PRIVATE SECTOR ACCESS TO DOMESTIC CREDIT AND INCOME INEQUALITY IN SUB-SAHARAN AFRICAN COUNTRIES

YETUNDE YVONNE OBAZEE
Department of Finance, University of Benin, Benin City, Edo State, Nigeria.
Obazeeyvonne@gmail.com
OSAGIE OSIFO
Department of Finance, University of Benin, Benin City, Edo State, Nigeria.
Osagie.osifo@uniben.edu

Abstract

This study examines the impact of private sector access to domestic credit on income inequality in Sub-Saharan Africa (SSA) from 1980 to 2021. Employing a longitudinal panel data framework and analyzing data from 48 SSA countries using the Generalized Method of Moments (GMM) and Fully Modified Ordinary Least Squares (FMOLS), the study investigates the role of financial inclusion variables such as access to credit, mobile banking, and financial infrastructure. Findings reveal a complex and regionally varied relationship: access to credit exacerbates income inequality in SSA as a whole and in regions like Southern Africa, where credit disproportionately benefits wealthier populations, while in Eastern Africa, equitable credit access mitigates inequality. The study underscores structural barriers such as collateral requirements and discriminatory lending practices that limit credit access for marginalized groups and SMEs. Recommendations include adopting inclusive financial policies, mandating equitable credit allocation, and supporting SMEs through interest-friendly credit schemes to foster inclusive growth and reduce inequality in SSA.

Keywords: Private Sector, Mobile Banking, Financial Policies, Financial Inclusion

JEL Classification: P34, G20, G21, G28

1. INTRODUCTION

Over the past two decades, policymakers, academics, and economic stakeholders have shown increasing concern over the issue of income inequality and its relationship with financial inclusion, particularly in developing economies (Kim, 2016; Breunig & Majeed, 2020; Van, Vo, Nguyen & Duc, 2006). Within this context, the private sector's access to domestic credit has emerged as a critical avenue for addressing income inequality and fostering inclusive economic growth. Financial inclusion—the provision of affordable, accessible, and sustainable financial services to underserved populations—plays a pivotal role in mitigating income disparities by

enabling the efficient and equitable allocation of financial resources across the economy. However, in Sub-Saharan Africa (SSA), the financial sector remains underdeveloped and exclusive, limiting access to credit and other financial services, particularly for marginalized groups and small- and medium-sized enterprises (SMEs). This underscores the urgency for SSA nations to adopt inclusive financial strategies that integrate credit accessibility into their broader income redistribution objectives.

Despite notable economic growth in Sub-Saharan Africa over the past one and a half decades, the region continues to grapple with stubbornly high levels of income inequality (AfDB, 2020). Although SSA has been home to some of the fastest-growing economies globally, such as Ethiopia, Rwanda, and Ghana, this economic progress has not translated into widespread improvements in living standards. Income inequality in the region is fueled by a concentration of wealth among a small elite, coupled with persistent poverty among the majority. According to PovcalNet (2014), while the percentage of people living in poverty in SSA declined from 52.75% in 1981 to 46.85%, income inequality has paradoxically widened. This trend is partly attributed to structural factors such as financial exclusion, which disproportionately limits access to credit and financial services for low-income households and rural populations (Devarajan & Fengler, 2013). Without adequate financial resources, these groups face significant barriers to participating in economic activities, further exacerbating inequality.

Private sector access to domestic credit has long been recognized as a key determinant of economic development and income distribution. Access to credit empowers businesses, particularly SMEs, to invest in productive activities, expand operations, and create jobs. However, credit markets in SSA remain underdeveloped, with limited financial penetration and low credit availability. For instance, account ownership in SSA increased from 24% in 2011 to 34% in 2014, yet access to credit barely rose, from 4.8% to 6% during the same period (Global Findex, 2014). This discrepancy highlights the inefficiencies and structural constraints in SSA's financial systems, including information asymmetry, limited competition, and restrictive institutional factors such as interest rate caps (Sexagaard, 2006; Maimbo & Gallegos, 2014). Such imperfections disproportionately exclude the poor from formal credit markets, thereby limiting their ability to improve their livelihoods and exacerbating income inequality. This dynamic raises important questions about the role of domestic credit allocation in bridging income gaps in the region.

This study seeks to explore the relationship between private sector access to domestic credit and income inequality in Sub-Saharan Africa. By focusing on financial inclusion variables—such as mobile banking, access to credit, the number of automated teller machines, and the prevalence of point-of-sale transactions—this research aims to provide a nuanced understanding of how financial access influences income redistribution in the region. Unlike previous studies that primarily focused on microfinance programs or used limited financial variables, this study adopts a comprehensive approach that incorporates both traditional and innovative financial tools. Moreover, the analysis spans from 1980 to 2021, providing a longitudinal

perspective on the evolving relationship between credit accessibility and income inequality. By addressing these gaps in the literature, this research contributes to ongoing policy debates on how to achieve inclusive economic growth in SSA through a more equitable distribution of financial resources.

2. LITERATURE REVIEW

2.1. THE CONCEPT OF INCOME INEQUALITY

Inequality refers to the skewed distribution of valued and scarce resources, both within nations and across national borders (Nel, 2018). Within-nation inequality can be considered vertically, focusing on the distribution between individuals and households or it can be considered horizontally, looking at the distribution between groups of people, distinguished by gender, ethnicity, space, and/or time. Inequality can be studied synchronically and diachronically. In the former, the study involves distribution cross-sectionally at one point in time, while the latter looks at distribution over a period of time, for instance over the lifetimes of subjects. Income inequality is also the unequal distribution of income and other resources among citizens. Income inequality denotes a substantial disparity in income levels within a population, influenced by various social factors including gender, age, and ethnicity. Its impact is diverse, affecting individuals, households, enterprises, and entire countries, and is closely tied to economic growth. Equality is universally valued across ideologies, cultures, and religions, reflecting a shared concern for fairness. Inequality can signify limited income mobility and opportunity, indicating persistent disadvantages for specific societal segments. The widening wealth gap has noteworthy repercussions for growth and macroeconomic stability, potentially concentrating power among a few, hindering optimal use of human resources, fostering political and economic instability, and elevating the risk of crises. The aftermath of the global financial crisis has intensified scrutiny on rising income inequality, emphasizing its economic and social ramifications.

