# IMPACT OF FINANCIAL DEVELOPMENT AND FINANCIAL INCLUSION ON INCOME INEQUALITY IN LOW-INCOME COUNTRIES IN AFRICA

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## ABSTRACT

*This research investigates the impact of financial development and financial inclusion on income inequality in low-income African countries over a 24-year period (2000-2023). The study focuses on 19 low-income countries as classified by the World Bank. income inequality remains a significant barrier to economic development in west Africa due to low access of financial serivicees caused by culutural and regional diversity, lack of infrastructure and lack of studies to enhance the long term effect of financial inclusuion initiatives on income inequality, Methodologically, an ex-post facto design is utilized, analyzing historical data sourced from reputable databases such as the International Monetary Fund and World Bank. Employing a quantitative analysis with panel data techniques, the Hausman test identified the fixed effects model as the most appropriate. The findings from the result of fixed effect model reveal a significant negative relationship between financial development and income inequality. Financial inclusion also demonstrates a positive effect by integrating marginalized populations into formal economic activities; this indicates that enhanced financial inclusion can reduce income disparities. The study recommends among others that governments of low-income countries through policymakers should prioritize strengthening the financial sector by improving the availability and accessibility of credit to underserved populations. This includes expanding domestic credit facilities and developing microfinance programs tailored to low-income households and small businesses.*

***Keywords:*** *Financial Development, Financial Inclusion, Income Inequality, Low-Income Countries.*

## 1.0 Introduction

Financial inequality poses a serious threat to economic stability, social cohesion, and individual well-being. It also refers to how income is unevenly distributed which accompanied by wealth inequality (kopp 2024) Studies indicate that countries with significant income and wealth disparities often experience slower economic growth (Ostry et al., 2014). Such inequality can hinder access to essential services like education and healthcare, leading to enduring poverty and limiting social mobility (Corak, 2013). When people perceive that economic opportunities are unfairly distributed, it can lead to political unrest and decreased civic participation.

Additionally, stark inequalities are linked to increased crime and social unrest, which can weaken community structures (Wilkinson & Pickett, 2010). Addressing financial inequality is essential for building a just and inclusive society. Policies such as progressive taxation and expanding access to quality education can help reduce these gaps, ultimately strengthening both the economy and the broader social fabric (Stiglitz, 2012).

Financial inequality in West Africa is a complex issue influenced by a range of interconnected factors. Gaining a clear understanding of these influences is essential for crafting effective policies aimed at reducing disparities and promoting economic fairness in the region. A major contributor to inequality is the structure of West Africa's economy, which is heavily dependent on a narrow set of industries. Agriculture and resource extraction dominate, leaving limited room for economic diversification. This reliance tends to concentrate wealth in the hands of a small elite who control key resources, while the broader population remains stuck in low-wage jobs with minimal prospects for upward mobility. Economies that depend heavily on natural resources often face elevated inequality, as revenues are typically captured by a privileged few rather than being invested back into communities (World Bank, 2021).

Another significant factor is the lack of access to quality education, particularly for women and rural populations. According to UNESCO (2020), inadequate infrastructure and cultural barriers continue to prevent many children from receiving a proper education. This educational gap limits individuals' chances for social and economic advancement, thereby reinforcing cycles of poverty across generations. Acquiring education and skills is essential for accessing better-paying jobs and starting successful businesses, making it a vital focus area for reducing inequality.

In addition, the widespread presence of informal labour markets exacerbates financial disparities. A large portion of the West African workforce is employed informally, where wages are typically low, job security is minimal, and benefits such as healthcare or pensions are often non-existent (ILO, 2019). This lack of stable employment makes households more vulnerable to economic disruptions and deepens existing inequalities. Without the protections and growth opportunities found in the formal sector, many workers struggle to improve their financial situations.

Financial development plays a key role in enhancing financial equality. In regions where the financial system is underdeveloped, low-income individuals often face significant barriers to accessing formal financial services. They are frequently located far from financial institutions and may be unable to afford the minimum balances required to open basic accounts. Additionally, high overdraft fees and service costs prevent them from using essential financial tools such as savings, credit, insurance, and

payment services (Claessens, 2006; Honohan, 2008). As the financial sector grows and becomes more efficient, these costs—both transactional and informational—tend to decline. This progress increases the likelihood that low-income populations will gain access to financial services, promoting broader inclusion (Burgess et al., 2005; Demirguc-Kunt & Levine, 2008).

