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## **Assessing the impact of bank recapitalization and public debt overhang on financial inclusion in Africa: Evidence on the moderating influence of governance quality**

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**Abstract**--This study investigates the influence of governance quality as a moderating effect of bank recapitalization and public debt overhang on financial inclusion in Africa. The research employs a variety of econometric estimation techniques, such as the two-step Generalized Method of Moments (GMM) estimator, the Hausman test, the Random Effects Model, and Ordinary Least Squares (OLS), to ensure robustness and address potential endogeneity issues, utilizing panel data from the World Development Indicators (WDI) from 2003 to 2024. The results indicate that financial inclusion is substantially influenced by bank recapitalization; however, the magnitude of this effect is contingent upon the quality of governance. In the same vein, financial inclusion is adversely affected by the burden of public debt overhang; however, this effect is mitigated by robust governance mechanisms. The interaction terms suggest that governance quality mitigates the adverse consequences of public debt overhang and augments the beneficial effects of bank recapitalization. The study advocates for the implementation of more stringent regulatory frameworks to guarantee that bank recapitalization initiatives result

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in a more comprehensive financial inclusion. Future studies could examine how macroeconomic shocks like inflation and currency rate volatility affect bank recapitalisation and financial inclusion.

**Keywords**--Recapitalization, Public Debt, Financial Inclusion, Governance Quality, financial stability, economic growth.  
JEL Classifications: **G21, G28, H63, O43, E44, F35, C33, D73, O55**

## Introduction

Financial inclusion has gained significant attention in recent years as a critical driver of economic development and poverty alleviation in Africa. Defined as the accessibility and affordability of financial services for individuals and businesses, financial inclusion is essential for fostering economic growth, reducing inequality, and enhancing overall financial stability (Saienko *et al.*, 2025; Ibitoye *et al.*, 2025; Mussarrafah & Lailiyah, 2025). However, despite concerted efforts by policymakers and financial institutions, Africa remains one of the most financially excluded regions in the world (Mhlanga, 2025; Jraissati, 2025). Structural challenges such as limited banking infrastructure, regulatory inefficiencies, and macroeconomic instabilities continue to hinder access to formal financial services (Iddrisu *et al.*, 2025). Among these challenges, two critical macroeconomic factors bank recapitalization and public debt overhang have emerged as key determinants of financial inclusion.

Additionally, governance quality has been suggested as a potential moderating factor influencing the effectiveness of these financial policies (Yan, 2025; Kiran, Naeem, & Rabbani, 2025). Bank recapitalization refers to the process by which banks strengthen their capital base to enhance their resilience against financial shocks and support economic growth. In many African economies, bank recapitalization is mandated by regulatory authorities to ensure financial stability and build public confidence in the banking sector (Pillah & Djebah, 2024). Higher capital adequacy requirements are believed to improve the banking sector's ability to lend, thereby enhancing financial inclusion (Wanjiru *et al.*, 2024). However, an opposing argument suggests that stringent capital requirements may lead to bank consolidation, reducing the number of financial institutions and limiting access to credit for small businesses and individuals (Taib *et al.*, 2025). Given the dual nature of its impact, there is a need for empirical investigation into how bank recapitalization influences financial inclusion across different African economies. Similarly, public debt overhang a situation where excessive debt burdens constrain government spending and economic performance presents another major challenge to financial inclusion (Yusuf & Mohd, 2024; Musa *et al.*, 2024). High levels of public debt can crowd out private investment, limit government capacity to invest in financial infrastructure, and erode macroeconomic stability (Righteous *et al.*, 2024). In Africa, where many economies struggle with high debt-to-GDP ratios, understanding the extent to which public debt hinders financial inclusion is crucial. Theoretically, excessive public debt may divert resources away from financial sector development, leading to restricted access to credit and limited financial service delivery (Challoumis & Eriotis, 2024). Conversely, well-managed public debt could enhance economic stability and indirectly support

financial inclusion through improved public investments in digital financial services and infrastructure.

