acute{\omega}_6 Lexp_{it} + \acute{\omega}_7 Pop_{it} + \mu_{it} \quad \text{..... (8)}$$

Where:
Prosp is economic prosperity, *Inst* is institutional quality, *FDi* is foreign direct investment as a ratio of GDP, *Gov* is government spending as a ratio of GDP, *Inf* is inflation, *Lexp* is life expectancy, *Pop* is population growth rate, μ is stochastic terms, $_{it}$ are as defined earlier.

The inclusion of Principal Component Analysis (PCA) in this study is motivated by the multidimensional and highly collinear nature of variables representing institutional quality, investment, and macroeconomic policy in Sub-Saharan Africa. Indicators such as governance effectiveness, regulatory quality, fiscal discipline, inflation stability, and capital formation often overlap, making estimation and interpretation complex. PCA as an orthogonal linear transformation technique is employed to reduce dimensionality and extract uncorrelated principal components that retain the maximum variance of the original data (Jolliffe & Cadima, 2016). This procedure allows the construction of composite indices that capture the underlying structure of institutions, investment, and policy frameworks more efficiently while minimizing redundancy and measurement bias. Consistent with contemporary development econometrics (Fosu, 2019; Asongu & Odhiambo, 2020), integrating PCA prior to the two-step system GMM estimation enhances orthogonality among regressors and strengthens the empirical validity of the study's analysis of prosperity drivers in Sub-Saharan Africa.

Estimating a model with the dynamic component (Prospit-1) and unobserved country-specific effects (ηi), relying on the Ordinary Least Squares (OLS) techniques or Fixed Effects (FE) estimators will yield inconsistent and biased results, as the lagged dependent variable is correlated with the error term. The standard for such dynamic growth regressions with panel data, especially for large number of countries (N) and a moderate time dimension (T) typical of SSA data, is the Two-Step System Generalized Method of Moment (Two-Step Sys-GMM) estimator developed by Blundell and Bond (1998). This robust technique is employed because of the dynamic nature of economic prosperity models and the potential endogeneity among key variables such as institution, investment, and macroeconomic policy. Traditional estimators often yield biased results in the presence of unobserved heterogeneity and simultaneity challenges common in panel data from SSA. The Two-Step System GMM efficiently addresses these issues by combining equations in levels and first differences while employing internal instruments to control for endogeneity. To prevent instrument proliferation, this study collapses instruments following Roodman's (2009) recommendation, ensuring model parsimony and validity. Instrument reliability and absence of serial correlation are further confirmed using Sargan (1958) and Arellano-Bond (1991) tests. This approach enhances the consistency and robustness of estimates, providing credible causal inferences on the determinants of economic prosperity in Sub-Saharan Africa.

3.2 Fixed and Random Effects Model Specification

To further ensure robustness, the study estimates both fixed-effects and random-effects

models as complementary static estimators. The fixed-effects model assumes that unobserved country-specific effects are correlated with the explanatory variables, thereby controlling for all time-invariant heterogeneity within each country. In contrast, the random-effects model assumes that these unobserved effects are uncorrelated with the regressors and are randomly distributed across countries. The Hausman (1978) specification test is applied to determine the more appropriate estimator, with the fixed-effects model preferred if systematic differences exist between the two estimators.

3.3 Panel Causality and Robustness Testing

Complementing the two-step system GMM and PCA, the Dumitrescu and Hurlin (2012) panel causality test is employed to explore the direction and dynamics of causal relationships among institutions, investment, macroeconomic policy, and economic prosperity while addressing potential endogeneity. This test is particularly suitable for heterogeneous panels such as Sub-Saharan Africa, as it permits cross-country variations in causal linkages rather than imposing a uniform relationship. Moreover, a static fixed-effects estimation is conducted to verify the consistency and stability of the explanatory variables' effects on economic prosperity. The integration of dynamic, static, and causality estimations thus reinforces the reliability and internal validity of the findings, offering a comprehensive empirical understanding of the drivers of prosperity in the region.

Data and Sources

The study utilizes balanced panel data covering 34 Sub-Saharan African (SSA) countries over the period (2000 –2024), derived exclusively from reputable and internationally comparable databases to ensure reliability and consistency. The selection of data sources was guided by the need for uniform definitions, cross-country comparability, and long-term coverage of key development indicators relevant to institutional performance, investment behavior, and macroeconomic policy dynamics in the region.