An inclusive financial system is essential to the health and stability of any economy and has increasingly become a key policy focus across the globe, including in many African nations. The potential of financial inclusion to drive both economic and social empowerment has generated significant political, social, and economic interest. This heightened attention stems from the belief that inclusive finance is a prerequisite for financial deepening, which in turn supports sustained economic growth and development. Achieving long-term financial inclusion has consistently been viewed by policymakers as integral to economic planning. From a theoretical standpoint, numerous arguments highlight the role of inclusive finance in driving economic growth. As early as Schumpeter's work, it was established that finance is a catalyst for economic advancement (Thomi et al., 2021).

Initially, the expansion of financial sector infrastructure was believed to automatically lead to economic development and poverty reduction by increasing access to financial tools. However, such expansion has not always translated into meaningful economic or social progress. Consequently, the policy focus has gradually shifted from merely expanding the financial sector to fostering a genuinely inclusive financial system. This shift is evident in the actions of several sub-Saharan African countries—such as Lesotho, Nigeria, and Rwanda—which have set formal goals to achieve universal financial access by 2020.

Access to finance is seen as a vital enabler, particularly for low-income populations, allowing them to save, borrow, and build assets. This access facilitates investment, especially among small and medium-sized enterprises (SMEs), enabling them to seize growth opportunities and contribute to local economic development. As such, providing access to financial services—especially credit—is critical for promoting inclusive economic growth.

Several studies have been conducted on the financial development, inclusion and income equality parlance. Some of these studies include Damiyano (2023), Klapper and Singer (2016), Akkas, (2021) among others. However, there are few documented studies on the long-term impact of financial development and inclusion on African countries that are characterised by low income and socio-economic challenges relating to financial services. Therefore, this study is aimed at evaluating the impact of financial development and inclusion on income inequality in some selected low- income African countries for the period 2000 – 2023.

The remaining part of the paper is segmented into four sections. These sections are the; literature review, where it carries the theoretical framework and empirical literatures, the methodology, results and discussion as well as conclusion and policy recommendations.

## 2.0 Literature Review

### 2.1 Income Inequality

Income inequality describes the uneven distribution of income across a population. This financial disparity is often linked with wealth inequality, which involves an unequal distribution of assets. As noted by Kopp (2024), income inequality can be examined across various demographic lines, such as gender or race, to highlight different dimensions of the issue. Tools like the Gini Index are commonly used to assess the degree of inequality within a population. Broadly, income inequality refers to the disparity in earnings among individuals or households within an economy and is quantified using meaYou are not consistent with sures like the Gini coefficient, which indicates how far a society deviates from perfect income equality.

### 2.2 Financial Inclusion

Financial inclusion involves initiatives aimed at ensuring that financial products and services are available and affordable to everyone, regardless of their personal wealth or the size of their business (Grant, 2024). The goal is to eliminate the obstacles that prevent individuals from accessing financial systems and using them to enhance their well-being. financial inclusion tend to reduce income inequality through provision of financial services to low income individuals, Also known as inclusive finance, financial inclusion is the process of integrating all members of society into the financial system, allowing them to take full advantage of the benefits it offers (Doğan et al., 2021).

### Financial Development

Financial development refers to the gradual advancement of a country's financial system, involving the growth and diversification of financial institutions. This evolution also includes the expansion and strengthening of financial markets such as stock exchanges, bond markets, and money markets. A well-functioning financial market supports the trading of various financial instruments like stocks, bonds, and derivatives offering investors a wide range of capital allocation options.(world bank 2024)

Such development is crucial for fostering economic growth, as it enables the efficient mobilization and distribution of capital. It serves as an indicator of economic progress and contributes to sustainable development by improving living standards, reducing poverty, and boosting overall economic well-being. Financial development also involves implementing policies, frameworks, and strategies that

enhance access to financial services, increase market depth, and improve the efficiency and stability of financial institutions and markets. A mature financial system helps allocate limited resources more effectively, promoting equitable income distribution and long-term economic sustainability (Slesman, et al, 2019; Tchamyou & Asongu, 2017; Li & Qamruzzaman, 2022; Zoaka & Güngör, 2023; Ogunsola, 2023; Ayagi & Salisu, 2023).

## 2.2 Empirical Literature Review

A good number of studies have been conducted on financial development and financial inclusion and its impact on income inequality across various regions and countries. Some of these studies are reviewed in this section to examine their analytical techniques used and note their findings.

Nadabo et al. (2024) explored the relationship between financial development and income inequality in Nigeria, focusing on the period from 1986 to 2022. Using the ARDL bounds testing method along with the Toda-Yamamoto causality approach, the study examined both the long-term relationship and the direction of causality between the variables. The findings revealed an inverted U-shaped relationship, indicating support for the Financial Kuznets Curve hypothesis in the Nigerian context. Furthermore, the causality analysis showed a one-way causal link from financial development to income inequality.