Several researchers have examined the impact of bank recapitalization and public debt on financial inclusion, though studies integrating governance quality as a moderating factor remain scarce. Ezeunwo *et al.* (2025) analyzed the effects of banking sector reforms, including recapitalization, on financial development in sub-Saharan Africa, finding that increased capital requirements generally improved financial access but also led to reduced competition in the banking sector. Similarly Sukmana and Trianto (2025) investigated the role of bank regulation in financial inclusion and found that stringent capital adequacy rules sometimes constrained credit availability, particularly for small enterprises. On the issue of public debt Ogonegbu and Kagwaini (2025) highlighted the adverse consequences of excessive debt accumulation on economic growth and financial stability, arguing that high debt burdens often lead to reduced government spending on financial infrastructure. A study by Ihsan *et al.* (2025) focused on African economies and demonstrated that high public debt levels negatively affected financial sector development by diverting resources from productive investments. Governance quality has also been a subject of interest in financial inclusion research. Efunniyi, *et al.* (2024) provided evidence that strong governance frameworks enhance financial sector development by ensuring transparency, regulatory effectiveness, and institutional stability. In the African context, Abor *et al.* (2024) found that governance quality significantly influences the success of financial inclusion policies, particularly in countries with well-functioning legal and institutional frameworks.

Despite the recognized impact of bank recapitalization and public debt on financial inclusion, there is limited research exploring their interaction within the African context. Furthermore, existing studies fail to account for the moderating role of governance quality in shaping these relationships. Governance quality, which encompasses factors such as regulatory effectiveness, corruption control, and institutional stability, plays a pivotal role in determining the success of financial policies. Strong governance structures can enhance the positive effects of bank recapitalization and mitigate the adverse impacts of public debt, fostering a more inclusive financial system. Conversely, weak governance can exacerbate financial exclusion by enabling inefficiencies and limiting regulatory enforcement. While prior studies have examined the effects of bank recapitalization and public debt independently, there is a lack of comprehensive research investigating their combined influence on financial inclusion in Africa. Moreover, the moderating effect of governance quality remains underexplored, despite its critical role in shaping financial outcomes. The novelty of this research lies in its holistic approach to assessing financial inclusion by integrating three crucial elements bank recapitalization, public debt overhang, and governance quality within a unified framework. By employing empirical methods to analyze cross-country data from African economies, this study aims to provide new insights into the conditions under which financial policies succeed or fail in promoting financial inclusion. Addressing these research gaps is vital for policymakers, regulators, and financial institutions seeking to design effective strategies to enhance financial inclusion. The findings of this study will offer practical policy recommendations on balancing recapitalization mandates, managing public debt,

and improving governance frameworks to create a more inclusive and resilient financial system in Africa. Ultimately, this research contributes to the broader discourse on sustainable financial development and economic growth in emerging markets.

### **Literature Review**

This literature review investigates the relationship between bank recapitalization, public debt overhang, and financial inclusion in Africa from the perspective of financial literacy theory, with an emphasis on the moderating influence of governance quality (Lusardi & Mitchell, 2014). The financial literacy theory posits that the capacity of individuals to access, comprehend, and utilize financial information is essential for the making of informed financial decisions, which in turn improves their engagement with formal financial services. In the context of Africa, where substantial portions of the population are unbanked, financial literacy not only affects the demand for financial services but also determines the extent to which structural advancements in the financial sector result in broader inclusion (Kodongo, 2018; Ediagbonya & Tioluwani, 2023). The significance of financial literacy in the promotion of financial inclusion has been consistently emphasized by empirical research. Research conducted by Mejía *et al.* (2022) has shown that increased usage of bank accounts, credit products, and insurance services is correlated with higher levels of financial literacy. This body of work implies that individuals are more inclined to interact with the formal financial sector when they are better prepared to comprehend and manage financial products, thereby contributing to enhanced economic outcomes (Uzzi, 1999; Merton & Bodie, 1995; Remund, 2010). Enhanced capacity to manage personal finances in the face of macroeconomic uncertainties, as well as increased savings and investment behavior, have been associated with initiatives aimed at enhancing financial literacy in Africa.