This study focuses on 34 Sub-Saharan African (SSA) countries, selected to ensure broad representation across the region's geographical, institutional, and economic diversity. These include Angola, Benin, Burkina Faso, Burundi, Cameroon, the Republic of Congo, Côte d'Ivoire, Djibouti, Ethiopia, Eswatini, Gabon, The Gambia, Guinea, Guinea-Bissau, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, São Tomé and Príncipe, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, and Zimbabwe. The inclusion of these countries captures both coastal and landlocked economies, resource-rich and resource-scarce states, as well as lower- and upper-middle-income economies within SSA. This comprehensive selection enhances the robustness and generalizability of the empirical findings, ensuring that the analysis reflects the structural heterogeneity and macroeconomic realities of the broader Sub-Saharan African region.

The dependent variable, economic prosperity, is proxied by real GDP per capita growth (constant 2015 US dollars), obtained from the World Development Indicators (WDI) published by the World Bank (2024). This indicator provides a standardized measure of income growth and living standards across countries. As an alternative welfare-based measure, life expectancy at birth is also sourced from the WDI to capture the non-income dimension of prosperity and long-term human development outcomes.

The key explanatory variables reflect the three central drivers identified in the study's conceptual framework, institutions, investment, and macroeconomic policy. Institutional quality

indicators, including control of corruption, government effectiveness, regulatory quality, and rule of law, are extracted from the Worldwide Governance Indicators (WGI) compiled by the World Bank (Kaufmann, Kraay, & Mastruzzi, 2023). These indicators were standardized and aggregated through Principal Component Analysis (PCA) to form a composite institutional index. For macroeconomic policy variables, the inflation rate (annual percentage change in the consumer price index) and population growth rate (annual percentage) are included. Both series are retrieved from the World Development Indicators (World Bank, 2024). Inflation reflects price stability and macroeconomic discipline, while population growth captures demographic pressures and labour force expansion.

All variables were checked for consistency, and missing values were addressed using interpolation where appropriate to preserve the balanced nature of the panel. The final dataset combines institutional, investment, and macroeconomic indicators, providing a comprehensive empirical basis for examining the determinants of economic prosperity in Sub-Saharan Africa.

4. Results and Discussion

Table1: Result of Descriptive statistics

	Sub-Saharan Africa			**Low-Income countries**			**Middle-Income countries**			**Upper Middle-Income countries**		
Variable	Obs.	Mean	Std.Dev.	Obs.	Mean	Std.Dev	Obs.	Mean	Std.Dev	Obs.	Mean	Std.Dev
Prosp	850	689228	1390358	200	393920.3	73349 5.6	250	916287.1	2076202	100	1199494	1692948
Gov	850	100.092	26.22214	200	112.4716	9.820454	250	86.57185	40.09143	100	91.4065	16.15160
Inst	850	-4.00E-09	2.167012	200	-0.511873	1.643218	250	-0.182671	2.250827	100	1.61869	2.587220
FDi	850	4.445221	8.205348	200	6.734802	13.4162	250	3.302448	4.776949	100	4.92169	8.126875
Lexp	850	59.59402	6.222414	200	58.22061	4.963519	250	59.32033	7.106642	100	63.8824	7.108682
Pop	850	2.473598	0.874860	200	2.890832	0.618284	250	2.233214	0.846376	100	2.15558	1.273101
Inf	850	10.77187	32.55478	200	8.747534	8.240815	250	13.43176	47.22419	100	13.9113	38.09805

Source: Authors' Computation 2025

Table 1 presents the descriptive statistics for the study variables across 34 Sub-Saharan African (SSA) countries from 2000–2024, disaggregated by income classification. The results reveal substantial heterogeneity across income groups. For the full SSA sample, real GDP per capita growth averaged 68.9 units, and the standard deviation of 13.9. Low-income countries recorded a much lower mean of 39.3 units, and standard deviation of 73.3, while middle- and upper middle-income countries reported higher averages of 91.6 units and standard deviation of 20.7; 119 units and standard deviation of 16.7, respectively, highlighting wide income disparities within the region.

