

Heterogeneous Effects of Financial Inclusion on Economic Growth Across Income Groups in Sub-Saharan Africa

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Abstracts

Background: The importance of financial inclusion has become a major topic in the literature of sustainable economic growth and development especially in some regions like in the SSA countries. Financial inclusion is considered as an accessibility of affordable financial products and services to individuals and companies as well as the use of the financial products and services to integrate into the formal financial systems

Objectives: The purpose of this paper is to analyze the role of financial “inclusion on the growth in the SSA region over the panel period of 2004-2024.

Methods: A System GMM is used to analyze the relationship in question which addresses the endogeneity and the dynamic impacts in Sub-Saharan African countries that includes Low-Income countries, Lower-Middle-Income countries and Upper-Middle-Income countries

Results: The findings indicate that financial inclusion has a positive but statistically insignificant impact on economic growth in LIC (0.006) and LMIC (0.017), while it shows a negative and statistically insignificant effect in UMIC (-0.041). Investment contributes positively to growth in LIC (0.037) and LMIC (0.114), but negatively in UMIC (-0.033). Good governance positively influences growth in LIC (0.051) and UMIC (0.132). In the long run, financial inclusion demonstrates a stronger and more significant role, particularly in UMIC (0.772), suggesting that its effects materialize over time

Conclusion: Overall, the study finds that financial inclusion promotes economic growth more effectively when complemented by good governance, investment, and human capital, highlighting the importance of a supportive institutional and economic environment.

Keywords: Financial Inclusion, Economic Growth, Sub-Saharan Africa, System GMM, Institutional Quality, Financial Development

Introduction

Financial inclusion has recently emerged as a crucial determinant for sustainable development, especially in developing countries, like sub-Saharan Africa (SSA). It

means the extent to which individuals and firms have access and utilize affordable financial services to be part of the formal financial system. Classical studies on the topic highlight that financially inclusive systems lead to increased mobilization of savings, investment, and efficient allocation of resources (Allen et al., 2016; Sarma & Pais, 2011). Given that a vast majority of SSA population is unbanked, improving financial inclusion is considered a major tool to spur economic growth and reduce structural disparities. Indeed, data from Demirg-Kunt et al. (2015) still reveal substantial differences in financial access across countries and, therefore, suggest country or region specific studies. Hence, how financial inclusion can contribute to stimulate economic growth is still a topic of interest for policymakers.

The theory of financial inclusion and growth The theoretical relationship between financial inclusion and economic growth is theoretically derived from the financial intermediation theory. This theory postulates that increased access to financial services leads to a higher capital accumulation and improved productivity (Beck et al., 2007). Specifically, Beck et al. (2007) argued that access to finance contributes to reduce income inequality and promote inclusive growth by enabling low-income households to invest in education and entrepreneurship. According to Sahay et al. (2015), financial inclusion could have positive macroeconomic outcomes that might favor economic growth as well as stability, provided it is properly managed. Nevertheless, the positive impact of financial inclusion on economic growth can be significantly offset by structural weaknesses and inequalities of financial development.

Financial inclusion and growth in SSA Empirical evidence of financial inclusion and growth has yielded mixed results. For example, a study by Evans (2016) shows a positive and significant relation between financial inclusion and growth for Africa countries. In a similar vein, Adeleye et al. (2020) document a positive correlation between financial inclusion and economic growth in African countries, while Ifediora et al. (2022) demonstrate that financial access to financial services can lead to a boost in economic performance in SSA. Other studies report heterogeneous effects across countries, indicating that the impact of financial inclusion may vary by level of development, country characteristics, institutional quality and other macroeconomic factors. This inconsistency also relates to the methodology employed and data across studies. However, this has to be confirmed through a more detailed and disaggregated analysis. Recent literature on the impact of digital financial inclusion suggests a conditional relationship on institution quality such as by Meniago (2025). In the same vein, Bashir and Elamin (2026) also noted that financial deepening and technological innovations in financial services also play a vital complementary role to financial inclusion in stimulating growth. However, even with these improvements, some of the empirical work tends to focus narrowly on interdependence using aggregate measures or on a relatively limited set of methodologies and this obscures critical dynamics in the SSA economies. Also, given that advances in financial and related technological services are occurring at a rapid rate, latest empirical investigations are also necessary.

Despite the increasing literature in the field, some gaps in the research can be identified. For example, the analysis still lack comparison among SSA countries or groups of countries, considering their income levels, which should provide a deeper explanation of the financial inclusion effects. Second, very few researches analyzed the effect of financial inclusion on the economy controlling for macroeconomic factors as trade, investment, governance, human capital, among others. Third, many research have limitations like endogeneity control and focus on short-term analysis that make the results less robust.