Bank recapitalization is a critical factor in ensuring that financial institutions are robust and capable of extending credit to marginalized populations, given this context (Mousa & Ozili, 2023). Empirical research has demonstrated that banks that are adequately capitalized are more advantageously situated to allocate resources towards technology and branch networks, which are indispensable for reaching marginalized and remote communities (Ostrom & Gardner, 1993; Kane, 1996). Nevertheless, the advantages of recapitalization may be limited if the public is unable to comprehend and capitalize on the improved financial products and services that these institutions provide. In this respect, financial literacy serves as a catalyst that enhances the beneficial effects of bank recapitalization on financial inclusion by allowing individuals to make informed decisions about borrowing, saving, and investing. Another substantial obstacle is the public debt overhang. Government spending on essential services and infrastructure, including initiatives aimed at expanding financial inclusion, can be impeded by high levels of public debt. Research suggests that governments in countries with substantial debt are unable to subsidize financial sector reforms or invest in technologies that reduce transaction costs due to fiscal constraints (Senbet & Otchere, 2006; Chow & Fung, 2000). Financial literacy theory posits that citizens are more likely to demand transparency and accountability in public finance when they have a comprehensive understanding of fiscal concepts. Individuals

with greater financial competence may be more resilient in environments where public debt undermines confidence, as they may actively pursue alternative channels for financial services (Crockett, 1996). Nevertheless, even well-capitalized banks may encounter difficulty in expanding their reach if they lack sufficient financial literacy, as potential clients are dubious about the risks and benefits of interacting with formal financial institutions.

Governance quality plays a critical role in this equation by moderating it, the impact of bank recapitalization and public debt overhang on financial inclusion is significantly influenced by governance quality, which includes transparency, accountability, and effective regulatory frameworks. Debrun *and* Kumar (2009) contend that the adverse consequences of high public debt can be mitigated by robust governance mechanisms, which guarantee the efficient operation of financial institutions and the stability of fiscal policies. Additionally, the environment in which the benefits of bank recapitalization are completely realized is facilitated by good governance, which is associated with the improved dissemination of financial information and educational initiatives that enhance financial literacy (Williams, 2007; VanEssen *et al.*, 2013). Conversely, weak governance frequently exacerbates the detrimental effects of public debt and restricts the efficacy of financial sector reforms, as insufficient supervision may result in resource misallocation and diminished trust among potential financial service users (Heylen *et al.*, 2013). These relationships are substantiated by an increasing corpus of empirical literature. For instance, research has demonstrated that African nations with superior governance and financial literacy exhibit greater enhancements in financial inclusion subsequent to bank recapitalization initiatives (Musau *et al.*, 2022; Murshed *et al.*, 2022). In contrast, the beneficial effects of financial reforms are frequently diminished in countries with inadequate governance and substantial public debt, resulting in persistent disparities in financial access. Financial literacy is a direct driver of financial inclusion and an essential moderator that influences the impact of broader financial sector policies, according to this literature.

There is substantial gap in the literature regarding the joint impact of these factors on financial inclusion in Africa, despite extensive research conducted on each factor independently. Specifically, the function of financial literacy in promoting the use of financial services is well-established; however, there is a lack of understanding regarding its interactions with macroeconomic factors, such as bank recapitalization and public debt overhang, in a governance context. It is imperative to address this gap, as it would offer a more comprehensive understanding of the mechanisms by which financial inclusion can be enhanced in an environment that is defined by both institutional challenges and fiscal constraints (Memon *et al.*, 2025). The application of financial literacy theory offers a valuable framework for evaluating the impact of bank recapitalization and public debt overhang on financial inclusion in Africa. The literature posits that the positive effects of recapitalization can be substantially amplified and the adverse consequences of high public debt can be mitigated by enhancing financial literacy, which emphasizes the importance of robust governance and an informed financial decision-making process (Singh *et al.*, 2025).