Government spending as a ratio of GDP averaged 100.09 units and standard deviation equal

to 26.2 for SSA, with low-income economies spending more (112.47) than middle (86.57) and upper middle-income (91.41) groups. Institutional quality averaged –4.00E–09 (standard deviation = 2.16) for the pooled sample, remaining negative for low- (–0.51) and middle-income (–0.18) economies but positive for upper middle-income countries (1.62), suggesting stronger governance among the latter. Average FDI inflows stood at 4.45% (standard deviation = 8.21), highest in low-income countries (6.73%) and lowest in middle-income ones (3.30%). Life expectancy averaged 63.88 years in upper middle-income economies compared to 58.22 years in low-income countries, reflecting the link between income and social welfare. Population growth rate averaged 2.47% for SSA, highest among low-income economies (2.89%) and lowest among middle-income ones (2.23%). Inflation averaged 10.77% (standard deviation = 32.6%), with substantial volatility across groups.

Overall, the descriptive results underscore deep structural and macroeconomic disparities within SSA. Low-income countries are marked by weaker institutions, rapid population growth, and macroeconomic instability, while higher-income economies show relatively stronger institutions, improved welfare outcomes, and more stable fiscal indicators. These differences form the empirical foundation for the econometric analysis that follows.

4.1 Correlation Matrix

Table 2: Result of correlation matrix Test

Variable	*Prosp*	*Gov*	*Inst*	*FDi*	*Lexp*	*Pop*	*Inf*
Prosp	1.000000						
Gov	-0.106324	1.000000					
Inst	0.027808	0.036988	1.000000				
FDi	-0.133538	0.102921	0.090103	1.000000			
Lexp	0.284247	-0.049296	0.233532	0.282813	1.000000		
Pop	0.175131	0.022584	-0.082399	-0.026895	-0.203298	1.000000	
Inf	-0.290640	-0.076536	-0.150052	0.062578	-0.041106	-0.025972	1.000000

Source: Authors' Computation 2025

The correlation matrix outlined in Table 2 reveals positive linkages between GDP per capita growth (*Prosp*) and key factors such as institutional quality, life expectancy, and population growth rate, whereas inverse relationships are evident with government spending as a ratio of GDP, foreign direct investment as a share of GDP, and inflation rates. To mitigate potential multicollinearity issues prior to model estimation, pairwise correlations among the variables were scrutinized; drawing from Iyoha (2004), coefficients exceeding 0.95 typically signal such risks. Findings demonstrate that all inter-variable correlations remain modest and well beneath this benchmark, thereby confirming the absence of multicollinearity concerns in the forthcoming econometric analysis.

4.2 Panel Unit Root Test

Table 3: The results of Panel unit root test

Variable	Im Persaran and Shin (IPS) Test			Fisher ADF		
	Level	1st Difference	Order of integration	Level	1st Difference	Order of integration
Prosp	3.59634	-13.8475	**I(1)**	64.7712	225.250	**I(1)**
	-0.9998	0		-0.5886	0	
Gov	-4.26608	….	**I(0)**	106.577	….	**I(0)**
	(0.0000)			-0.0019		
Inst	-11.0493	….	**I(0)**	237.669	….	**I(0)**
	0			0		
FDi	-8.13431	….	**I(0)**	144.23	….	**I(0)**
	0			0		
Lexp	-0.61273	-24.3189	**I(1)**	68.9881	270.851	**I(1)**
	-0.27	0		-0.4438	0	
Pop	-4.2833	….	**I(0)**	177.919	….	**I(0)**
	0			0		
Inf	-14.4346	….	**I(0)**	221.377	….	**I(0)**
	0			0		

Source: Authors' Computation 2025

The results of panel unit root tests in Table 3 show that the variables (Gov, Inst, FDi, Pop, and Inf) were all stationary at level form I(0), whereas Prosp, and Lexp are integrated at first difference I(1). However, the results reveal that all variables are stationary at different orders. Having confirmed the order of integration, the next step is to test if long-run relationships exist among the variables. The outcome will determine whether a group of non-stationary series is co-integrated or not.

4.3 Panel Co-integration Test

This study employed the Pedroni residual cointegration test to determine if long-run relationships exist among the variables (panel co-integration test).

Table 4: Results of Pedroni residual cointegration test.

Alternative hypothesis: common AR coefs. (within-dimension)				
	Statistic	Prob	Weighted Statistics	Prob
Panel v-Statistic	1.820632	0.0343	7.045651	0.0000
Panel rho-Statistic	4.358116	1.0000	5.396355	1.0000
Panel PP-Statistic	-2.48067	0.0066	-1.21055	0.1130
Panel ADF-Statistic	11.62609	1.0000	5.931229	1.0000
Alternative hypothesis: individual AR coefs. (between-dimension)				
	Statistic	Prob.		