2.2. MEASUREMENT OF INCOME INEQUALITY

The most common measure of income inequality is the Gini index or Gini coefficient which is a synthetic measure of how unevenly income is distributed among a ranked population (Aslan, Delechat, Newiak, & Yang, 2017). While various indicators, such as the income earned by specific quartiles or the ratio of income per capita among different groups, provide insights into income distribution, the Gini coefficient stands out for its comprehensive nature. The Gini index is usually measured by the World Bank's Gini coefficient for different countries (World Bank Development Indicators 2016). A Gini coefficient that is equal to zero expresses perfect equality and a Gini coefficient that is equal to 100 expresses maximal inequality.

The availability of income distribution data poses challenges, particularly in low-income countries. Heterogeneity across countries, and sometimes overtime, is a major drawback in dealing with such data. There are limited sources of cross-country information on income distribution, with the World Income Inequality Database (WIID) being one such source; however, countries report their data in varied and

sometimes inconsistent ways. Variables like consumption or expenditure may be used instead of income, and the measurement of income can be in gross or net terms (net referring to disposable income after taxes and transfers). Additionally, the unit of analysis may be either the individual or the household, with variations in accounting for the number of persons in the household. Overall, the quality of information varies across surveys. In this study, income inequality will be assessed using the Gini coefficient.

2.3. ACCESS TO CREDIT (FINANCE)

In the 1980s and 1990s, many African countries initiated a series of structural and policy reforms in the financial sector as part of broader economic reforms. The objective was to rekindle economic growth and enhance overall economic and financial sector efficiency (see World Bank 1989). In the financial sector, the problem was financial repression, and its pervasiveness in developing countries was responsible for stifling economic growth (Mackinnon, 1973; Shaw, 1973). In the first generation of financial sector reforms, measures included abolishing explicit controls on the pricing and allocation of credit, reducing direct government intervention in bank credit decisions, relaxing controls on international capital movements, and allowing interest rates to be market-determined. The second generation of financial sector reforms focused on structural and institutional constraints, such as improving the legal, regulatory, supervisory, and judiciary environment, restoring bank soundness, and rehabilitating financial infrastructure. The impact of these reforms on the financial sector has been positive, with improved financial depth, market-determined interest rates, and relaxed entry restrictions. However, challenges persist, especially regarding access to finance for the majority of the population and SMEs, which remains poor. The depth and breadth of the financial sector in Africa also lag behind other regions. Consequently, the impact of these reforms on the economy has been mixed, and their effect on poverty and income distribution has been controversial, with some arguing that it has been negative. Economic and finance literature, however, suggests that a well-functioning financial system has the potential to foster the accumulation of physical capital, improve economic efficiency and thus promote long term growth, (Demetrides & Andrinova, 2004; Levine, 2003). An effective financial system ensures that scarce capital is directed at its best alternative use. However, the impact of the development of financial markets on income distribution is not definitively settled in the literature. Some argue that the development of financial markets has a positive impact on income distribution because more developed and freer markets widen the availability of credit, allowing the poor to invest in building their human and physical capital. They are presented with an opportunity to invest in their skills and those of their children and also set up new small businesses (Banerjee & Newman, 1993). Thus, by broadening the financial opportunities available to the poorer segments, financial markets have the effect of equalizing the distribution of income. However, others argue that since the poor face challenges in accessing credit due to a lack of collateral and connections, the development of financial markets may exacerbate income inequality. Consequently, the financial reforms undertaken by many African

countries to deepen and develop their financial markets may be associated with a persistent increase in inequality. This is because those who are well-off are better equipped to exploit the new financial opportunities that the liberalization of financial markets entails.

2.4. REVIEW OF RELATED THEORIES

2.4.1. KUZNETS HYPOTHESIS

The Kuznets Hypothesis, proposed by Kuznets (1955), posits that economic growth initially exacerbates income inequality before eventually reducing it, resulting in an inverted U-shaped curve. Kuznets argued that during the early phases of industrialization, economic growth benefits capital-intensive industries and urban centers, leaving rural and low-income populations behind. Over time, as growth becomes more inclusive, inequality stabilizes and then declines due to improved access to education, healthcare, and financial resources. Despite its conceptual appeal, Kuznets acknowledged the lack of robust empirical evidence to confirm this conjecture, describing his work as primarily speculative (Gallo, 2002). Nevertheless, this hypothesis provides a foundational framework for understanding income inequality in relation to economic development. In the context of financial inclusion, the Kuznets Hypothesis implies that the development of financial systems—such as banking and access to credit—can reduce income inequality by facilitating broader participation in economic growth (Duvendack & Mader, 2019). However, empirical evidence from less developed countries (LDCs) suggests that inequality often worsens before improving, highlighting the need for deliberate policies to ensure inclusive financial development.

2.4.2. FINANCIAL REPRESSION THEORY

McKinnon (1973) and Shaw (1973) introduced the Financial Repression Theory to explain how restrictive financial policies hinder economic growth and income equality in developing countries. Financial repression occurs when governments impose interest rate ceilings, restrict entry into banking, or allocate credit based on non-economic priorities, limiting the efficient flow of capital. McKinnon argued that these policies force borrowers to rely on informal financial sources, while low interest rates discourage savings and reduce the quality of investments. This creates a cycle of inefficiency, where financial resources are diverted from productive uses, undermining economic growth and worsening inequality. According to Montiel (1995), such systems are further characterized by restrictive banking regulations, high reserve requirements, and limited competition, which exacerbate income disparities by excluding marginalized groups from accessing formal credit. While the McKinnon-Shaw analysis advocates financial liberalization to improve savings, investments, and income distribution, critics argue that unregulated markets can lead to speculative activities and financial instability (Gibson & Tsakalotos, 1994; Stiglitz & Weiss, 1981). Thus, while financial repression limits growth, unregulated liberalization also poses risks, underscoring the need for balanced financial policies.

2.4.3. FINANCIAL INTERMEDIATION THEORY

Financial Intermediation Theory emphasizes the role of financial institutions in mobilizing savings and channeling them into productive investments, thereby fostering economic growth and income redistribution. According to Gorton and Winton (2002), financial intermediaries such as banks, stock markets, and credit unions reduce transaction costs, provide liquidity, and mitigate risks by connecting surplus units (savers) with deficit units (borrowers). This intermediation enhances the allocation of capital, supporting productive sectors that drive economic development. By broadening access to credit, financial intermediaries help lower-income groups participate in economic activities, potentially reducing income inequality. However, in contexts like Sub-Saharan Africa, underdeveloped financial markets and barriers to credit access limit the effectiveness of financial intermediation, perpetuating structural inequalities. Thus, the theory underscores the importance of enhancing financial infrastructure and accessibility to address disparities in income distribution.