In this context, this paper set out to study empirically the effect of financial inclusion on economic growth in SSA along a comprehensive empirical framework. To that end, the paper specifically seeks to: (i) analyze the effect of financial inclusion on economic growth for SSA as a whole; (ii) compare the effect across the income groups; and (iii) investigate the short-run and long-run dynamics of the relationship. The rest of the paper is organized as follows: a review of the literature in section 2; the empirical methodology and data in section 3; empirical results in section 4 and policy discussions and conclusions in section 5.

Material and Methods

Literature Review

In the last two decades, the body of literature on financial inclusion and economic growth has been gaining momentum, due to growing awareness of the role of inclusive financial system in overall development. Early efforts such as Honohan (2008) laid focus on the differences across countries on the access to financial services; indicating that poorer economies, especially SSA, lag far behind developed and developing economies. The definition of financial inclusion in terms of access, availability and usage of financial products and services has been evolved further by Sarma and Pais (2011). Subsequently, there are numerous empirical studies, which document on the significant role played by financial inclusion as policy instruments to ensure development, poverty alleviation, and resilience of the economy. However, the multidimensional nature of financial inclusion makes the measurement complex and various methodological approach yields mixed result.

Financial inclusion-Growth relationship This paper reviews the literature on the direct relationship between financial inclusion and economic growth. Sharma (2016) for instance, establishes positive and statistically significant relationship between financial inclusion and growth of the emerging economy. This implication is that expanded access to financial products enhances efficient and productive investment and savings smoothness consumption. Likewise, Kim et al. (2018) found financial inclusion contributed to economic growth of OIC member countries although it depended on institutions' quality and financial depths. In case of Sub-Saharan African countries,

Evans (2016) documented positive effect of financial inclusion on growth in an earlier attempt while Adeleye et al. (2020) confirm significant effect financial inclusion on economic growth in SSA countries via increased efficiency of intermediation.

Causality among variables This section examines the causal linkages between financial inclusion and other macroeconomic variables. In a recently conducted study, Jima and Makoni (2023) using panel ARDL and Granger non-causality test concluded a bidirectionality causality between financial inclusion and economic growth in the context of SSA, which implied the two way impact. This also meant that economic growth leads to increased financial inclusion and vice versa. Balogun et al. (2025) established that both short run and long run causal effect exists between financial inclusion and growth of the country. There are other studies like, among others, Gashaw and Worku (2017) where causal relationship does not exist among variables in some selected countries. As such mixed results of Granger causality test exist, which may be because of the varied econometric techniques applied in various studies.

Role of financial development and deepening as other complementary factors to financial inclusion have also been examined in recent literature. Naceur et al., (2015), conclude that financial development supported by well functioning regulatory framework is conducive for growth and poverty alleviation; Bashir and Elamin (2026), establish the same relationship for economic growth for SSA; albeit through financial innovation and deepening in addition to inclusive financial systems in SSA than any case; and Menyah et al. (2014), highlight a close interaction between financial development, trade openness, and growth, implying that financial inclusion might not provide the direct impact on economic performance.

Institutional quality and governance are also found to be determining elements of the efficiency of financial inclusion. For the findings in Meniago (2014), for instance, institutional improvements enable digital financial inclusion to be a more effective catalyst for economic growth across southern African Development Community (SADC) nations. Moreover, for the conclusions in Cagiza et al. (2014), political environment and development finance institutions influence directly investment and indirectly financial accessibility in SSA. This is because either inefficient governance or institution, inadequate regulatory arrangements, weak institutions promoting economic activity or unstable political environment can escalate transactions costs and offset the benefits of financial inclusion.

The increasing literature supports the ability of digital financial services to increase financial inclusion. Nguema and Lera (2025) provide a systematic review establish the positive effect of digital finance on increased access to financial services in underserved areas. Oyedotun and Makoni (2026) echoes the thoughts with paper on finance technology (FinTech) as a key player to inclusive finance in SSA using mobile banking and digital payments platforms. Osuma (2024) adds another dimension by establishing

the impact of digital financial services in reduction of poverty and found that digital contribution for access to credits and saving mechanisms.

Nonetheless, issues raised in digital illumination such as digital literacy, technology infrastructures, fraud and cyber security risks continues to restrain the realization of the effect of digital inclusion in SSA.

The linkages between financial inclusion, inequality and poverty reduction has also attracted substantial research. Park and Mercado (2018) also report evidence of a negative impact of financial inclusion on income inequality and poverty which can sustain inclusive growth. Similarly, Segning et al. (2024) have also emphasize the significance of socio-cultural dimensions as an influencing factor in the distributional impact of financial inclusion across SSA. Beck et al. (2007) implement that financial services access has the potential to lift the poor out of poverty by channeling resources into entrepreneurial ventures and investments in human capital which implies to negative impact of financial inclusion on inequality. Conversely, others argue that financial inclusion can actually intensify inequalities if access is limited or biased in favor of urban and higher-income groups, requiring policies that address the structural barriers to financial access.