Group rho-Statistic	7.362345	1.0000		
Group PP-Statistic	-2.05275	0.0200		
Group ADF-Statistic	6.171465	1.0000		

Source: Authors' Computation 2025

Table 4 presents the results of the Pedroni residual cointegration test. The outcomes of the panel cointegration analysis indicate that out of the six test dimensions, two reject the null hypothesis of no cointegration, confirming the existence of a long-run equilibrium relationship among the variables. Furthermore, both the PP and ADF statistics provide additional evidence supporting the presence of long-run association within the model.

Regression Results (Statics and Dynamic model): Drivers of economic prosperity in SSA

Table 5: Results of Fixed effect, Random effect models, and Two-step system GMM dynamic panel model.

Variables/Estimation technique	**Fixed effects**	**Random effects**	**Two-step system GMM**
Prosp(-1)			1.179014***
			-0.02809
Prosp(-2)			-0.074638***
			-0.012424
Gov	0.356630***	0.333012***	-0.212322***
	-0.081876	-0.080193	-0.030841
Inst	-0.136699***	-0.138679***	0.030591
	-0.053823	-0.053803	-0.048508
*Gov*Inst*	0.035451***	0.036165***	-0.006387
	-0.012035	-0.012028	-0.011031
FDi	-0.006421	-0.006833***	0.002364***
	-0.003009	-0.003005	-0.000533
Lexp	0.159765***	0.159883***	-0.017407***
	-0.004977	-0.004963	-0.003679
Pop	-0.083088	-0.065344	0.030462***
	-0.044171	-0.043898	-0.005408
Inf	0.009503***	0.009362***	0.003429
	-0.000691	-0.00069	-0.000431
R-squared	0.962389		
F-statistic	182.1266		
Prob(F-statistic)	0		
Hausman	69.9		

Prob>chi^2	0		
Observation	748		
No of instrument	34		
AR(1)(p-value)	0.0034		
AR(2) (p-value)	0.861		
Sargen Test	9.86		
Hansen Test	12.04		

Source: Authors' Computation 2025 Note *** indicates significance at 1% level, and Standard Errors are in parentheses

The empirical findings presented in Table 5 elucidate the key determinants of economic prosperity in Sub-Saharan Africa (SSA), with analyses conducted across the full sample and stratified by income levels. To ensure robustness, the study employs fixed effects (FE) and random effects (RE) estimators, guided by the outcomes of the Hausman specification test. Nonetheless, primary interpretations are drawn from the two-step system generalized method of moments (GMM) estimator, which effectively addresses potential endogeneity and unobserved heterogeneity. Diagnostic assessments affirm the model's validity: the Arellano-Bond test indicates an absence of first-order autocorrelation in the differenced residuals, while the Sargan test statistic confirms the appropriateness of the instrumental variables. Overall, these specifications demonstrate strong predictive power for economic growth and development trajectories in the region.

A central insight emerges from the dynamic nature of economic prosperity, proxied by GDP per capita growth (denoted as Prosp). The coefficient on the first lag of Prosp is positive and statistically significant at the 1% level, underscoring self-reinforcing momentum in growth processes. Specifically, a 1% increase in prior-year prosperity is associated with a 1.179% uplift in current prosperity across SSA, holding other factors constant. This pattern aligns with theoretical expectations, wherein past achievements foster enhanced aggregate demand, bolster investment inflows, and amplify capital accumulation, thereby perpetuating virtuous cycles of expansion. Such dynamics are particularly salient in SSA, where initial gains can catalyze broader structural improvements. Conversely, the second lag of Prosp exhibits a negative and significant coefficient, suggesting potential diminishing returns or cyclical adjustments over extended horizons, which may reflect resource constraints or external shocks prevalent in the region.

Turning to fiscal policy, government spending emerges as a notable impediment to prosperity. The estimated coefficient reveals a negative and significant relationship, implying that a 1% rise in public spending correlates with a 0.212% contraction in economic prosperity, ceteris paribus. This counterintuitive outcome may stem from inefficiencies in allocation, such as crowding out private investment, escalating debt burdens, or suboptimal prioritization of non-productive sectors like subsidies over infrastructure. In SSA contexts, where fiscal discipline is often challenged by governance gaps and commodity dependence, these findings highlight the perils of expansive spending without commensurate productivity gains. Corroborating Doces (2020), who documents adverse effects of government consumption on growth, though contrasting with Wang (2011), who finds positive effects in OECD contexts.