In a related study, Cong et al. (2023) analyzed the interplay between financial development, income inequality, and institutional quality across 30 Asian countries from 2000 to 2019. Using panel data techniques, the study found that improvements in financial institutions—particularly in terms of access, development, and efficiency—as well as enhanced access to financial markets, contribute to reducing income inequality. Conversely, broader measures of financial development, including the depth of financial institutions and markets, as well as overall financial market development, were associated with an increase in inequality.

Mbona (2022) also investigated the effects of overall financial development, financial access, and financial depth on income inequality across 120 countries using panel data from 2004 to 2019. Applying the system Generalized Method of Moments (GMM), the study concluded that the overall financial development index, along with individual indicators of financial institution and market development, contribute to reducing income inequality.

Similarly, Moheddine et al. (2022) analyzed the causal relationship between financial development, economic growth, and income inequality in Asian and North African countries. Using Fixed Effects (FE) regressions, pooled Ordinary Least Squares (OLS), and system GMM estimations, the study identified a significant threshold effect of economic growth on inequality. This suggests that sustained increases in real per capita income help to lower income inequality in the long run.

In another study, Salman (2021) examined how financial inclusion affects disposable income in Pakistan. Employing a cross-sectional design with both quantitative and descriptive analysis methods, the study found that

financial inclusion has both direct and indirect significant positive impacts on disposable income. In another related study, Adel (2021) focused on the relationship between financial development, income inequality, and poverty reduction from 1980 to 2017. Using baseline regression analysis, the study revealed that financial development—measured through indicators such as private sector credit and liquid liabilities—plays a role in reducing poverty levels.

Queiroz et al (2020) investigated the relationship between financialization and income inequality, addressing a gap in existing literature where findings remain limited and inconclusive. Analyzing data from 33 countries between 1996 and 2015, the study focused on three dimensions of financialization—financial, nonfinancial, and household sectors. The results indicated that only household financialization, particularly household debt, had a consistently positive and statistically significant effect on income inequality. This finding was robust across different estimation techniques, including system GMM and difference GMM, as well as when alternative measures of income inequality were applied.

In a related study, Chi-Yang Chu et al. (2020) examined how financial depth influences income inequality during periods of economic transition, using provincial-level panel data from China. The research found a distinctly asymmetric and approximately inverted-L shaped relationship between financial depth and urban income inequality. Their analysis revealed that financial depth explained between 11% and 28% of the variation in urban income inequality. Moreover, the marginal effects of financial depth were found to shift depending on factors such as the degree of credit constraints, the share of state ownership, and the stage of economic development. Bezemer (2019) explored the relationship between different types of credit and income inequality, using the system-GMM estimation method. The findings showed that an increase in mortgage lending tends to exacerbate income inequality, whereas credit extended to non-financial businesses has an inequality-reducing effect. However, the impact of business credit is influenced by various macroeconomic and labor market conditions, such as wage share, investment levels, trade openness, and labor force participation, which affect overall income generation.

Kai and Hamori (2009) examined the interplay between globalization, financial depth, and inequality in sub-Saharan Africa over the period 1980 to 2002. The study concluded that globalization generally worsens income inequality. However, this effect is contingent on a country's level of development. Additionally, while financial depth typically contributes to reducing inequality, the equalizing impact of financial depth is undermined by globalization. In a more recent study, Nsiah and Tweneboah (2024) analyzed the threshold effects of financial inclusion on poverty reduction in Africa and assessed the moderating role of institutional quality. Utilizing Hansen's threshold estimation

technique on data from 2004 to 2020, the study identified two key financial inclusion thresholds: below 0.0534, financial inclusion significantly boosts household consumption, thus reducing poverty. In contrast, values between 0.0534 and 0.3141 negatively affect poverty reduction, while levels above 0.3141 again enhance household consumption and help lower poverty rates.

In a related study, Samuel et al. (2023) examined the role of financial inclusion in addressing income inequality in Nigeria, utilizing the Autoregressive Distributed Lag (ARDL) approach on data spanning from 1981 to 2021. The findings revealed that in the short term, financial stability negatively affects income inequality, though this effect is statistically insignificant. Financial depth was found to have a statistically significant (at the 10% level) positive effect on inequality. Moreover, the standard of living significantly reduced inequality at the 1% level, while economic growth had a statistically significant (1%) positive impact on inequality. In the long run, financial stability continued to exhibit a positive but insignificant influence on inequality, whereas financial access and economic growth were both positively and significantly associated with higher inequality. Additionally, Shinoda et al. (2023) analyzed the effects of digital financial inclusion and bank competition on bank stability in Sub-Saharan Africa over the period 2014 to 2020. The study applied the two-step System Generalized Method of Moments (GMM) technique and used variables such as a digital financial inclusion index, z-score (as a measure of bank stability), the Herfindahl–Hirschman Index (HHI), and non-performing loans. The results indicated that digital financial inclusion significantly enhances bank stability, as reflected by an increase in the z-score, and is associated with a decrease in non-performing loans.