2.4.4. FINANCIAL LIBERALIZATION THEORY

The Financial Liberalization Theory, developed by McKinnon (1973) and Shaw (1973), advocates for the deregulation of financial markets to promote economic growth. The theory suggests that removing restrictions such as interest rate ceilings and credit allocation quotas encourages savings, increases investments, and improves resource allocation efficiency. Higher interest rates, as a result of liberalization, incentivize savings and direct capital toward productive investments, stimulating economic activity and reducing poverty (Bhaduri, 2005). Levine and Zervos (1996) further argue that financial liberalization facilitates the development of stock markets, which complement banking activities by mobilizing capital and diversifying risks. However, critics caution that poorly regulated financial liberalization can exacerbate inequality, as wealthier individuals and corporations are better positioned to exploit new financial opportunities (Stiglitz & Weiss, 1981). For Sub-Saharan Africa, financial liberalization has the potential to enhance private sector access to domestic credit, but its success depends on accompanying measures to ensure inclusivity and mitigate risks of exclusion.

2.5. EMPIRICAL LITERATURE

Honohan (2008) finds a significant negative relationship between household access to finance, as measured by account ownership at a bank or microfinance institution, and income inequality, measured by Gini coefficients. Aslan et al. (2017) show that greater inequality in household access to and use of formal financial services, such as savings and credit, is strongly associated with greater inequality in income. In particular, Park and Mercado (2015) investigated the factors influencing financial inclusion and the significance of financial inclusion in reducing poverty and lowering income inequality, focusing on 37 developing Asian economies. Their results indicate that financial inclusion, specifically access to credit, not only significantly reduces poverty but also demonstrates evidence of lowering income inequality. Regarding the factors influencing financial inclusion, their study reveals

that per capita income, the rule of law, and demographic structure contribute to increased financial inclusion. Conversely, a higher age-dependency ratio was found to significantly reduce financial inclusion. Interestingly, primary education completion and literacy rates showed no significant effect on the level of financial inclusion in developing Asia.

Nyarko, Ahmad, and Green (2020) looked into the connection between financial inclusion (access to money) and a rise in household welfare. The availability, accessibility, utilization, and quality of financial inclusion are all considered when calculating an index of financial inclusion. Discrete and continuous models are used in econometric analysis to generate reliable results. The key finding shows that more people using and having access to high-quality financial services results in large welfare gains. The results emphasize the significance of legislative initiatives to promote financial inclusion, which will enhance welfare. In developing Asian countries between 1960 and 2011, Park and Shin (2017) conducted an empirical investigation on the relationship between financial access and income disparity. The study indicated that financial accessibility helps to reduce inequality up to a point, but as inclusive financial development advances further, it helps to increase disparity. This was determined using pooled and panel regression models.

In the period from 2004 to 2011, Kim and Kim (2016) conducted an analysis to estimate the influence of financial inclusion, or financial equality, on the association between income inequality and economic output across 40 countries belonging to the European Union (EU), the Organization for Economic Cooperation and Development (OECD), or the Eurozone. The study employed a cross-sectional analysis with fixed-effect regression, utilizing the Generalized Method of Moments (GMM) and Two-Stage Least Square (TSLS) for specific parameters. The results indicate that income disparity negatively affects GDP output, with this impact being more pronounced in low-income nations.

3. METHODOLOGY

3.1. RESEARCH DESIGN

This study employed a longitudinal research design within a panel data framework to investigate the impact of private sector access to credit on income inequality in Sub-Saharan African (SSA) countries, while incorporating other financial inclusion variables as control variables. The longitudinal design was selected as both the dependent variable (income inequality) and independent variables (private sector credit) were inherently non-manipulable, having already manifested over time.

3.2. METHOD OF DATA COLLECTION

The study utilized a census of all 48 Sub-Saharan African countries, with data collected from the World Bank's World Development Indicators (WDI) 2022 and the World Income Inequality Database (WIID) 2022, covering the period from 1980 to 2021 to capture the effects of private sector access to credit on income inequality.

3.3. THEORETICAL FRAMEWORK AND MODEL SPECIFICATION

This study builds on the Kuznets Hypothesis, which posits that income inequality rises during the initial stages of economic development and declines as economies mature. While Kuznets emphasized market forces, this study highlights the role of financial inclusion—especially private sector access to crediting and reducing inequality in Sub-Saharan Africa (SSA). Financial inclusion variables such as access to credit (ATC), mobile banking (MOBK), point-of-sale transactions (POS), automated teller machines (ATM), number of bank branches (NUMB), and number of bank accounts opened (NBAO) are expected to reduce inequality. Interest rate spread (IRS) is included to capture financial market efficiency, while control variables such as labor productivity (LABP), urbanization rate (RURB), dependency ratio (DEPR), and government expenditure (GEXP) account for other drivers of inequality.

Model I: Panel Causality Framework

To explore the causal relationship between private sector access to credit and income inequality, the study employs the Granger causality framework using a panel data approach. The model is specified as follows:

$$Y_{it} = \alpha_0 + \Sigma\ (\alpha_j\ Y_{it-j}) + \Sigma\ (\delta_k\ X_{it-k}) + \varepsilon_{it}$$

Where:

- Y_{it} = Income inequality (measured by the Gini coefficient) in country *i* at time *t*.
- X_{it} = Financial inclusion variables (ATC, MOBK, POS, ATM, NUMB, NBAO).
- α_j, δ_k = Coefficients of lagged dependent and independent variables, respectively.
- ε_{it} = Error term.

The Granger causality test identifies whether private sector access to credit cause income inequality, whether income inequality causes private sector access to credit, or whether a bidirectional (feedback) relationship exists.