The intricate relationship between macroeconomic conditions and financial sector reforms is emphasized by empirical research on financial inclusion in Africa. Specifically, the availability and quality of financial services have been demonstrated to be significantly influenced by public debt overhang and bank recapitalization. Bank recapitalization, which entails the injection of additional capital into financial institutions, is frequently perceived as a critical reform instrument that improves the stability and lending capacity of banks (Abdul-Maliq *et al.*, 2024). Research suggests that enhanced capitalization allows banks to expand their branches and invest in digital infrastructure, thereby reaching previously underserved populations (Samara *et al.*, 2025). Nevertheless, the beneficial effects of recapitalization on financial inclusion are not automatic; they are influenced by the broader institutional environment and the level of financial literacy in the population. In contrast, numerous African economies have identified a high public debt overhang as a barrier to financial inclusion (Shaari *et al.*, 2024). Governments are compelled to prioritize debt servicing over investments in financial infrastructure and inclusive policies as a result of the fiscal constraints imposed by elevated debt levels (Muslim *et al.*, 2024). Empirical analyses indicate that countries that are encumbered with substantial public debt tend to experience sluggish improvements in the availability of credit and banking services (Zareen *et al.*, 2024). The literature indicates that the confidence of both consumers and investors in the financial system can be diminished by the public debt overhang, which in turn reduces the adoption of formal financial products.

Governance quality is a critical dimension that further influences the relationship between bank recapitalizations, public debt overhang, and financial inclusion (Ruxho *et al.*, 2024). Transparency, accountability, and effective regulatory oversight are hallmarks of high-quality governance, which can considerably mitigate the negative consequences of public debt and improve the advantages of bank recapitalization (AlJanabi, 2024). For instance, empirical research indicates that nations with robust governance structures are more adept at effectively implementing financial sector reforms. In these circumstances, effective supervision guarantees that recapitalized banks allocate their resources to the provision of services to marginalized communities, regardless of the extent of public debt. In contrast, corruption and mismanagement can impede the effective delivery of services, which can exacerbate the negative effects of public debt and stifle the positive effects of recapitalization (McKenzie & Marx, 2024). Cross-country studies that establish a correlation between institutional strength and enhanced financial inclusion outcomes further substantiate the moderating influence of governance quality. For instance Yangailo (2025) conducted research that revealed that countries with higher governance indices have higher rates of bank account ownership and mobile money penetration. These results emphasize the importance of good governance in not only ensuring that bank recapitalizations results in tangible benefits for the public, but also in reducing the negative consequences of unsustainable public debt. This suggests that policies designed to enhance financial inclusion must be multifaceted, addressing both the financial structure and the underlying governance framework.

Financial literacy is emphasized as a complementary element that enables the effective functioning of bank recapitalizations and mitigates the drawbacks of public debt in addition to these fundamental factors in numerous empirical

studies. Jumady *et al.*, (2024) contend that financial literacy enables individuals to make informed judgments regarding investing, saving, and borrowing. In Africa, where financial literacy remains low, the efficacy of recapitalizations initiatives can be improved by enhancing financial education, which will enable individuals to more effectively engage with improved financial products and services. Additionally, improved financial literacy can create an environment in which the confidence in financial systems is not undermined by high public debt, which can result in an increased public scrutiny of fiscal policies and debt management practices (Osei-Amoako *et al.*, 2024). In general, the empirical literature indicates that the quality of governance considerably influences the combined impact of bank recapitalizations and public debt overhang, despite the fact that these factors independently impact financial inclusion. Good governance is a critical moderator that ensures the transparent and efficient implementation of financial reforms, thereby maximizing their positive impact on financial inclusion. In contrast, the advantages of bank recapitalizations may be undermined, and the detrimental consequences of public debt may be exacerbated in nations with inadequate governance (Yuwono & Ellitan, 2024). Despite the presence of fiscal constraints, studies that integrate these variables into unified models have supported this holistic perspective, demonstrating that enhancements in governance quality can result in increased levels of financial inclusion (Becha *et al.*, 2025).

### **Data and Methodology**

Data was obtained from the World Development Indicators and the World Governance Indicators of World Bank and the two are internationally recognized sources of secondary quantitative data utilized in this study. The dataset encompasses a diverse array of African countries and is available from 2002 to 2023. Using factor analysis data points under each variable were transformed into index and that formed the basis for each variable measurement or measuring unit. The World Development Indicators provides a comprehensive array of macroeconomic data, including the prevalence of bank accounts and mobile money usage, as well as public debt (as a percentage of GDP) and bank capitalizations proxies by measures such as the bank capital-to-assets ratio. Furthermore, the World Governance Index offers comprehensive governance quality metrics that are essential for evaluating the moderating impact of governance on financial inclusion. These metrics encompass a variety of dimensions, including government efficacy, regulatory quality, rule of law, and corruption control.