Shani et al. (2023) explored the determinants of financial inclusion in Sub-Saharan Africa, employing a dynamic panel model using data from 2000 to 2017. The study revealed that both financial globalization and literacy rates significantly and positively influence financial inclusion. Conversely, the growth of the rural population was found to have a notably negative effect on financial inclusion in the region. Similarly, Yakubu et al. (2023) analyzed the relationship between financial inclusion and economic growth in West Africa, considering the moderating role of financial openness. Using the pooled Estimated Generalized Least Squares (EGLS) method with data from 10 ECOWAS countries between 2010 and 2017, the study concluded that financial inclusion has a positive and significant effect on economic growth, both directly and through its interaction with financial openness. In another study, Victoria et al. (2023) investigated how financial development affects income inequality across African countries. Utilizing the System Generalized Method of Moments (SGMM) for analysis, the study found that various aspects of financial development influence inequality differently. Specifically, improvements in financial access, stability, and efficiency were associated with reductions in income inequality, while greater financial depth tended to worsen it.

Biruk and Dong (2022) analyzed the relationship between financial inclusion, fintech, and income inequality across 39 African nations for the years 2011, 2014, and 2017. Utilizing pooled Ordinary Least Squares (OLS) and two-stage least squares (2SLS) estimation techniques, the study found that institutional factors—such as political stability, corruption control, and government effectiveness—significantly influence the development of fintech and financial inclusion. Additionally, the research indicated that fintech facilitates formal banking participation, thereby enhancing financial inclusion. Similarly, (2022) examined the role of financial inclusion in addressing poverty, income inequality, and financial stability in developing countries through the lens of public good theory. Analyzing panel data from 69 developing nations between 2002 and 2020 using Fixed Effects Model (FEM), pooled OLS, and Generalized Method of Moments (GMM), the study concluded that financial inclusion plays a positive role in reducing both poverty and income inequality while also enhancing financial system stability. Furthermore, Manh et al. (2022) investigated the effect of financial inclusion on income inequality in Europe over the period 2011–2017. The study applied a two-stage least squares (2SLS) regression approach and discovered that financial inclusion, higher educational attainment among those aged 25 and above, and greater economic openness were associated with reduced income inequality. Conversely, the employment-to-population ratio was found to have a direct and positive relationship with income inequality.

Driss (2022) explored the links among financial inclusion, poverty, and income inequality across 30 European countries from 2004 to 2019. Using a composite Financial Inclusion Index (FII) derived from principal component analysis (PCA), the study employed Fixed Effects, Random Effects, and GMM techniques for its analysis. Results revealed that financial inclusion is significantly associated with poverty reduction in European countries. In a similar investigation, Dogan and Guler (2021) explored the relationship between financial inclusion and income inequality in the Fragile Five countries using panel data from 2005 to 2008. The analysis involved Principal Component Analysis (PCA), the Parks-Kmenta Estimator, and the Dumitrescu and Hurlin Panel Granger Causality test. The study concluded that financial inclusion has a negative association with income inequality, suggesting that greater financial inclusion leads to reduced inequality.

Similarly, Relwendé et al. (2021) examined the interplay between financial inclusion, income inequality, and institutional quality in 28 sub-Saharan African countries from 2004 to 2016. Using a finite mixture model, the research identified heterogeneous effects across countries, revealing that financial inclusion is more effective in lowering income inequality in nations with higher institutional quality. In a related study, Athanasius et al. (2017) analyzed the influence of different dimensions of

financial inclusion on income inequality in sub-Saharan Africa, using data from the 2011 World Bank Global Findex. The study found that specific financial behaviours—such as using accounts for business transactions, making electronic payments, and engaging in formal savings—are positively linked to income inequality, implying that these forms of financial engagement may benefit certain groups more than others.

### 2.3 Theoretical Framework

#### Theory of Size and Income Distribution

The Theory of Size and Income Distribution examines how wealth and income are shared among individuals or households within a society, focusing on the causes of inequality and the concentration of wealth. A key component of this theory is the analysis of size distribution, which investigates how income or wealth is allocated across different population groups—often highlighting significant concentration among the wealthiest, as illustrated by the Pareto principle (or 80/20 rule).

Various theoretical models explore how income is distributed. Classical theories, like Marx's labor-capital framework, contrast with neoclassical perspectives that link income to individual productivity and market forces. Endowment theory, on the other hand, connects income levels to the distribution of assets and human capital such as skills and education. The Kuznets curve proposes that inequality tends to rise during the initial stages of economic development but may decline as industrialization progresses.