Model II: Financial Inclusion and Income Inequality

To estimate the impact of private sector access to credit on income inequality, the study adapts the model by Brei, Ferri, and Leonardo (2018) and extends it as:

$$GINI_{it} = \beta_0 + \beta_1(ATC_{it}) + \beta_2(MOBK_{it}) + \beta_3(POS_{it}) + \beta_4(ATM_{it}) + \beta_5(NUMB_{it}) + \beta_6(NBAO_{it}) + \beta_7(ATC_{it} \times IRS_{it}) + \gamma(VOC_{it}) + \mu_{it}$$

Where:

- $GINI_{it}$ = Income inequality (measured by the Gini coefficient).
- ATC_{it} = Access to credit.
- $MOBK_{it}$, POS_{it}, ATM_{it}, $NUMB_{it}$, $NBAO_{it}$ = Financial inclusion variables.

- $ATC_{it} \times IRS_{it}$ = Interaction term capturing the moderating effect of financial market efficiency.
- VOC_{it} = Vector of control variables (LABP, RURB, DEPR, GEXP).
- μ_{it} = Error term.

The expected signs of the financial inclusion coefficients (β_1, β_2, β_3, β_4, β_5, β_6) are negative, indicating that financial inclusion reduces inequality. For control variables, it is expected that labor productivity (LABP), urbanization rate (RURB), and government expenditure (GEXP) will reduce inequality, while a higher dependency ratio (DEPR) worsens it.

3.4. DATA ESTIMATION TECHNIQUES

The study employed a panel causality technique to analyze the relationship between private sector access to credit and income inequality in SSA, and the Generalized Method of Moments (GMM) was used to estimate the main model. System GMM was preferred over difference GMM as it minimizes data loss in unbalanced panels and addresses endogeneity issues by combining moment conditions for both differenced and level equations in dynamic panel models. A series of preliminary and diagnostic tests were conducted to ensure the reliability of results. These included descriptive statistics to summarize variable properties, correlation analysis to assess multicollinearity and the strength of relationships, and the Augmented Dickey-Fuller (ADF) test to confirm stationarity of all variables at order I(1), a prerequisite for GMM estimation. These steps ensured robustness and avoided spurious regression results.

4. ANALYSIS AND DISCUSSION OF FINDINGS

4.1. ANALYSIS PRESENTATIONS

This section presents the analysis in two categories: preliminary and inferential, starting with Sub-Saharan Africa as a whole, followed by sub-regional analyses for West, East, Middle, and Southern Africa in sequential order.

4.1.1. SUB-SAHARAN AFRICA

Table 1: *Descriptive Statistics*

	II	ATC	ATM	DEPR	GEXP	IRS	LABP	NUMB	RURB
Mean	6.409	18.551	9.086	82.763	12.524	5.131	11701.200	5.702	41.436
Maximum	64.800	142.422	92.530	110.430	43.484	66.895	61231.760	55.070	90.423
Minimum	0.000	0.000	0.000	40.421	0.000	-3.602	0.000	0.000	9.139
Std. Dev.	15.499	22.403	16.268	14.821	8.497	8.502	13188.750	8.756	17.307
Skewness	2.115	3.044	2.557	-0.996	0.665	2.619	1.928	3.335	0.412
Kurtosis	5.826	13.548	9.335	3.738	3.863	13.318	6.203	15.189	2.768
Jarque-Bera	872.299	4999.891	2233.873	152.075	84.692	4513.560	846.831	6507.489	24.657
Probability	0	0	0	0	0	0	0	0	4E-06
Observations	809	809	809	809	809	809	809	809	809

Source: Author's computation, 2023

The descriptive statistics for Sub-Saharan Africa reveal significant variability in private sector access to credit (ATC), with a mean of 18.55% and a wide range from 0.00% to 142.42% of GDP, indicating disparities across countries. The high standard deviation (22.40) and positive skewness (3.04) suggest that a few countries significantly outperform others in credit access. Other financial inclusion and control variables, such as the number of automated teller machines (ATM), dependency ratio (DEPR), and government expenditure (GEXP), also display considerable heterogeneity.

Table 1: *Correlation Analysis for sub-Saharan Africa*

	II	ATC	ATM	DEPR	GEXP	IRS	LABP	NUMB	RURB
II	1.000	0.049	0.017	0.014	0.000	0.018	0.021	-0.006	-0.021
ATC	0.049	1.000	0.634	-0.605	0.267	-0.058	0.522	0.365	0.267
ATM	0.017	0.634	1.000	-0.735	0.405	0.044	0.474	0.758	0.359
DEPR	0.014	-0.605	-0.735	1.000	-0.395	-0.014	-0.560	-0.631	-0.491
GEXP	0.000	0.267	0.405	-0.395	1.000	-0.002	0.250	0.302	0.063
IRS	0.018	-0.058	0.044	-0.014	-0.002	1.000	-0.070	0.098	0.045
LABP	0.021	0.522	0.474	-0.560	0.250	-0.070	1.000	0.195	0.582
NUMB	-0.006	0.365	0.758	-0.631	0.302	0.098	0.195	1.000	0.343
RURB	-0.021	0.267	0.359	-0.491	0.063	0.045	0.582	0.343	1.000

Source: Author's computation, 2023.

The correlation analysis for Sub-Saharan Africa shows that private sector access to credit (ATC) has a moderate positive correlation with financial inclusion indicators such as the number of automated teller machines (ATM, 0.634) and the number of bank branches (NUMB, 0.365), indicating that greater credit access is associated with expanded financial infrastructure. ATC also has a strong positive relationship with labor productivity (LABP, 0.522), suggesting its potential role in fostering economic efficiency. However, ATC exhibits a negative correlation with the dependency ratio (DEPR, -0.605), implying that higher access to credit is more prevalent in economies with lower economic dependency burdens.

Table 3*: GMM Results*

Differenced GMM Estimates				
Variables	***Coef.***	***Std. Error***	***t-Stats***	***P-value***
II (-1)	-0.151***	0.010	-15.613	0.000
ATC	0.223*	0.132	1.690	0.091
ATM	-0.034	0.135	-0.254	0.800
DEPR	0.196	0.171	1.148	0.251
GEXP	-0.469***	0.104	-4.498	0.000
IRS	0.164	0.123	1.334	0.183
LABP	0.001***	0.000	3.547	0.000
NUMB	0.314	0.247	1.275	0.203
RURB	-0.753*	0.389	-1.933	0.054

Source: Author's computation, 2023.