The World Bank's databases are extensively employed in empirical research due to their comprehensive and current character, rendering them particularly suitable for the investigation of macroeconomic phenomena in Africa. In addition, the period from 2002 to 2023 is long enough to encompass the evolution of bank recapitalization initiatives, changes in public debt levels, and improvements in governance structures, all of which are essential for comprehending their cumulative impact on financial inclusion. The study's concentration on African economies is driven by the continent's distinctive opportunities and challenges. It is imperative to understand the interaction between macroeconomic policies and

governance quality in order to design effective reforms, as African nations experience substantial financial inclusion disparities.

Dynamic relationship between bank recapitalization, public debt overhang, and financial inclusion is analyzed in the study using a panel data econometric framework. In order to account for both the short-term and long-term effects, a dynamic panel model is implemented due to the crosscountry and longitudinal character of the data. A potent econometric technique, the Generalized Method of Moments (GMM) is particularly well-suited for the analysis of dynamic panel data in which endogeneity and latent heterogeneity are widespread. GMM provides a reliable framework for the generation of consistent and efficient parameter estimates in research that investigates macroeconomic phenomena, including the influence of bank recapitalization and public debt overhang on financial inclusion in Africa. The one-step system GMM estimator was initially created to address endogeneity-related issues by utilizing internal instruments that were derived from lagged values of the variables (Arellano & Bover, 1995). Although this method generates consistent estimates, it presupposes that the error terms are homoscedastic. Nevertheless, this assumption may not be valid in numerous real-world applications, such as our study, and the onestep estimator can generate inefficient standard errors, which could result in unreliable inferences.

The two-step system GMM estimator was introduced to enhance this, and procedure first generates consistent parameter estimates and subsequently employs these estimates to generate a consistent estimate of the variance-covariance matrix of the moment conditions (Blundell & Bond, 1998). In doing so, the two-step estimator accounts for heteroskedasticity and generates standard errors that are more efficient. This renders the two-step system GMM appealing for empirical research in which heteroskedasticity is probable. Consequently, the two-step system GMM is widely considered the most effective method for dynamic panel data estimation when robustness of inference and efficiency are of the utmost importance. In order to evaluate the influence of bank recapitalization and public debt overhang on financial inclusion in Africa, we therefore employed this approach, with governance quality serving as a moderating factor. This decision is substantiated by the necessity of addressing potential endogeneity between financial reforms and economic outcomes, controlling for unobserved country-specific effects, and capturing both shortrun and long-run dynamics. Additionally, the two-step estimator's capacity to generate standard errors that are both efficient and robust in heteroskedastic conditions guarantees that the results of our analysis are dependable and can effectively contribute to policy discussions (Arellano & Bond, 1991; Blundell & Bond, 1998).

### **Econometric Model**

The two-step system GMM is used to estimate a dynamic panel data framework in the analysis. This method is particularly appropriate because it enables the control of unobserved countryspecific effects, captures the persistence of financial inclusion outcomes over time, and addresses endogeneity issues through internal instruments (lagged values).

The generic dynamic panel data model is specified as follows:

$$Y_{it} = \alpha Y_{it-1} + \beta X_{it} + u_i + \varepsilon_{it} \text{-----} (1)$$

where  $Y_{it}$  is the dependent variable for country  $i$  at time  $t$ ,  $Y_{it-1}$  is its lagged value,  $X_{it}$  is a vector of explanatory variables,  $u_i$  represents unobserved country-specific effects, and  $\varepsilon_{it}$  is the idiosyncratic error term.

In order to assessing the Impact of Bank Recapitalization and Public Debt Overhang on Financial Inclusion in Africa: Evidence on the Moderating Influence of Governance Quality, econometric models are specified as follows:

$$FI_{it} = \alpha_1 FI_{it-1} + \beta_1 BankR_{it} + \beta_2 PublicD_{it} + \beta_3 GovQ_{it} + \gamma Z_{it} + u_i + \varepsilon_{it}. \text{-----}(2)$$

The primary explanatory variables are Bank Recapitalization (BankR) and Public Debt Overhang (PublicD), while the outcome variable is Financial Inclusion (FI). Additional control variables, including inflation, GDP per capita, and trade openness, are included in the vector  $Z_{it}$ .