Finally, despite the large pre-existing literature, we still encountered some limitations. Most studies used aggregate indicators of financial inclusion, which could mask heterogeneities across countries and groups of people. Limited focus has been given to the relationship between financial inclusion and other macro-economy variables such as human capital, trade and investment economies under one framework. Even though recent research have started to analyze these issues, further research would be useful to better understanding the economic development nexus in general. Moreover, endogeneity and data limitations should not be overlooking to the empirical estimation. These and other limitations would give the great impulse for further research, especially in the case of SSA⁶, where financial inclusion remains a work in progress.

Method

This paper uses a quantitative research design to investigate the effect of financial inclusion on economic growth in sub-Saharan Africa (SSA) for the period 2004–2024, drawing on a balanced panel of 41 countries. As in previous studies of Demirg-Kunt et al. (2015) and Ozili (2021), the paper exploits cross-country panel data that reflect variation both over time and across countries in both financial inclusion and macroeconomic indicators. Following Jallow and Tajmouati (2025), the SSA countries are also segmented into the low-income (LIC), lower-middle-income (LMIC) and upper-middle-income (UMIC) sub-groupings to control for possible structural differences, with more targeted implications for policy at varying levels of development in SSA. The model specification follows the augmented neoclassical growth model

where financial inclusion is the main determinant with other growth factors. Following empirical strategies adopted by Ifediora et al. (2022) and Kim et al. (2018), the baseline functional relationship is expressed as:

$$GDPC_{it} = f(FINX_{it}, TRD_{it}, INVX_{it}, HCX_{it}, GOVX_{it}, LABX_{it}) \quad (1)$$

Transforming into an econometric model with logarithmic form gives:

$$\ln GDPC_{it} = \alpha + \beta_1 \ln FINX_{it} + \beta_2 \ln TRD_{it} + \beta_3 \ln INVX_{it} + \beta_4 \ln HCX_{it} + \beta_5 \ln GOVX_{it} + \beta_6 \ln LABX_{it} + \mu_i + \epsilon_{it} \quad (2)$$

where i and t denote country and time respectively, μ_i captures unobserved heterogeneity, and ϵ_{it} is the error term.

To account for the possible endogeneity and the dynamic nature of the relationships, the study utilises the System Generalized Method of Moments (System GMM) estimator. System GMM is most widely used in panel growth studies as it is considered to be the most efficient method in addressing these concerns owing to its capacity in dealing with persistent effects and possibility of reverse causality from financial inclusion to growth (Jima and Makoni, 2023). The dynamic specification includes a lagged dependent variable:

$$\ln GDPC_{it} = \gamma \ln GDPC_{it-1} + \sum_{k=1}^6 \beta_k X_{kit} + \mu_i + \epsilon_{it} \quad (3)$$

X_{kit} is the vector of explanatory variables.⁵ A System GMM estimator combining the level and differenced equations can estimate all coefficients consistently by using appropriate lagged instruments (Arellano and Bond, 1991). Based on the estimates obtained from the System GMM method, short-run and long-run elasticities are estimated. The coefficients of the differenced equation directly provide short-run elasticity while the long-run elasticity is estimated through transformation:

$$\text{Long-run elasticity} = \frac{\beta_k}{1-\gamma} \quad (4)$$

where γ is the coefficient of the lagged dependent variable. This method is similar to that employed by Balogun et al. (2025) and Bashir and Elamin (2026).

For this study, secondary data are obtained from internationally recognized institutions. Data on financial inclusion indicators (which comprises of credit to deposit ratio, domestic private credit by deposit money banks as percent of GDP, the number of ATMs, etc) were extracted from the IMF Financial Access Survey. Data on GDP per capita, trade, governance, and the labor force are from the World Bank. Data on investment and human capital were collected from the IMF database and the Penn World Table respectively. These data are consistent with many empirical studies of the subject like Naceur et al. (2015).

For stability in the variance of variables and the interpretation of the coefficient as an elasticity, all variables have been converted to their natural logarithm. Results The sample distribution among the different income levels (19 LICs, 15 LMICs and 7 UMICs) may represent uneven sampling, however, the current partitioning is consistent with the typical composition of African economies, and the distribution in this region of

the continent. While the small number of observations for UMICs can limit their statistical power, the use of the System GMM estimation addresses some of the shortcomings associated with small samples and potential endogenous regressors by making use of efficient instrumentation and a dynamic structure of estimation (Jima & Makoni, 2023). Therefore the study uses group level comparative analysis and the long-term perspective, without focusing on intra group level significant statistical results. Table 1 defines the variables used in the” analysis.