The GMM results indicate that private sector access to credit (ATC) has a positive but weakly significant impact on income inequality in Sub-Saharan Africa, with a coefficient of 0.223 and a p-value of 0.091. This suggests that while access to credit can potentially influence inequality, its effect may not always reduce it directly, due to unequal distribution of credit or barriers to access for marginalized

groups. Other significant factors include government expenditure (GEXP), which reduces inequality (coefficient: -0.469, $p < 0.01$), and labor productivity (LABP), which shows a positive impact on inequality (coefficient: 0.001, $p < 0.01$), potentially reflecting productivity gains concentrated among higher-income groups.

4.1.2 WEST AFRICAN REGION

***Table 4**: Descriptive Statistics for west African region data*

	II	ATC	ATM	DEPR	GEXP	IRS	LABP	NUMB	RURB
Mean	6.88	16.56	5.44	86.03	10.72	3.04	9159.04	5.52	43.65
Maximum	50.70	66.39	52.07	106.62	23.73	21.16	26178.70	42.07	67.10
Minimum	0.00	0.00	0.00	47.18	0.00	-3.60	2279.23	0.00	16.21
Std. Dev.	15.06	12.62	10.50	11.07	5.55	6.34	5860.24	7.00	11.46
Skewness	1.77	1.69	3.10	-0.95	-0.49	0.81	1.09	3.16	-0.63
Kurtosis	4.25	6.66	12.38	5.19	2.72	2.31	3.27	12.99	3.47
Jarque-Bera	157.65	276.32	1409.64	93.69	11.78	34.26	54.15	1560.80	20.03
Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Observations	268	268	268	268	268	268	268	268	268

Source: Author's computation, 2023.

The descriptive statistics for the West African region show that private sector access to credit (ATC) has a mean value of 16.56% of GDP, with a wide range from 0.00% to 66.39% and a standard deviation of 12.62, indicating significant variability in credit availability across countries. The positive skewness (1.69) suggests that a few countries have notably higher access to credit compared to the regional average.

***Table 5:** Correlation Analysis results for West African Region Data*

	II	ATC	ATM	DEPR	GEXP	IRS	LABP	NUMB	RURB
II	1.000	-0.020	-0.027	0.044	0.089	-0.023	-0.025	-0.044	-0.057
ATC	-0.020	1.000	0.780	-0.573	0.419	-0.128	0.466	0.820	0.366
ATM	-0.027	0.780	1.000	-0.702	0.284	0.180	0.470	0.929	0.536
DEPR	0.044	-0.573	-0.702	1.000	-0.005	-0.136	-0.436	-0.704	-0.683
GEXP	0.089	0.419	0.284	-0.005	1.000	-0.172	0.143	0.318	-0.255
IRS	-0.023	-0.128	0.180	-0.136	-0.172	1.000	0.238	0.174	0.408
LABP	-0.025	0.466	0.470	-0.436	0.143	0.238	1.000	0.554	0.563
NUMB	-0.044	0.820	0.929	-0.704	0.318	0.174	0.554	1.000	0.605
RURB	-0.057	0.366	0.536	-0.683	-0.255	0.408	0.563	0.605	1.000

Source: Author's computation, 2023.

The correlation analysis for the West African region shows that private sector access to credit (ATC) is strongly and positively correlated with the number of bank branches (NUMB, 0.820) and the number of automated teller machines (ATM, 0.780), indicating that increased access to credit is associated with a more developed financial infrastructure. Additionally, ATC has a moderate positive correlation with labor productivity (LABP, 0.466) and urbanization rate (RURB, 0.366), suggesting its role in fostering economic activity and urban growth. However, ATC is negatively correlated with the dependency ratio (DEPR, -0.573), reflecting lower access to credit in countries with higher economic dependency burdens.

Table 6: *Fully Modified Ordinary Least Squares for West African region.*

FMOLS Estimates				
Variables	***Coef.***	***Std. Error***	***t-Stats***	***P-values***
ATC	-194.843	150.599	-1.294	0.197
ATM	4.542	2.994	1.517	0.131
DEPR	3.243	2.311	1.403	0.162
GEXP	2.729***	0.890	3.066	0.003
IRS	2.811***	0.851	3.304	0.001
LABP	-0.020**	0.010	-2.011	0.046
NUMB	5.969	8.306	0.719	0.473
RURB	1.634	7.573	0.216	0.829

Source: Author's computation, 2023.

The FMOLS results for the West African region show that private sector access to credit (ATC) has a negative but statistically insignificant impact on income inequality (coefficient: -194.843, p = 0.197). This suggests that while access to credit could theoretically reduce inequality, its effect in the region is not robust, potentially due to uneven credit allocation or barriers faced by marginalized groups in accessing financial resources. Significant variables in the model include government expenditure (GEXP, p = 0.003) and interest rate spread (IRS, p = 0.001), both of which positively impact income inequality, and labor productivity (LABP, p = 0.046), which reduces inequality.

4.1.3. EAST AFRICAN REGION

Table 7: *Descriptive Analysis Results for East African Region*

	II	**ATC**	**ATM**	**DEPR**	**GEXP**	**IRS**	**LABP**	**NUMB**	**RURB**
Mean	7.188	14.312	7.831	82.910	12.474	7.529	5233.678	6.440	33.596
Maximum	57.100	53.241	92.530	110.430	38.699	49.046	31625.880	55.070	78.217
Minimum	0.000	0.000	0.000	43.165	0.000	0.000	0.000	0.000	14.964
Std. Dev.	16.471	9.942	16.547	14.947	8.981	9.996	5554.525	12.256	16.576
Skewness	1.911	0.290	3.562	-1.123	0.341	2.403	2.628	3.047	1.315
Kurtosis	4.822	2.923	15.586	4.128	2.884	9.070	11.663	10.869	4.275
Jarque-Bera	173.320	3.310	2021.857	61.115	4.615	579.393	992.534	957.575	82.590
Probability	0.000	0.191	0.000	0.000	0.099	0.000	0.000	0.000	0.000
Observations	232	232	232	232	232	232	232	232	232

Source: Author's computation, 2023.

The descriptive analysis for the East African region reveals that private sector access to credit (ATC) has a mean value of 14.31% of GDP, with a wide range from 0.00% to 53.24% and a standard deviation of 9.94, indicating moderate variability across countries. The low skewness (0.29) suggests a more balanced distribution of credit access compared to other regions, although some countries still lag significantly behind.