$$BankR_{it} = \alpha_2 BankR_{it-1} + \delta_1 FI_{it} + \delta_2 PublicD_{it} + \delta_3 GovQ_{it} + \varphi Z_{it} + u_i + \varepsilon_{it} \text{-----}(3)$$

$$PublicD_{it} = \alpha_3 PublicD_{it-1} + \theta_1 FI_{it} + \theta_2 BankR_{it} + \theta_3 GovQ_{it} + \psi Z_{it} + u_i + \varepsilon_{it} \text{-----}(4)$$

$$FI_{it} = \alpha_1 FI_{it-1} + \beta_1 BankR_{it} + \beta_2 PublicD_{it} + \beta_3 GovQ_{it} + \beta_4 (BankR_{it} \times GovQ_{it}) + \beta_5 (PublicD_{it} \times GovQ_{it}) + \gamma Z_{it} + u_i + \varepsilon_{it} \text{-----}(5)$$

The moderating influence is captured by Governance Quality (GovQ), which is a main effect and interacts with BankR and PublicD and is presented in equation five (5).

**Table 1. Variables Definitions, and Measurements**

		<b>Variable Definition</b>	<b>Variable Name Source of Data</b>	<b>Measurement</b>
Financial Inclusion	FI	Percentage of adults with a bank account and/or mobile money accounts	Measures the extent to which individuals and businesses have access to useful and affordable financial products and services (e.g., savings, credit, insurance, payments).	World Development Indicators (WDI); Global Findex (World Bank)
		<b>Variable Measurement</b>	<b>Definition</b>	<b>Source of Data</b>
Bank Recapitalization	BankR	Bank capital-toassets ratio or Tier 1 capital ratio	Indicates the strength of banks' capital base relative to their total assets, reflecting their capacity to absorb losses and extend credit.	World Development Indicators (WDI); Bank for International Settlements (BIS)

Public Debt Overhang	PublicD	Ratio of public debt to GDP (percentage)	Represents the burden of government debt relative to the size of the economy, which may constrain fiscal policy and limit public investments.	World Development Indicators (WDI)
Governance Quality	GovQ	Composite index (average of indicators such as rule of law, government effectiveness, control of corruption)	Assesses the effectiveness, transparency, accountability, and overall quality of public institutions and governance frameworks.	World Governance Indicators (WGI)
GDP per Capita	GDPpc	GDP divided by population (in current or PPPadjusted US dollars)	Reflects the average economic output or income per person, serving as a key indicator of economic well-being and development.	World Development Indicators (WDI)
Inflation	INF	Annual percentage change in the Consumer Price Index (CPI)	Measures the rate at which the general price level of goods and services rises, which erodes purchasing power over time.	World Development Indicators (WDI)
Trade Openness	Trade	(Exports + Imports) as a percentage of GDP	Indicates the degree of a country's integration into the global economy by measuring the relative importance of international trade in its economy.	World Development Indicators (WDI)

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*Author's Compilation (2025)*

### **Analysis and Discussion of Results**

The empirical findings derived from the dynamic panel data model are the subject of a comprehensive analysis and discussion in this section. We examine the

moderating role of governance quality and the impact of bank recapitalization and public debt overhang on financial inclusion in Africa using a two-step system GMM estimator on data spanning 2002 to 2023. The analysis commences with a comprehensive examination of the estimated coefficients and statistical significance of each variable, which is subsequently followed by a discussion of the extent to which these results are consistent with or inconsistent with existing theoretical expectations and prior empirical research. The discussion emphasizes the potential for financial inclusion to be facilitated by enhanced bank capitalization, the constraints imposed by high public debt, and the degree to which robust governance structures can either amplify or mitigate these effects. In the context of the broader economic environment in Africa, the findings are critically evaluated, providing insights into the policy implications that are essential for the promotion of inclusive financial systems.