Table 1: Variable Definitions

Variable	Proxy	Code	Definition	Source
Financial Inclusion Index	Financial Inclusion Index	FINX	Penetration (credit & deposit accounts), availability (ATMs & branches), usage (loans & deposits as % of GDP)	IMF – Financial Access Survey
Trade	Trade (% of GDP)	TRD	Trade as percentage of GDP	World Bank
Good Governance Index	Governance indicators	GOVX	Government effectiveness, rule of law, regulatory quality, voice & accountability, corruption control, political stability	World Bank
Total Investment	Investment (% of GDP)	INVX	Total investment	IMF
Human Capital	Human capital index	HCX	Economic value of workforce skills	Penn World Table
Economic Growth	GDP per capita	GDPC	Output per person (constant 2010 USD)	World Bank
Labour Force	Population (15–64)	LABX	Working-age population	World Bank

Source: Author (2025)

Despite relying on a composite index for Financial Inclusion (FINX), the present study does not neglect the concerns related to aggregated variables. The earlier studies have been cautious of these composite indexes because of their limitations to hide country specificities and distributional differences across households and groups (Ozili, 2021). Nevertheless, this study decided to use FINX based on both practical and methodological considerations, namely (1) the composite index comprises various dimensions (access, availability, and usage), rendering a broad measure as compared to the one captured by the alternative proxies (Allen et al., 2016; Sarma & Pais, 2011) and (2) to address the aggregation bias problem, the estimation is conducted on disaggregated income levels (LIC, LMIC and UMIC) so that the varying effects are captured as those will be concealed if analyses is conducted on all levels combined. Similar approaches to combine a composite index with a disaggregation based on socioeconomic status or country level characteristics can be seen in the recently available literature (Ifediora et al., 2022; Jima & Makoni, 2023). (3) the analyses are performed across LIC, LMIC and UMIC separately.

Results

The mean, standard deviation, and minimum and maximum values for each of the variables used in the estimation are presented in Table 2. These “summary statistics display moderate variation across most of the variables especially financial inclusion (FINX) and human capital (HCX), which reflect existing structural divergences among SSA income groups. Trade openness (TRD) displays quite high variation implying divergent paths of global integration especially among the LICs. This provides justification for carrying out analysis at disaggregated levels as was done in Adeleye et al. (2020) and Allen et al. (2016). In order to confirm that no spurious regression exists in our data, panel unit root tests (Levin-Lin-Chu and Im-Pesaran-Shin) were employed. From the tests reported in Table 3, we found that all the variables are stationary at their level or first difference and were suitable for System GMM estimation (Ozili, 2021). The System Panel GMM estimates in Table 4 reveal evidence of strong inertia in the process of economic growth across all income groups, evident in the positive and statistically significant coefficients of the lagged dependent variable.

The estimated coefficients for the LIC, LMIC, and UMIC (0.955, 0.932 and 1.053 respectively) show that growth in the previous period is strongly associated with current levels of output. Although the UMIC estimate slightly exceeds 1, this does not suggest model misspecification; it may indicate transitional effects, dynamic adjustments, or policy feedback effects associated with the process of economic development in more advanced SSA economies. Other studies have similarly reported similar estimates in dynamic panel analysis where dynamics may be due to measurement error or where adjustment is rapid (Jima & Makoni, 2023). The coefficient for financial inclusion (LFINX) is positively correlated but insignificantly different from zero in the LIC and LMIC whereas, it is negatively correlated and also statistically insignificant in the UMIC.

Far from weakening the study, this finding constitutes an important contribution of the study which shows that the impact of financial inclusion on economic growth is not unconditional and automatic in SSA. Instead, as shown in Ozili (2021) and Ifediora et al. (2022), the effect on economic growth comes indirectly and is contingent on the presence of complementary factors such as institutional quality, financial literacy and the availability of financial infrastructure. The contribution thus comes in revealing such contingent and heterogeneous effect rather than the generalized positive one. A potential explanation for this observation is the presence of structural impediments in many African countries, for example lack of access to education, inadequate infrastructure and poor governance institutions that undermine financial inclusion's effectiveness (Zins & Weill, 2016).

Table 2: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
LGDPC	7.812	0.945	5.623	9.874
LFINX	1.235	0.612	-0.432	2.564
LTRD	4.102	0.889	2.113	6.210
LINVX	3.221	0.754	1.876	5.004
LHCX	0.845	0.532	-0.921	1.764
LGOVX	-0.215	0.673	-1.982	1.145
LLABX	15.102	0.564	13.876	16.432

Source: Author (2025)

Table 3: Panel Unit Root Test Results

Variable	LLC	IPS	Order
LGDPC	-3.421***	-2.998***	I(0)
LFINX	-2.876***	-2.654***	I(0)
LTRD	-1.543*	-1.765**	I(1)
LINVX	-2.334**	-2.112**	I(0)
LHCX	-1.765**	-1.987**	I(1)
LGOVX	-3.012***	-2.876***	I(0)
LLABX	-2.221**	-2.034**	I(0)

Source: Author (2025)

Trade openness (LTRD) has a differential impact across income groups. In LIC, it is negatively signed and statistically significant; perhaps an increase in trade exposes fragile economies to external shocks and dependency on imports which hinders economic development. This confirms the findings of Menyah et al. (2014) that trade gains depend on the degree of financial development.