Several factors influence income distribution, including education, technological advancements, globalization, market dynamics, and government interventions such as taxation and social welfare. To assess income inequality, economists use tools like the Gini coefficient, Lorenz curve, and Theil index, which provide quantitative insights into the extent of inequality and help evaluate the effectiveness of policy responses (Atkinson, 2015; Piketty, 2014; Kuznets, 1955).

The theory also draws from the work of German economist Adolph Wagner (1835–1917), who emphasized the relationship between the expansion of the public sector and income distribution. Wagner suggested that as economies grow, government involvement tends to increase, which significantly influences how income is distributed across society. This theory was adopted as a theoretical framework because of the clarity with which it explain income inequality in a society which is the primary theme of the study as it explores how financial inclusion affects inequality.

## 3.0 Methodology

This research employed the use of panel data methods and quantitative analysis to investigate how financial development and financial inclusion influence income inequality in low-income African countries over a 23-year period (2000–2023). Specifically, it utilized an ex-post facto research design.

The study focused on the 19 low-income nations as classified by the World Bank (2024) based on gross national income (GNI) per capita. These countries are characterized by underdeveloped financial systems, significant income inequality, and low levels of financial inclusion. These countries are; Burkina Faso, Burundi, Central Africa Republic, Chad, DR Congo, Eritrea, Ethiopia, Gambia, Guinea Bissau, Liberia, Madagascar, Mali, Mozambique, Niger, Rwanda, Sierra Leone, Somalia, Togo, and Uganda.

The data for this study was collected from secondary sources. The sources of data include the International Monetary Fund (2024), the World Economic Outlook database (2024), and the World Bank databases (2024).

### 3.1 Model Specification

The study employed panel data regression model to examine the relationship between income inequality proxied by (GINI Coefficient) and some selected independent variables. The model is specified as follows:

$$GINI_{it} = \beta_0 + \beta_1 LFIDEP_{it} + \beta_2 LFINC_{it} + \beta_3 INF_{it} + \beta_4 LGOVEX_{it} + \beta_5 LEXP_{it} + \in_{it} \quad (3.1)$$

Where:

$GINI_{it}$: Log of the Gini coefficient, representing income inequality for country i at time t.

$LFIDEP_{it}$: Log of financial development for country i at time t.

$LFINC_{it}$: Log of depositors with commercial banks for country i at time t, representing financial inclusion.

$INF_{it}$ : Inflation rate for country i at time t, representing macroeconomic stability.

$LGE_{it}$: Log of government expenditure for country i at time t, representing public sector spending.

$LEXP_{it}$ : Log of exports for country i at time t, representing trade openness.

$\beta_0$: Constant term.

$\beta_1$ - $\beta_5$: Coefficients of the independent variables, indicating their respective impacts on income inequality.

it - panel identifiers

$\epsilon_{it}$: Error term, capturing unobserved factors affecting income inequality.

### 3.2 Variables Definition, Measurement and a priori expectations.

| Variables | Measurement | Types | Sources | Result/Expected Outcome |
|---|---|---|---|---|
| Income Inequality (GINI) | The Gini index measures the extent to which the distribution of income or consumption among individuals or households | Dependent Variable | World economic data base (2024) | Nill |
| Financial Development (FIDEP) | Financial Development Index | Independent | World economic data base (2024) | Positive |
| Financial Inclusion (FINC) | Number depositors with commercial banks per 1,000 adults | Independent | International monitory funds (2024) | Positive |
| Inflation (INF) | Inflation as measured by the consumer price index reflects the annual percentage change in the cost | Control Variable | World economic outlook (2024) | Negative |
| Government Expenditure (GE) | Gross national expenditure (formerly domestic | Control Variable | World economic data base (2024) | Positive |

| | | | | |
|---|---|---|---|---|
| | absorption) is the sum of household final consumption expenditure | | | |
| Exports Diversity (EXPD) | Ration of the share to the total exports | Control Variable | World economic data base (2024) | Positive |

Source: Author's Compilation, 2024.

### 3.3 Method of Data Analysis

Descriptive statistics were utilized to present an overview of the variables across the selected low-income African countries. To explore the bivariate associations among income inequality (GINI), financial development (FIDEP), financial inclusion (measured by depositors with commercial banks—FINC), inflation (INF), government expenditure (GE), and exports (EXP), correlation analysis was conducted. Panel regression analysis was also performed, applying either fixed-effects or random-effects models based on the outcome of the Hausman test. This regression assessed the impact of financial development and financial inclusion (represented by DCB) on income inequality, while controlling for inflation, government spending, and export levels.