Institutional quality, measured through a composite index, displays a positive yet statistically insignificant association with prosperity. Under the baseline scenario, a 1% enhancement in institutional framework, encompassing the rule of law, corruption control, and regulatory

efficiency, is linked to a modest 0.031% increment in growth and development. This subdued effect underscores persistent institutional frailties in SSA, where reforms, though directionally beneficial, have yet to yield transformative impacts. Weak enforcement mechanisms and political instability may dilute the potential dividends, resulting in only marginal contributions to prosperity. Aligning with Kesiena and Bernhard (2023), who note government effectiveness' limited impact on growth.

The interactive term between government spending and institutional quality further illuminates these dynamics, yielding a coefficient of -0.006387 that is insignificant at the 5% threshold. This negative interaction suggests that institutional deficiencies exacerbate the adverse effects of fiscal outlays, potentially channeling resources into rent-seeking or unproductive avenues rather than growth-enhancing initiatives. In essence, poor governance acts as a binding constraint, amplifying fiscal inefficiencies and underscoring the imperative for synergistic reforms in both domains to unlock prosperity.

Foreign direct investment (FDI) stands out as a robust positive driver, with its coefficient positive and significant at the 1% level. A 1% increase in FDI inflows is projected to elevate prosperity by 0.0023%, all else equal. This affirms FDI's role as a conduit for technology transfer, skill development, and market integration, which are critical in SSA's resource-rich yet capital-scarce economies. These results resonate with prior scholarships, including Uneze (2013) and Batrancea et al. (2021), which document analogous positive linkages between FDI and growth, emphasizing its spillover effects on domestic productivity.

In contrast, life expectancy at birth exerts a negative and significant influence, with a coefficient of -0.017407. A 1% improvement in this health metric is paradoxically tied to a 0.017% decline in prosperity. This anomaly may arise from the demographic pressures in SSA, where extended lifespans amid high fertility rates strain public resources, exacerbate dependency ratios, and divert investments from productive sectors. Coupled with endemic health challenges like infectious diseases, low life expectancy historically mirrors broader socioeconomic stagnation, rendering marginal gains insufficient to propel growth without complementary interventions.

The inflation rate coefficient is positive but lacks statistical significance, indicating that a 1% escalation in inflation corresponds to a 0.003429% rise in prosperity, though this effect is not robust. This tepid relationship suggests that moderate inflation may signal economic activity in SSA's nascent markets, yet volatility or hyperinflation risks could undermine confidence if unchecked.

To validate these inferences, robustness checks via the two-step system GMM are detailed in the lower panel of Table 5. The configuration employs a collapsed instrument matrix, ensuring the number of groups exceeds instruments and mitigating proliferation biases. The Arellano-Bond AR(2) test yields a p-value of 0.8610, insignificantly different from zero, confirming no second-order serial correlation in the first-differenced errors. Complementarily, the Hansen test statistic of 12.04 supports the null of instrument exogeneity, alleviating concerns over over-identification. Collectively, these diagnostics affirm the model's reliability, providing a solid foundation for policy implications aimed at fostering sustainable prosperity in SSA.

4.4 Dumitrescu and Hurlin Granger Causality Analysis

The Dumitrescu and Hurlin (2012) panel causality framework was employed to examine the direction and intensity of causal linkages among the study variables. This approach assesses causality through two primary statistics: the W-bar statistic, which represents the mean of individual test statistics, and the Z-bar statistic, standardized under the normal distribution,

together with their associated probability values. The results, presented in Table 6, summarize the D–H panel Granger causality outcomes for the 34 Sub-Saharan African economies. The application of this test provides deeper insights into the dynamic interdependence among institutional, investment, and macroeconomic variables, thereby enhancing the empirical understanding of how these factors collectively influence economic prosperity across the region.