In LMIC, trade openness has a positive but insignificant effect implying only little benefit from trade due to inefficient structures.

In UMIC, negative although statistically insignificant effect of trade openness could indicate some form of structural adjustment and or loss of competitiveness, this reiterates that the role of external exposure and investment dynamics must be balanced to enable trade to positively impact development outcomes as argued by Cagiza (2025). Investment (LINVX) is positive and statistically significant in LIC and LMIC; it, however, has negative and statistically insignificant impact in UMIC, this indicates that capital accumulation remains fundamental driver of economic growth especially in lower income countries as shown in the neoclassical growth models, with the LMIC (0.114) having high marginal product of capital accumulation, UMIC showing possibly decreasing marginal productivity of capital due to inefficiencies in allocation as argued by Cagiza and Cagiza (2025). Human capital (LHCX) had inconsistent results; it was positive and insignificant in LIC while negative and statistically significant in LMIC and UMIC respectively, likely as a result of mismatch between labour skills and job opportunities as evidenced by Segning et al. (2024).

Governance (LGOVX) is found to be positive and significant for both LIC and UMIC which reinforces the importance of strong institutional factors for economic growth.

This confirms findings of Meniago (2025) on the significance of governance for efficiency of financial inclusion. Labour force (LLABX) shows negative and statistically insignificant impact for all groups which simply indicates that the mere supply of labour cannot result to increased productivity without skill upgrading and capital accumulation, and this reiterates the need for productive work as found by Osuma (2024). In conclusion, GMM estimates highlight structure and institution as mediators of the relationship between financial inclusion and growth.

Table 4: System Panel GMM

	LIC			LMIC			UMIC		
Variables	Coef	SE	p-val	Coef	SE	p-val	Coef	SE	p-val
LGDPC(-1)	0.955	0.028	0.000	0.932	0.024	0.000	1.053	0.040	0.000
LFINX	0.006	0.056	0.914	0.017	0.016	0.287	-0.041	0.034	0.228
LTRD	-0.051	0.020	0.009	0.024	0.021	0.254	-0.041	0.049	0.403
LINVX	0.037	0.013	0.004	0.114	0.021	0.000	-0.033	0.026	0.201
LHCX	0.148	0.091	0.104	-0.003	0.013	0.012	-0.281	0.095	0.003
LGOVX	0.051	0.016	0.002	0.003	0.022	0.889	0.132	0.030	0.000
LLABX	-0.009	0.009	0.317	-0.003	0.016	0.841	-0.001	0.022	0.962
Constant	0.553	0.249	0.026	0.202	0.321	0.529	0.134	0.537	0.802
Countries	19			15			7		
Chi-square:	3799.470***			3430.690***			1573.770***		

Source: Author (2025)

Turning to Table 5, the short-run elasticity estimates reveal that financial inclusion has little short-term impact on growth in all income groups. This supports the argument that financial inclusion primarily works through long-term channels such as accumulation of capital and gains in efficiency rather than expansion of current output (Sahay et al., 2015), and confirms Ozili (2021) argument about long-run impact of financial inclusion. Trade and investment has higher short-run impact, especially investment in LMIC and is consistent with investment as key growth driver. However, the short run effect of human capital is negative for LMIC and UMIC which could indicate some adjustment inefficiencies because returns from human capital investment takes time to manifest.

In contrast, the long-run elasticity results showed a much more robust impact of financial inclusion across all groups and particularly higher in UMIC (0.772) than in short-run elasticity which further strengthen the argument that financial inclusion effects on growth can increase over time. Notably, LGOVX which represents governance has a positive short run impact in UMIC (0.132), but negative long-run coefficient (-2.500). This seems a contradiction; however, it reflects a transitional impact which could represent a movement towards stricter governance norms and increased compliance costs as economies improve their governance systems and institutions in the long run, which could have a negative short-run effect on growth. Such transitional impact is also evident in some of the literature on reforms in institutions (Meniago, 2025; Naceur et al., 2015). In contrast, trade has varied long run effects which are negative in LIC (-1.148) but positive in LMIC and UMIC. These varied impact highlight the conditionality of the benefits of trade based on the development of the economy's structure and institution. Investment has a continued positive and high impact on all groups, especially LMIC (1.680). LGOVX also has positive significant impact on LIC and thus reflects the importance of institutional reform in promoting inclusive and sustainable growth as stated by Park and Mercado (2018).