Table 8: *Correlation Analysis Results for East African Region*

	II	ATC	ATM	DEPR	GEXP	IRS	LABP	NUMB	RURB
II	1.000	-0.079	-0.026	0.106	-0.061	0.036	0.075	-0.037	-0.059
ATC	-0.079	1.000	0.036	-0.329	0.374	-0.062	0.140	0.137	0.288
ATM	-0.026	0.036	1.000	-0.732	0.429	0.003	-0.099	0.940	0.401
DEPR	0.106	-0.329	-0.732	1.000	-0.477	-0.010	-0.082	-0.767	-0.688
GEXP	-0.061	0.374	0.429	-0.477	1.000	0.175	0.022	0.514	0.229
IRS	0.036	-0.062	0.003	-0.010	0.175	1.000	-0.095	0.011	-0.067
LABP	0.075	0.140	-0.099	-0.082	0.022	-0.095	1.000	-0.166	0.268
NUMB	-0.037	0.137	0.940	-0.767	0.514	0.011	-0.166	1.000	0.405
RURB	-0.059	0.288	0.401	-0.688	0.229	-0.067	0.268	0.405	1.000

Source: Author's computation, 2023

The correlation analysis for the East African region shows that private sector access to credit (ATC) has a weak negative correlation with income inequality (II, -0.079), indicating that higher credit access may slightly reduce inequality, though the effect appears limited. ATC has a moderate positive correlation with government expenditure (GEXP, 0.374) and urbanization rate (RURB, 0.288), suggesting that countries with greater credit access also tend to have higher public spending and urban development. However, the negative correlation between ATC and the dependency ratio (DEPR, -0.329) highlights that higher credit access is associated with countries with lower economic dependency burdens.

Table 9: *Inferential Analysis (FMOLS Estimates) for East African Region*

FMOLS Estimates				
Variables	***Coef.***	***Std. Error***	***t-Stats***	***P-values***
ATC	-1.218*	0.716	-1.702	0.091
ATM	27.126***	5.903	4.596	0.000
DEPR	2.324**	0.974	2.387	0.019
GEXP	1.982**	0.928	2.137	0.035
IRS	2.265	1.744	1.299	0.196
LABP	-0.007	0.010	-0.671	0.504
NUMB	-7.094	5.345	-1.327	0.187
RURB	-3.560	3.603	-0.988	0.325

Source: Author's computation, 2023.

The FMOLS results for the East African region show that private sector access to credit (ATC) has a negative and weakly significant effect on income inequality (coefficient: -1.218, $p = 0.091$), suggesting that increasing access to credit may help reduce inequality, but the impact is limited. Other significant variables include automated teller machines (ATM, coefficient: 27.126, $p < 0.01$), dependency ratio (DEPR, coefficient: 2.324, $p = 0.019$), and government expenditure (GEXP, coefficient: 1.982, $p = 0.035$), which all have positive effects on inequality, indicating that while financial infrastructure and public spending increase, inequality persists.

4.1.4. CENTRAL AFRICAN REGION

Table 10: *Descriptive Analysis Results for Central African Region*

	II	ATC	ATM	DEPR	GEXP	IRS	LABP	NUMB	RURB
Mean	4.332	8.140	3.216	86.714	11.715	4.664	24070.450	2.505	46.614
Maximum	56.200	25.240	19.130	104.798	29.494	66.895	113013.100	12.630	90.423
Minimum	0.000	0.000	0.000	56.033	0.000	0.000	1934.290	0.000	0.000
Std. Dev.	13.334	5.261	5.185	12.727	5.245	10.895	28950.910	3.196	24.407
Skewness	2.789	0.231	1.873	-0.423	0.695	3.166	1.433	1.520	-0.169
Kurtosis	8.948	2.603	5.439	2.027	3.564	14.476	3.861	4.101	2.357
Jarque-Bera	398.878	2.225	119.890	9.979	13.508	1030.844	53.744	62.714	3.167
Probability	0.000	0.329	0.000	0.007	0.001	0.000	0.000	0.000	0.205

Source: Author's computation, 2023.

The descriptive analysis for the Central African region indicates that private sector access to credit (ATC) has a low mean value of 8.14% of GDP, with a range from 0.00% to 25.24% and a standard deviation of 5.26, reflecting limited and uneven credit availability across countries. The low skewness (0.231) suggests a more balanced distribution of credit access compared to other regions, but the overall low average highlights significant underdevelopment in credit markets.

Table 11: *Correlation Analysis Results for Central African Region*

	II	ATC	ATM	DEPR	GEXP	IRS	LABP	NUMB	RURB
II	1.000	-0.084	-0.013	0.059	-0.079	0.086	-0.089	-0.054	0.084
ATC	-0.084	1.000	0.301	-0.098	0.285	-0.263	0.015	0.286	0.163
ATM	-0.013	0.301	1.000	0.009	0.288	0.104	-0.039	0.700	0.460
DEPR	0.059	-0.098	0.009	1.000	-0.390	0.298	-0.844	-0.197	-0.138
GEXP	-0.079	0.285	0.288	-0.390	1.000	-0.068	0.272	0.576	0.213
IRS	0.086	-0.263	0.104	0.298	-0.068	1.000	-0.220	0.061	0.057
LABP	-0.089	0.015	-0.039	-0.844	0.272	-0.220	1.000	0.306	-0.135
NUMB	-0.054	0.286	0.700	-0.197	0.576	0.061	0.306	1.000	0.043
RURB	0.084	0.163	0.460	-0.138	0.213	0.057	-0.135	0.043	1.000

Source: Author's computation, 2023.

The correlation analysis for the Central African region shows that private sector access to credit (ATC) has a weak negative correlation with income inequality (II, -0.084), indicating a marginal potential for credit access to reduce inequality. ATC has moderate positive correlations with government expenditure (GEXP, 0.285) and the number of bank branches (NUMB, 0.286), suggesting that better credit access is associated with increased financial infrastructure and public spending. However, the negative correlation between ATC and the dependency ratio (DEPR, -0.098) indicates that credit access is less prevalent in countries with higher economic dependency burdens.