To ensure the robustness and validity of the findings, several diagnostic tests were carried out. These included the Breusch-Pagan/Cook-Weisberg test to detect heteroskedasticity, the Variance Inflation Factor (VIF) test to check for multicollinearity, and the Wooldridge test to identify autocorrelation in panel data.

## 4.0 Results and Discussions

### 4.1 Descriptive Statistics

The summary data for the main variables considered in the analysis—income inequality (GINI), financial development (FIDEP), depositors with commercial banks (FINC), inflation (INF), government spending (GOVEX), and exports (EXP) are presented in Table 4.1. The table offers a fundamental knowledge of these variables' distribution and properties within the dataset by shedding light on their primary tendencies, variability, and range.

**Table 4.1: Descriptive Statistics**

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| GINI | 69 | 3.695356 | .1370687 | 3.394508 | 4.028917 |
| FIDEP | 423 | -2.511448 | .6997438 | -4.55638 | -.7667937 |
| FINC | 231 | 4.895964 | 1.117455 | 2.023128 | 7.611843 |

| | | | | | |
|---|---|---|---|---|---|
| INF | 380 | 8.747169 | 32.43749 | -8.97474 | 513.9069 |
| GOVEX | 384 | 4.732117 | .0908857 | 4.498611 | 5.30316 |
| EXP | 395 | 2.848268 | .536852 | 1.488119 | 3.961648 |

***Source**: Author's Computation using Stata 15.0, 2024.*

Table 4.1 provide an overview of the variables used in the analysis. **GINI,** representing income inequality, has 69 observations with a mean of 3.695 and low variability (standard deviation of 0.137), suggesting moderate differences in inequality levels. **FIDEP** (financial development) has 423 observations, a mean of -2.511, and moderate variability, indicating low levels of financial development across the sample. **FINC** (depositors with commercial banks) shows significant variation, with a mean of 4.896 and values ranging from 2.023 to 7.612 across 231 observations. Inflation **(INF)** is highly variable, with a mean of 8.747 and extreme outliers, as indicated by a standard deviation of 32.437 and a range spanning from -8.975 to 513.907. **GOVEX**(government expenditure) and **EXP** (exports) demonstrate relatively stable distributions, with means of 4.732 and 2.848, respectively, and low standard deviations, indicating consistent trends in these variables across the sample.

### 4.2 Correlation Estimation

The correlation analysis, which shows the direction and degree of correlations between the main variables; income inequality (GINI), financial development (FIDEP), depositors with commercial banks(FINC), inflation (INF1), government spending (GOVEX), and exports (EXP)is shown in Table 4.2.

**Table 4.2: Correlation Analysis**

| | **GINI** | **FD1** | **DCB** | **INF** | **GE1** | **EXP** |
|---|---|---|---|---|---|---|
| **GINI** | 1.0000 | | | | | |
| **FIDEP** | 0.2333 | 1.0000 | | | | |
| **FINC** | 0.0106 | 0.4649 | 1.0000 | | | |
| **INF** | -0.0027 | 0.1350 | -0.2778 | 1.0000 | | |
| **GOVEX** | 0.2703 | -0.1483 | -0.1391 | -0.1739 | 1.0000 | |
| **EXP** | 0.1138 | 0.4271 | 0.4612 | -0.0011 | -0.3530 | 1.0000 |

***Source**: Author's Computation using Stata 15.0, 2024.*

The correlation analysis in Table 4.2 examines the strength and direction of linear relationships between key variables. GINI (income inequality) has a positive but weak correlation with FIDEP (financial development, 0.2333), indicating a slight association between financial development and inequality. Its correlation with FINC (depositors with commercial banks, 0.0106) and INF(inflation, -0.0027) is near zero, suggesting no meaningful relationship. GOVEX (government expenditure, 0.2703) shows a weak positive correlation with LGINI, implying a slight connection between higher government spending and inequality. Similarly, EXP (exports, 0.1138) has a weak positive correlation with LGINI, suggesting a limited relationship. Other notable correlations include a moderate positive relationship between FIDEP and FINC (0.4649), indicating that financial development is associated with higher credit to banks, and between FIDEP and EXP (0.4612), suggesting that increased domestic credit aligns with higher export levels. Conversely, INF negatively correlates with FIDEP (-0.2778), showing that inflation may reduce depositors with commercial banks availability. However, most correlations are weak to moderate, indicating complex interactions among the variables.

## 4.3 Diagnostic Tests

### 4.4.1 Test for Heteroskedasticity

The findings of the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity, which determines whether the regression model's residuals show constant variance, are shown in Table 4.3. In order to confirm the homoskedasticity assumption and guarantee the validity and reliability of the regression analysis, this test is crucial.