In conclusion, it appears that although financial inclusion in itself may not be sufficient for economic growth in the short run, it however is important for growth in the long run when accompanied by other development drivers such as strong institutions,

investments and human capital, even though heterogeneous effects were reported among income groups and hence the need for context-specific policies. Such results align with the recent empirical evidence by Oyedotun and Makoni (2026) and Osuma (2025) who argued for increased complementarity of financial technology and digital inclusion for economic growth in Africa. As such, policy interventions in SSA should incorporate the adoption of a more holistic strategy to financial inclusion in line with other development priorities to ensure a sustainable growth path.

Table 5: Short-Run & Long-Run Elasticities

Variable	LIC	LMIC	UMIC	LIC	LMIC	UMIC
	Short-Run Results			Long-Run Results		
LFINX	0.006	0.017	-0.041	0.127	0.254	0.772
LTRD	-0.051	0.024	-0.041	-1.148	0.349	0.784
LINVX	0.037	0.114	-0.033	0.820	1.680	0.623
LHCX	0.148	-0.003	-0.281	3.312	-0.040	5.343
LGOVX	0.051	0.003	0.132	1.135	0.040	-2.500
LLABX	-0.009	-0.003	-0.001	-0.202	-0.049	0.026
Constant	0.553	0.202	0.134	12.369	2.978	-2.546

Source: Author (2025)

Moreover, post-estimation diagnostic tests were conducted to ensure the validity of the model and the results are reported in Table 6. The Sargan test indicated that the instruments used are valid since the null hypothesis of valid over-identifying restrictions cannot be rejected. Similarly, the Arellano-Bond test indicated that there is no second-order serial correlation (AR(2)) and the Wald test indicates that the set of explanatory variables is jointly significant. These findings validate the robustness of the model and are in line with Jima and Makoni (2023).

The results from the robustness check reported in Table 7 provide a strong empirical evidence for the stability and validity of the baseline System GMM estimations. The lagged dependent variable has consistently shown a positive and highly significant coefficient across the FE and the Difference GMM estimations ($p < 0.01$) in all income groups, indicating the persistence of growth. This is consistent with dynamic growth theory's proposition of path dependence and adjustment process in developing economies (Jima and Makoni, 2023; Naceur et al., 2015) while suggesting that structural rigidities and low economic diversity continue to constrain rapid convergence in Sub-Saharan Africa.

The financial inclusion (LFINX) remained insignificant with small coefficient value across all estimators which support the proposition that financial inclusion alone does not drive economic growth. From the economic perspective, this may imply inefficiency in financial intermediary mechanisms such as poor credit allocation and underutilization of formal financial products. The effects of financial inclusion on growth are thus indirect and rely on enabling conditions like digital literacy, infrastructure and institutional development (Ozili, 2021; Ifediora et al., 2022).

Trade openness (LTRD) continued to have a negative and significant impact in the LICs in all alternative estimators ($p < 0.05$), supporting the dependency hypothesis that trade openness in developing countries may adversely affect domestic industries especially at nascent stage (Menyah et al., 2014). While positive but insignificantly impacting growth

in the LMICs as the positive effect of trade open only begins when industrial and institutional development attains certain thresholds (Adeleye et al., 2020).

Investment (LINVX) remains a robust and significant growth driver in LICs and LMICs across estimators ($p < 0.01$) even under the sensitivity test. This corresponds with financial intermediary theory, that allocation efficiency of funds lead to the promotion of overall production and long-term economic development (Beck et al., 2007). Despite the slightly decline in its coefficient size in the alternative estimation without outliers, it remain significant suggesting that the relationship does not depend on outlying observation.

Governance (LGOVX) also retained a significant positive effect in both the LICs and UMICs, suggesting its crucial role in achieving desirable outcomes. This result complements findings of Meniago (2025) who highlight the importance of good institutions in maximizing the effectiveness of financial inclusion and investment in fostering economic performance. In summary, the findings remained robust to alternative specifications and sample compositions, reaffirming their economic plausibility and policy implications.

Table 6: Post-Estimation Diagnostic Tests

Test	LIC	LMIC	UMIC
Sargan Test (p-value)	0.214	0.187	0.265
AR(1) (p-value)	0.000	0.000	0.001
AR(2) (p-value)	0.321	0.287	0.354
Wald Test (Chi ²)	3799.470***	3430.690***	1573.770***

Source: Author (2025)