Table 12: *FMOLS Results for Central African Region*

FMOLS Estimates				
Variables	***Coef.***	***Std. Error***	***t-Stats***	***P-values***
ATC	-0.717	1.934	-0.371	0.715

ATM	2.496	8.471	0.295	0.772
DEPR	19.411	27.312	0.711	0.486
GEXP	-0.930	3.067	-0.303	0.765
IRS	-0.042	0.267	-0.156	0.878
LABP	-0.002	0.050	-0.045	0.964
NUMB	-9.693	13.879	-0.698	0.494
RURB	6.849	13.959	0.491	0.630

Source: Author's computation, 2023

The FMOLS results for the Central African region reveal that private sector access to credit (ATC) has a negative but statistically insignificant impact on income inequality (coefficient: -0.717, p = 0.715). This suggests that while credit access may theoretically reduce inequality, its actual impact in the region is negligible, potentially due to unequal distribution or other structural barriers limiting its effectiveness. None of the other variables in the model, including financial infrastructure (ATM, NUMB) or public expenditure (GEXP), have significant effects on inequality.

4.1.5. RESULTS PRESENTATION FOR SOUTHERN AFRICAN REGION

Table 13: *Descriptive Analysis for Southern African Region*

	II	ATC	ATM	DEPR	GEXP	IRS	LABP	NUMB	RURB
Mean	5.16	24.11	29.16	65.56	28.02	6.12	27172.03	7.97	44.74
Maximum	61.00	72.77	72.95	76.93	43.48	10.47	44969.06	15.45	71.56
Minimum	0.00	0.00	0.00	57.50	0.00	0.00	5265.80	1.91	21.69
Std. Dev.	16.42	20.90	21.97	4.50	10.21	2.00	15257.05	3.91	16.47
Skewness	2.87	0.92	0.60	0.23	-1.27	-0.02	-0.47	-0.10	0.13
Kurtosis	9.37	3.16	2.24	2.67	4.82	3.42	1.51	1.73	1.62
Jarque-Bera	165.73	7.64	4.54	0.73	21.93	0.41	6.92	3.69	4.43
Probability	0.00	0.02	0.10	0.69	0.00	0.82	0.03	0.16	0.11
Observations	54	54	54	54	54	54	54	54	54

Source: Author's computation, 2023

The descriptive analysis for the Southern African region indicates that private sector access to credit (ATC) has a high mean value of 24.11% of GDP, with significant variability ranging from 0.00% to 72.77% and a standard deviation of 20.90. This reflects considerable disparities in credit access across countries. The positive skewness (0.92) suggests that a few countries enjoy significantly higher levels of credit access compared to the regional average.

Table 14: *Correlation Analysis results for Southern African Region*

	II	ATC	ATM	DEPR	GEXP	IRS	LABP	NUMB	RURB
II	1.000	0.096	0.108	-0.086	0.099	-0.001	0.083	0.159	0.090
ATC	0.096	1.000	0.663	-0.397	0.129	-0.281	0.332	0.202	0.465
ATM	0.108	0.663	1.000	-0.256	0.006	-0.591	0.569	0.700	0.547
DEPR	-0.086	-0.397	-0.256	1.000	-0.417	-0.058	-0.376	0.046	-0.650
GEXP	0.099	0.129	0.006	-0.417	1.000	0.287	-0.078	-0.147	0.052
IRS	-0.001	-0.281	-0.591	-0.058	0.287	1.000	-0.643	-0.707	-0.512
LABP	0.083	0.332	0.569	-0.376	-0.078	-0.643	1.000	0.753	0.930
NUMB	0.159	0.202	0.700	0.046	-0.147	-0.707	0.753	1.000	0.543
RURB	0.090	0.465	0.547	-0.650	0.052	-0.512	0.930	0.543	1.000

Source: Author's computation, 2023

The correlation analysis for the Southern African region shows that private sector access to credit (ATC) has a weak positive correlation with income inequality (II, 0.096), suggesting that increased credit access alone may not necessarily reduce inequality in the region. ATC is strongly positively correlated with financial infrastructure indicators, such as the number of automated teller machines (ATM, 0.663) and urbanization rate (RURB, 0.465), indicating that better-developed financial systems and urbanization are associated with higher credit access. However, the negative correlation between ATC and the dependency ratio (DEPR, -0.397) suggests that countries with lower economic dependency burdens tend to have better access to credit.

Table15: *FMOLS Estimates for Southern African Region*

FMOLS Estimates				
Variables	***Coef.***	***Std. Error***	***t-Stats***	***P-values***
ATC	2.775***	0.676	4.103	0.000
ATM	0.057	0.641	0.089	0.929
DEPR	1.912***	0.584	3.274	0.002
GEXP	0.982	0.620	1.583	0.121
IRS	9.975***	2.686	3.714	0.001
LABP	-0.005***	0.002	-2.847	0.007
NUMB	1.100	2.030	0.542	0.591
RURB	-3.861***	1.207	-3.200	0.003

Source: Author's computation, 2023

The FMOLS results for the Southern African region reveal that private sector access to credit (ATC) has a significant positive impact on income inequality (coefficient: 2.775, $p < 0.01$), suggesting that increased access to credit in the region is currently associated with higher inequality. This could indicate that credit access is disproportionately benefiting wealthier groups or regions, rather than addressing inequality. Other significant variables include the dependency ratio (DEPR, coefficient: 1.912, $p = 0.002$) and interest rate spread (IRS, coefficient: 9.975, $p = 0.001$), both of which exacerbate inequality, while labor productivity (LABP, coefficient: -0.005, $p = 0.007$) and urbanization (RURB, coefficient: -3.861, $p = 0.003$) reduce inequality.

4.2. DISCUSSION OF FINDINGS

The findings underscore the contentious role of private sector access to credit in addressing income inequality in Sub-Saharan Africa (SSA). Regionally, credit access in SSA as a whole, and particularly in Southern Africa, appears to exacerbate income inequality, as wealthier groups disproportionately benefit from increased credit availability. This aligns with earlier studies by Adeleye et al. (2020), but contradicts findings by Honohan (2008), Aslan et al. (2017), and Park and Shin (2017), who argued that increased credit access reduces inequality. Notably, in regions like Eastern Africa, increased credit access showed a mitigating effect on inequality, suggesting that equitable distribution of credit resources plays a critical role. West Africa and Middle Africa show mixed, though not significant, results, further emphasizing the complexity of credit access in reducing disparities across SSA.