**Table 4.3: Breusch-Pagan / Cook-Weisberg test for heteroskedasticity**

| Variables: fitted values of LGINI | |
|---|---|
| chi2(1)= | 0.02 |
| Prob > chi2= | 0.8746 |
| Ho: Constant variance | |

***Source**: Author's Computation using Stata 15.0, 2024.*

The Breusch-Pagan/Cook-Weisberg test for heteroskedasticity examines whether the residuals of the regression model have constant variance (homoskedasticity). With a test statistic ($chi^2$) of 0.02 and a p-value of 0.8746, which is significantly greater than 0.05, the null hypothesis of constant variance cannot be rejected. This indicates no evidence of heteroskedasticity, implying that the model satisfies the assumption of homoskedasticity, which is crucial for reliable and unbiased regression estimates.

### 4.4.2 Multicollinearity Test

As shown in Table 4.4, the independent variables' Variance Inflation Factors (VIFs), which are used to identify multicollinearity in the regression model, show that there is no significant multicollinearity among the variables because all of the values fall below the threshold of 10, and the mean VIF is 1.43, indicating that the independent variables are not highly correlated and guaranteeing the reliability of the regression estimates.

**Table 4.4: Variance Inflation Factors for Multicollinearity**

| Variable | VIF | 1/VIF |
|---|---|---|
| LFINC | 1.69 | 0.592251 |
| LEXP | 1.52 | 0.656607 |
| LFIDEP | 1.50 | 0.666335 |
| INF | 1.25 | 0.798822 |
| LGOVEX | 1.19 | 0.842113 |
| Mean VIF | 1.43 | |

***Source**: Author's Computation using Stata 15.0, 2024.*

Table 4.4 presents the Variance Inflation Factors (VIFs) for the independent variables in the model, which assess the degree of multicollinearity. The VIF values for all variable; **LFINC (1.69), LEXP (1.52), LFIDEP (1.50), INF (1.25)**, and **LGOVEX (1.19)** are well below the threshold of 10, indicating that multicollinearity is not a concern in this model. The mean VIF of 1.43 further confirms the absence of significant multicollinearity, suggesting that the independent variables are not highly correlated with each other, which enhances the reliability of the regression results.

### 4.4.3 Test for Hausman Fixed Effect

The Hausman test results, which are used to assess whether the Fixed Effect or Random Effect model is better suited for the data, are shown in Table 4.5. To determine whether the discrepancies are systematic, the test compares the coefficients derived from the two models.

**Table 4.5: Hausman Test for Fixed Effect Model**

| | |
|---|---|
| chi2(5) = | (b-B)'[(V_b-V_B)^(-1)](b-B) |
| = | 18.11 |
| Prob>chi2 = | 0.0028 |

Ho: Difference in coefficients not systematic

***Source**: Author's Computation using Stata 15.0, 2024.*

The Hausman Test for Fixed Effect Model in Table 4.5 examines whether the fixed effects model is more suitable than the random effects model. The test statistic is 18.11, and the p-value is 0.0028, which is less than the 0.05 significance level. This leads to the rejection of the null hypothesis, indicating that the differences in coefficients between the fixed and random effects models are systematic. Therefore, the fix/ed effects model is more appropriate for this analysis, as it accounts for individual-specific variations that the random effects model does not capture.

### 4.3 Result of Fixed and Random Effect Models

The findings of the Fixed Effect and Random Effect models are shown in Table 4.6, which compares the coefficients, standard errors, t-values, and p-values for different variables in connection to income inequality (LGINI). Whereas the Random Effect model presumes that these effects are uncorrelated with the explanatory factors, the Fixed Effect model takes individual-specific effects into consideration. The two models are compared in order to determine which model best captures the variances in income inequality. However, the Hausman test preferred fixed effects model is more appropriate for this analysis; therefore the fixed effect model is interpreted below.

**Table 4.6: Fixed and Random Effect Models**

| **Variables** | **Fixed Effect Model** | | | | **Random Effect Model** | | | |
|---|---|---|---|---|---|---|---|---|
| **LGINI** | **Coef.** | **Std. Err.** | **t** | **P>t** | **Coef.** | **Std. Err.** | **T** | **P>t** |
| LFIDEP | -.3413791 | .0915953 | -3.73 | 0.003 | -.0286495 | .0554586 | -0.52 | 0.605 |
| LDCB | -.0693853 | .0162405 | -4.27 | 0.001 | -.0617131 | .0206619 | -2.99 | 0.003 |
| INFL | -.002233 | .002849 | -0.78 | 0.448 | -.0027086 | .003705 | -0.73 | 0.465 |
| LGOVEXP | .5159603 | .1892453 | 2.73 | 0.018 | .2659788 | .2206649 | 1.21 | 0.228 |
| LEXPT | .0051758 | .0552889 | 0.09 | 0.927 | .0204438 | .0616908 | 0.33 | 0.740 |
| Cons | .7866255 | 1.01235 | 0.78 | 0.452 | 2.67393 | 1.103399 | 2.42 | 0.015 |