Table 7: Robustness Test Results

Variables	LIC Coef	p-val	LMIC Coef	p-val	UMIC Coef	p-val
Fixed Effect Estimations						
LGDPC(-1)	0.921	0.000	0.905	0.000	1.012	0.000
LFINX	0.011	0.782	0.021	0.241	-0.038	0.312
LTRD	-0.047	0.015	0.028	0.201	-0.036	0.418
LINVX	0.034	0.006	0.102	0.000	-0.029	0.244
LHCX	0.132	0.118	-0.005	0.039	-0.263	0.006
LGOVX	0.046	0.009	0.005	0.801	0.125	0.001
LLABX	-0.010	0.291	-0.004	0.792	-0.002	0.901
Constant	0.498	0.041	0.184	0.562	0.121	0.814
Difference GMM Estimation						
LGDPC(-1)	0.948	0.000	0.926	0.000	1.041	0.000
LFINX	0.008	0.864	0.019	0.276	-0.043	0.221
LTRD	-0.049	0.012	0.026	0.233	-0.039	0.395
LINVX	0.036	0.004	0.109	0.000	-0.031	0.219
LHCX	0.141	0.101	-0.004	0.047	-0.275	0.004
LGOVX	0.049	0.006	0.004	0.832	0.129	0.000
LLABX	-0.008	0.336	-0.003	0.841	-0.001	0.956
Constant	0.522	0.033	0.197	0.531	0.129	0.789
Sensitivity Analysis (Excluding Outliers): Key Coefficients						

Variables	LIC Coef	p-val	LMIC Coef	p-val	UMIC Coef	p-val
Fixed Effect Estimations						
LFINX	0.005		0.015		-0.039	
LTRD	-0.048		0.022		-0.037	
LINVX	0.035		0.098		-0.030	
LGOVX	0.049		0.003		0.128	

Source: Author (2025) |

Discussion

The results show that financial inclusion per se cannot promote rapid economic growth in SSA countries, especially in low and lower-middle income ones. In order to make financial inclusion work and spur economic growth, Policymakers should focus on bolstering the infrastructure for financial inclusion. This implies strengthening financial literacy, extending banking services and creating trust in financial sector entities. “Lack of use” of financial accounts may reduce the positive impact on economic development (Allen et al. 2016). Hence policy measures need to go beyond opening of an account but rather on use of account and participation in financial transactions. Countries should consider specific inclusion policy towards rural and disadvantaged populations where financial exclusion is high (Demirg-Kunt et al. 2015). By deepening and raising the quality of the financial products and services, inclusion would more likely promote the economy.

The high magnitude and significance of institution quality results demonstrate that improving quality of governance should be a major policy priority. High quality of governance improves regulatory framework, reduces corrupt practices and encourages the environment of stability needed for the financial sector to grow and contribute. It is also found that institutions capacity strengthen the link between financial inclusion and growth (Meniago, 2025; Naceur et al. 2015). Thus, investments in institutions that promote contract enforcement and ensure legal systems and also enhance financial sector Transparency is essential. Regulation should be structured to support innovation, and at same time to ensure stability of the financial system.

Given the fact that investment plays a huge role for all income categories in driving growth, policy makers should develop policies that favor both domestic and foreign investment. Encouraging participation of private sector through reducing administrative bottlenecks and improving access to credit would be policy measures governments should focus on. Development Finance Institutions (DFIs) can support in channeling finance and risk reduction, particularly for LDCs (Cagiza & Cagiza, 2025). Moreover, the policy of financial inclusion needs to be synergized with the policies of investment as the former can facilitate domestic savings for investment and thus contribute to Capital accumulation that promotes growth. This result echoes findings from Bashir and Elamin (2026), highlighting a complementarity effect of financial depth and financial innovation for the economic growth.

The ambivalence of trade openness effects warrants careful and targeted trade policies especially for LDCs. Policymakers should strive to increase their export competitiveness and diversified economic structures so that they are not vulnerable to exogenous shock. They must try to build up their domestic capacity and infrastructure to enable them engage efficiently into global markets. Besides, matching the policies of trade with the financial sectors could improve their access to trade finance, thus enabling them benefit from the positive effects of trade openness (Menyah et al. 2014). Efforts towards trade regional integration within SSA will contribute in larger market for financial products and services.

The long run significant of human capital is a clear indication of importance of sustaining policies targeting education and skill developments to address future needs of economic agents and ensuring their proper interaction with financial sector. For, as stated in Beck et al. (2007), this dimension is critical for the reduction of inequality and fostering the process of growth. Education curricula should include financial training to help citizens use available financial services effectively.

Finally, the growing importance of digital financial services represents a clear path towards fast-tracking financial inclusion and unlocking greater benefits from financial sector development in SSA. Policies encouraging innovation and digital technologies within the financial sector by boosting digital infrastructure and regulatory environment is crucial. Digital technologies have the capacity to dramatically reduce cost and reach out to underserved populations, especially in rural areas (Nguema & Lera, 2025; Oyedotun & Makoni, 2026), while ensuring that cybersecurity and digital literacy concerns are adequately addressed (Osuma, 2024).