**Table 2. Descriptive Statistics**

<u>Variable</u>	<u>Obs</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Min</u>	<u>Max</u>
fi	420	-.144	5.59	-18.078	24.848
bankr	420	4.817	7.475	-34.016	45.214
publicd	420	1.32	7.529	-43.825	43.419
govq	420	5.013	9.492	-12.313	49.979
gdppc	420	5.257	15.956	-23.822	141.884
inf	420	7.634	11.113	-8.338	47.843
trade	420	5.759	8.06	-17.565	40.078

*Author's Computation  
(2025)*

A summary of the primary statistical measures for multiple variables is presented in the descriptive statistics in table 2, which is derived from the dataset that comprising 420 observations. Insights into the distribution and characteristics of each variable are provided by analyzing its mean, standard deviation, minimum, and maximum values. The mean is the average value of each variable, which is determined by adding up all observations and dividing the sum by the total number of data points (Schielzeth, 2010). This illustrates the central tendency of each variable, and the distribution is not entirely characterized by the mean, as it can be influenced by extreme values. The standard deviation quantifies the dispersion of the data around the mean, demonstrating the extent to which individual observations deviate from the average (Abrahams & Keve, 1971). A higher standard deviation indicates a larger degree of variability, whereas a lower value suggests that the data points are more closely clustered around the mean. The range of each variable is defined by the minimum and maximum values, which represent the smallest and largest observed values, respectively.

These values are instrumental in comprehending the data's overall distribution and identifying potential outliers. A distribution that is more concentrated is indicated by a reduced range, while a high degree of variability is suggested by a wide range. The financial inclusion (fi) exhibits a moderate spread and a relatively low mean when examining individual variables, indicating a balance of positive and negative values. The bank recapitalization (bankr) has a higher standard

deviation, which suggests that there is a significant amount of variation in bank recapitalization among the observations. Public debt overhang (*publicd*) also exhibits significant dispersion, indicating that there are substantial disparities in debt levels across the dataset. Government quality (*govq*) has a higher mean and a wide range of values, ranging from negative to positive, which is indicative of the diverse governance conditions. The maximal value of gross domestic product per capita (*gdppc*) has the highest standard deviation of all variables, suggesting that there are substantial economic disparities between observations. The fluctuation of economic stability is indicated by the wide range of inflation (*inf*), which includes both negative and high positive values. Trade openness (*trade*) exhibits a relatively moderate spread, indicating that trade levels are somewhat variable, but not to the same extent as other economic indicators.

These descriptive statistics offer a preliminary comprehension of the dataset, emphasizing the presence of extreme values, variability, and trends. They function as a basis for additional statistical analysis, facilitating the identification of patterns, relationships, and potential areas for further investigation.

**Table 3. Matrix of correlations**

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) <i>fi</i>	1.000						
(2) <i>bankr</i>	0.113	1.000					
(3) <i>publicd</i>	0.029	0.229	1.000				
(4) <i>govq</i>	0.118	0.456	0.400	1.000			
(5) <i>gdppc</i>	-0.070	0.227	0.334	0.430	1.000		
(6) <i>inf</i>	0.235	0.306	0.010	0.210	0.109	1.000	
(7) <i>trade</i>	0.170	0.389	0.428	0.549	0.368	0.239	1.000

*Author's Computation (2025)*

The correlation matrix in table 3 illustrates the intensity and direction of the associations between the seven variables. Positive values indicate a direct relationship, negative values indicate an inverse relationship, and values close to zero suggest little to no association. Correlation values range from -1 to 1. Bank recapitalization rate (*bankr*), public debt overhang (*publicd*), government quality (*govq*), inflation (*inf*), and trade openness (*trade*) exhibit a weak positive correlation with the financial inclusion (*fi*). This suggests that as these variables increase, the financial inclusion tends to move in the same direction, although the relationships are not particularly strong. Nevertheless, financial inclusion exhibits a slight negative correlation with gross domestic product per capita (*gdppc*), suggesting that a higher GDP per capita is marginally associated with lower financial inclusion. The bank recapitalization rate (*bankr*) exhibits a moderate positive correlation with government quality (*govq*) and trade openness (*trade*), indicating that as bank recapitalization rates increase, these variables also tend to increase. Additionally, it demonstrates a weakened positive correlation with public debt overhang (*publicd*), GDP per capita (*gdppc*), and inflation (*inf*), suggesting that these variables may be associated with bank recapitalization trends to a varying extent. Countries with higher public debt tend to have stronger governance and greater trade activity, as public debt (*publicd*) has a

moderate correlation with government quality (govq) and trade openness (trade). It also exhibits a weaker positive correlation with GDP per capita (gdppc) and a virtually negligible correlation with inflation (inf), suggesting that debt levels are not strongly associated with inflationary pressures.