The uneven distribution of credit resources is a key factor, as financial institutions often favor high-income groups and large corporations over low-income households and SMEs. For instance, in Nigeria, only 3.78% of bank customers accessed credit in 2019, highlighting systemic barriers such as collateral requirements, cumbersome application processes, and risk aversion by banks (Endurance, 2021). This trend is echoed in other SSA countries like Ghana, Kenya, and South Africa, where skewed credit allocation deepens inequality. As such, while credit access has the potential to reduce income inequality when equitably distributed, the prevailing reality in SSA sees credit largely benefiting wealthier populations, exacerbating the income gap and limiting the potential for inclusive economic growth (World Bank, 2022; Ackah & Vuvor, 2011; Aro, 2023).

5. CONCLUSION AND RECOMMENDATION

This research focuses on examining the impact of private sector access to credit on income inequality in Sub-Saharan Africa (SSA). The findings reveal a complex and regionally varied relationship, with credit access in SSA as a whole and in regions like Southern Africa exacerbating income inequality, due to the disproportionate allocation of credit resources to wealthier populations and large corporations, while low-income groups and SMEs remain underserved. However, in Eastern Africa, equitable distribution of credit demonstrates its potential to mitigate inequality, highlighting the importance of inclusive financial practices. Structural barriers, including collateral requirements, risk aversion by financial institutions, and discriminatory lending practices, further compound the inequality gap in many parts of SSA. Therefore, policies that promote equitable access to credit, particularly for low-income households and SMEs, are essential to leveraging credit as a tool for reducing inequality and fostering inclusive economic growth across the region.

Owing to this conclusion emanating from the research findings, it is therefore recommended that:

1) There should be accelerated efforts towards offering interest-friendly credits to low- and middle-income groups in rural and semi-rural areas that are densely populated with SMEs. Regulatory authorities, whether in Eastern, Southern, Western, or Middle Africa, should also make it mandatory for financial institutions to loan out a certain percentage of their annual earnings to registered SMEs and operators in rural areas, who are oftentimes in need of these loans to make profitable investments. In addition, most of these SMEs operate in the informal sector, which incurs bureaucratic costs. Necessary institutions should endeavor to issue a waiver on these SMEs to enable them to come to the formal sectors of the economy with license registrations, as it will help reduce the credit risk lenders hold on them. Emphasis should be placed on SMEs in the above regards because they constitute the most viable channel of equitable income distribution.

REFERENCES

Ackah, J., & Vuvor, S. (2011). *The challenges faced by small & medium enterprises (SMEs) in obtaining credit in Ghana* (pp. 1–56). Retrieved from http://www.diva-portal.org/smash/get/diva2:829684/FULLTEXT01.pdf

AfDB. (2013). *Financial inclusion in Africa*. In T. Triki & I. Faye (Eds.), *Financial Inclusion in Africa*. Retrieved from http://www.afdb.org/Financial_ Inclusion_in_Africa.pdf

AfDB. (2018). *Briefing notes for AfDB long term strategy: Briefing Note 5: Income inequality in Africa.* African Development Bank.

Aro, B. (2023). Niyi Adebayo: Poor access to credit facilities stifling Nigeria's economic growth. *The Cable.* Retrieved from https://www.thecable.ng/niyi-adebayo-poor-access-to-credit-facilities-stifling-nigerias-economic-growth/amp

Aslan, G., Delechat, C., Newiak, M. M., & Yang, M. F. (2017). Inequality in financial inclusion and income inequality. *International Monetary Fund Working Paper Series,* (17/236).

Banerjee, A., & Newman, A. (1993). Occupational choice and the process of development. *Journal of Political Economy, 101*(2), 274–298. https://doi.org/10.1086/261876

Breunig, R., & Majeed, O. (2020). Inequality, poverty, and economic growth. *International Economics,* 161(3), 83-99. https://doi.org/10.1016/j.inteco.2019.12.006

Devarajan, S., & Fengler, W. (2013). Africa's economic boom: Why the pessimists and optimists are both right? *Foreign Affairs, 92*(3), 68–81.

Duvendack, M., & Mader, P. (2019). Impact of financial inclusion in low- and middle-income countries: A systematic review of reviews. *Systematic Review, 42*(1), 33–52.

Endurance, O. (2021). Seven in 10 bank customers lack access to credit. Can fintech save the day? *Businessday NG.* Retrieved from https://businessday.ng/financial-inclusion/article/seven-in-10-bank-customers-lack-access-to-credit-can-fintech-save-the-day/

Honohan, P. (2008). Cross-country variation in household access to financial services. *Journal of Banking and Finance, 32*(11), 2493–2500.

Kim, J. H. (2016). A study on the effect of financial inclusion on the relationship between income inequality and economic growth. *Emerging Markets Finance and Trade, 52*(3), 498–512. https://doi.org/10.1080/1540496X.2015.1047306

Mackinnon, R. I. (1973). *Money and capital in economic development.* Washington, DC: Brookings Institution.

Nel, P. (2018). Inequality in Africa. In T. Binns (Ed.), *Routledge Handbook of African Development.*

Nyarko, C. S., Ahmad, H. A., & Green, C. J. (2020). Financial inclusion and welfare improvement: Empirical evidence from household survey data. *Centre for Global Finance Working Paper Series,* No. 11.

Park, C. Y., & Mercado, R. (2015). Financial inclusion, poverty, and income inequality in developing Asia. *ADB Economics Working Paper Series,* No. 426.

Park, D., & Shin, K. (2017). Financial development and inclusive economic growth. *Emerging Markets Finance and Trade, 53*(3), 2794–2825. https://doi.org/10.1080/1540496X.2017.1333955

PovcalNet. (2014). PovcalNet database. Retrieved from https://www.worldbank.org /en/research/brief/povcalnet.

Sexagaard, M. (2006). Excess liquidity and effectiveness of monetary policy: Evidence from Sub-Saharan Africa. *IMF Working Paper,* WP/06/115.

Van, L. T. H., Vo, A. T., Nguyen, N. T., & Duc, V. H. (2006). Financial inclusion and economic growth: International evidence. *Emerging Market Finance Journal, 57*(3), 239–263.

World Bank. (2014). *Global financial development report: Financial inclusion*. Washington, DC: World Bank.

World Bank. (2022). *Global financial index: Financial inclusion.* Washington, DC: World Bank.