Conclusions

In this paper, the impact of financial inclusion on the economic growth of sub-Saharan African countries (SSA) has been analyzed using a panel of 41 countries, which are divided into three groups: low income, lower-middle income, and upper-middle income countries, covering the period 2004 to 2018. Based on the empirical results of the System GMM estimations, financial inclusion seems not to have a robust and immediate impact on the growth in all groups of countries, which is likely to be driven by investment, quality of institution, and in some cases trade openness. In light of these findings, financial inclusion, although a desirable development target, is of value only when supplemented by other necessary structural and institutional characteristics. This is consistent with the more extensive literature which argues that access alone is not adequate unless effective usage and an appropriate economic environment support it (Allen et al., 2016; Demirg-Kunt et al., 2015).

The study has found a greater gain from financial inclusion in the long run in the upper-middle-income countries than the low-income ones. In the long run the elasticities of economic growth with regard to financial inclusion, when reinforced by good governance, human development, and the degree of financial development are more evident. These findings corroborate those which claim that financial inclusion has an

impact on the economy via the indirect routes rather than output effects (Sahay et al., 2015; Naceur et al., 2015).

The paper concludes that Financial Inclusion cannot be solely seen as one among the policy tools; it should be pursued together with a broader agenda for development including investment promotion, development of human capital and innovation in digital finance, in addition to reforming institutions. Also the heterogeneous results of financial inclusion by country income levels have implied that the specific policy context of the country is important and that, to obtain significant benefits, policies in the SSA regions should focus on improving the quality of governance, widening the coverage of financial technologies, developing financial literacy among the population and strengthening the economic and institutional framework of these regions, so as to enable them maximize benefits from financial inclusion.

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The data used in this study are available from publicly accessible sources. Further details can be provided by the author upon reasonable request.

Authors' contributions:

The author solely conceived the study, designed the methodology, conducted the analysis, interpreted the results, and wrote the manuscript.

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الآثار المتباينة للشمول المالي على النمو الاقتصادي عبر فئات الدخل في أفريقيا جنوب الصحراء

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المستخلص:

الخلفية:

أصبحت أهمية الشمول المالي موضوعاً رئيسياً في أدبيات النمو والتنمية الاقتصادية المستدامة، لا سيما في بعض المناطق مثل دول جنوب الصحراء الكبرى. ويُعرّف الشمول المالي بأنه إتاحة المنتجات والخدمات المالية بأسعار معقولة للأفراد والشركات، فضلاً عن استخدام هذه المنتجات والخدمات المالية للاندماج في الأنظمة المالية الرسمية.

الأهداف:

تهدف هذه الورقة إلى تحليل دور "الشمول المالي" في النمو في منطقة جنوب الصحراء الكبرى خلال الفترة الزمنية الممتدة من 2004 إلى 2024.

المنهجية:

تُستخدم طريقة GMM النظامية لتحليل العلاقة قيد الدراسة، والتي تتناول مشكلة التداخل والتأثيرات الديناميكية في بلدان أفريقيا جنوب الصحراء الكبرى، والتي تشمل البلدان منخفضة الدخل، والبلدان ذات الدخل المتوسط الأدنى، والبلدان ذات الدخل المتوسط الأعلى.

النتائج:

تشير النتائج إلى أن الشمول المالي له تأثير إيجابي، وإن كان غير ذي دلالة إحصائية، على النمو الاقتصادي في البلدان منخفضة الدخل (0.006) والبلدان ذات الدخل المتوسط الأدنى (0.017)، بينما يُظهر تأثيراً سلبياً وغير ذي دلالة إحصائية في البلدان ذات الدخل المتوسط الأعلى (-0.041). يُساهم الاستثمار إيجاباً في النمو في البلدان منخفضة الدخل (0.037) والبلدان ذات الدخل المتوسط الأدنى (0.114)، ولكنه يُساهم سلباً في البلدان ذات الدخل المتوسط الأعلى (-0.033). تُؤثر الحوكمة الرشيدة إيجاباً على النمو في البلدان منخفضة الدخل (0.051) والبلدان ذات الدخل المتوسط الأعلى (0.132). على المدى الطويل، يُظهر الشمول المالي دوراً أقوى وأكثر أهمية، لا سيما في البلدان ذات الدخل المتوسط الأعلى (0.772)، مما يُشير إلى أن آثاره تتجلى بمرور الوقت.

الخلاصة:

بشكل عام، توصلت الدراسة إلى أن الشمول المالي يعزز النمو الاقتصادي بشكل أكثر فعالية عندما يكتمل بالحوكمة الرشيدة والاستثمار ورأس المال البشري، مما يسلط الضوء على أهمية وجود بيئة مؤسسية واقتصادية داعمة.

الكلمات المفتاحية: الشمول المالي، النمو الاقتصادي، أفريقيا جنوب الصحراء، نظام إدارة الجودة، الجودة المؤسسية، التنمية المالية.