Table 6 Results of D-H Causality Test

Hypothesis	W-Stat.	Zbar-Stat	Prob	Causality
Gov → Prosp	2.19377	-0.12851	0.8977	Unidirectional
Prosp → Gov	3.9665	3.9231	9.00E-05	Causality
Inst → Prosp	3.15478	2.0679	0.0386	Bi-directional
Prosp → Inst	13.2384	25.1143	0	causality
FDi → Prosp	3.09683	1.93546	0.0529	No Causality
Prosp → FDi	3.04104	1.80793	0.0706	
Lexp → Prosp	3.83166	3.61491	0.0003	Bi-directional
Prosp → Lexp	4.31831	4.72716	2.00E-06	Causality
Pop → Prosp	3.98455	3.96435	7.00E-05	Bi-directional
Prosp → Pop	5.16466	6.66152	3.00E-11	Causality
Inf → Prosp	6.62943	10.0093	0	Bi-directional
Prosp → Inf	4.36212	4.82729	1.00E-06	Causality

Source: Authors Computation using Stata 15

The Dumitrescu-Hurlin panel Granger causality tests in Table 6 reveal critical dynamics among the drivers of economic prosperity (Prosp) in Sub-Saharan Africa (SSA). A unidirectional causality runs from government spending (Gov) to Prosp, suggesting fiscal outlays on health, education, and security catalyze growth without reverse causation. Conversely, institutional quality (Inst) and Prosp exhibit bidirectional causality, indicating mutual reinforcement where better governance fosters prosperity, and growth strengthens institutions. No causal link exists

between foreign direct investment (FDI) and Prosp, reflecting FDI's episodic nature in SSA. Bidirectional causalities are observed between Prosp and life expectancy (Lexp), population growth (Pop), and inflation (Inf), highlighting feedback loops where health and demographic factors drive productivity, and prosperity supports their improvement, while moderate inflation signals activity but risks erosion if unchecked. These findings underscore the need for integrated policies leveraging fiscal and institutional synergies to sustain SSA's economic development.

Summarizing the findings, this study sheds light on the factors driving economic prosperity in Sub-Saharan Africa through a detailed empirical analysis. The results highlight a self-sustaining cycle of prosperity, where past economic success strongly influences current performance. Foreign direct investment stands out as a key positive driver, fueling growth significantly. On the other hand, government spending has a notable negative impact, worsened by inefficiencies tied to weak institutional structures. Although the direct effect of institutional quality on prosperity is modest, a two-way causal link emphasizes its critical underlying role. The findings make a strong case that lasting economic progress depends not just on increased public spending but on coordinated reforms that strengthen institutions to better direct investments and public funds toward productive outcomes.

4.5 Policy Implications

The robust empirical findings necessitate a strategic recalibration of macroeconomic policy in Sub-Saharan Africa (SSA), focusing on fiscal discipline and systemic institutional strengthening as synergistic imperatives for sustainable economic prosperity. The significant negative impact of government spending ($\eta = -0.212$) on GDP per capita growth challenges conventional development theory and strongly suggests that public expenditure is currently characterized by profound inefficiencies and rent-seeking behavior, rather than productive capital formation; this calls for immediate reforms in public financial management, mandating transparent, outcome-based budgeting to redirect funds from non-productive consumption to high-return infrastructure and human capital investments, thereby mitigating the current crowding-out effect on private sector activity. Furthermore, the statistically negligible effect of institutional quality ($\eta = +0.031$) underscores the severity of governance deficits, indicating that institutional frameworks currently lack the necessary robustness to ensure accountability, check corruption, and translate policy intentions into tangible growth outcomes; therefore, achieving meaningful prosperity requires moving beyond mere de jure reforms to establish genuine rule of law, policy credibility, and effective control of corruption, which is paramount for transforming public spending from a growth liability into a catalyst for private investment and long-term economic development.

4.6 Conclusion and Recommendation

This study, analyzing 34 Sub-Saharan African countries from 2000 to 2024 using a robust two-step system GMM framework, reveals that economic prosperity (Prosp) is significantly impeded by inefficient government spending (-0.212% impact per 1% increase), exacerbated by weak institutional quality (0.031% positive but insignificant effect) and their negative interaction (-0.006387 coefficient). Foreign direct investment (FDI) positively drives growth (0.0023% per 1% increase), while life expectancy (-0.017%) and inflation show mixed effects. To foster sustainable prosperity, policymakers should prioritize fiscal discipline, redirecting expenditures toward productive sectors like infrastructure, and strengthen institutions to curb inefficiencies and rent-seeking. Enhancing FDI through investor-friendly policies and addressing demographic

pressures via targeted health and education investments are critical. Future research should explore sub-regional heterogeneities to refine these policy pathways.

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