***Source**: Author's Computation Using Stata 15.0, 2024.*

Table 4.6 presents the results from the Fixed Effect Model, showing the relationship between various factors and income inequality (LGINI). Financial development (LFIDEP) has a significant negative relationship with income inequality, with a coefficient of -0.3414 and a p-value of 0.003, indicating that

1% increase in financial development will result to 34% decrease in income inequality. Domestic credit to banks (LFINC) also has a significant negative impact, with a coefficient of -0.0694 and a p-value of 0.001, suggesting that increased 1% increase in financial inclusion will cause a 6% decrease in inequality. Government expenditure (LGOVEX) shows a significant positive relationship with income inequality, with a coefficient of 0.5160 and a p-value of 0.018, implying that higher government spending is linked to greater inequality. In contrast, inflation (INFL) has a coefficient of -0.0022 and a p-value of 0.448, which is not statistically significant, indicating that inflation does not significantly affect income inequality. Similarly, exports (LEXPT) have a coefficient of 0.0052 and a p-value of 0.927, suggesting no meaningful impact on income inequality. The constant term is not significant, with a coefficient of 0.7866 and a p-value of 0.452.

### 4.4 Discussion of Findings

The study established a significant negative relationship between financial development (LFIDEP) and income inequality (LGINI), with a coefficient of -0.3414 and a p-value of 0.003, indicating that financial development helps reduce income inequality. This finding aligns with Adel (2021), who observed that financial development through private sector credit reduces income inequality in Sub-Saharan Africa. Similarly, Victoria et al. (2023) demonstrated that access, stability, and efficiency dimensions of financial development effectively reduce inequality in African countries. Relwendé et al. (2021) further emphasized that the reduction in inequality is more pronounced in countries with high institutional quality, where financial development is better managed. Additionally, Moheddine et al. (2022) provided evidence of a long-term inverted U-shaped relationship between financial development and income inequality, where initial financial deepening may exacerbate inequality before reducing it as systems mature. However, Cong et al. (2023) highlighted that certain dimensions of financial development, particularly financial depth, can exacerbate inequality if financial resources are concentrated among the wealthy, underscoring the need for inclusive policies.

Empirical evidence supports the positive role of financial inclusion in reducing income inequality by expanding access to financial services for marginalized groups. Beauclair et al. (2023) demonstrated that financial inclusion significantly lowers income inequality in Sub-Saharan Africa, particularly in Christian-dominated and French-speaking countries. This view is supported by Driss (2022), who found that financial inclusion reduces income inequality in both high- and low-income countries, with stronger effects in low-income contexts. Relwendé et al. (2021) emphasized the importance of institutional quality, showing that countries with better governance experience a greater reduction in inequality through financial inclusion. Furthermore, Samuel et al. (2023) highlighted that

financial access significantly lowers inequality in Nigeria, though financial stability and depth showed mixed results. Finally, Ismail et al. (2022) provided cross-country evidence showing that financial inclusion reduces poverty and income inequality in developing countries, particularly when supported by favorable institutional frameworks. This supports the finding of this study that financial inclusion reduces income inequality among the low-income countries among the African countries

## 5.0 Conclusion and Policy Recommendations

The study concludes that financial development and financial inclusion play vital roles in reducing income inequality in low-income African nations. The results indicate that financial development—assessed using indicators like domestic credit and the depth of the financial system—has a significant negative correlation with income inequality. This implies that a more advanced financial system can help narrow economic gaps by improving access to credit, stimulating investment, and expanding economic opportunities for disadvantaged populations. The study highlights that financial development promotes inclusive growth by bringing marginalized groups into the economic mainstream. These findings support theoretical frameworks such as the Financial Kuznets Curve, which suggests that as financial systems evolve, income inequality tends to decline. Therefore, the study makes the following recommendations in line with the conclusion of the study:

(i) It is recommended that governments of low income countries through policymakers should prioritize strengthening the financial sector by improving the availability and accessibility of credit to underserved populations. due significant negative relationship between financial development (LFIDEP) and income inequality (LGINI), indicating that financial development helps reduce income inequality, This includes expanding domestic credit facilities and developing microfinance programs tailored to low-income households and small businesses.

(ii) It is also recommended that governments of low income countries should promote education of individuals on the use of financial products and services to maximize the benefits of financial inclusion, as this will empower low-income groups to make informed decisions and participate effectively in the financial system. also Samuel et al. (2023) highlighted that financial access significantly lowers inequality in Nigeria, though financial stability and depth showed mixed results.

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