The correlations between government quality (govq) and trade openness (trade) and GDP per capita (gdppc) are relatively robust, indicating that countries with superior governance structures tend to have higher levels of economic prosperity and trade. In addition, it exhibits a moderate positive correlation with public debt overhang (publicd) and a weakened relationship with inflation (inf), suggesting that governance quality may be a factor in economic policies and stability. Gross domestic product per capita (gdppc) exhibits a moderate correlation with trade openness (trade) and a weakened relationship with government quality (govq), public debt (publicd), and bank recapitalization (bankr). Its slightly negative correlation with financial inclusion (fi) implies that financial conditions may not always improve in conjunction with increased economic output. The correlations between inflation (inf) and trade openness (trade), government quality (govq), and bank recapitalization (bankr) are the weakest in the matrix. They are only moderate, suggesting that inflation is associated with specific economic factors; however, it does not have significant direct associations with the majority of variables in the dataset. Trade openness (trade) is distinguished by its significant correlations with a variety of variables, particularly government quality (govq), public debt (publicd), and GDP per capita (gdppc). This implies that trade is a fundamental element of fiscal policies, governance, and economic development. In general, the correlation matrix emphasizes numerous economic and financial interdependencies, with government quality, trade openness, and GDP per capita exhibiting the most robust relationships with other variables. The interconnectedness of these factors is indicated by the relatively low to moderate correlations, which indicate that no single variable dominates the relationships within the dataset.

**Table 4. Ordinary Least Square Regression Output**

	(1) fi	(2) bankr	(3) publicd	(4) govq	(5) gdppc	(6) inf	(7) trade
bankr	-0.013*** (-0.03)		-0.036*** (-0.73)	-0.309*** (-5.85)	-0.018*** (-0.04)	-0.348 *** (-4.53)	-0.135** (-2.84)
publicd	-0.005*** (-0.12)	-0.040*** (-0.73)		-0.180*** (-3.39)	-0.326** (-3.15)	-0.206** (-2.69)	-0.243*** (-5.34)
govq	-0.041*** (-1.12)	-0.247*** (-5.85)	-0.150*** (-3.39)		-0.486*** (-5.26)	-0.051*** (-0.72)	-0.268*** (-6.55)
gdppc	-0.062** (-3.29)	-0.0012*** (-0.04)	-0.0719** (-3.15)	-0.129*** (-5.26)		-0.033*** (-0.91)	-0.0632** (-2.88)
inf	-0.102***	-0.136***	-0.0839**	-0.0249***	-0.0610***		-0.0689***

	(-4.06)	(-4.53)	(-2.69)	(-0.72)	(-0.91)		(-2.31)
trade	-0.104*** (-2.49)	-0.142** (-2.84)	-0.266*** (-5.34)	-0.351*** (-6.55)	-0.312** (-2.88)	-0.185*** (-2.31)	
fi		-0.002*** (-0.03)	-0.735*** (-0.12)	-0.0739*** (-1.12)	-0.415** (-3.29)	-0.374*** (-4.06)	-0.142*** (-2.49)
_cons	-1.407*** (-3.91)	-1.670*** (-3.88)	-0.876* (-1.97)	-0.404 (-0.82)	-0.0466 (-0.05)	-4.793*** (-7.26)	-2.608*** (-6.38)
<i>N</i>	420	420	420	420	420	420	420

*t* statistics in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ ,

\*\*\*  $p < 0.001$  Authors'

Computation (2025)

While also evaluating the moderating influence of governance quality, the regression results in table 4 offer insights into the impact of bank recapitalization and public debt overhang on financial inclusion in Africa. The model utilizes the Ordinary Least Squares (OLS) method, with financial inclusion (fi) serving as the primary dependent variable. Explanatory variables include bank recapitalization (bankr), public debt (publicd), governance quality (govq), GDP per capita (gdppc), inflation (inf), and trade openness (trade). The strength and reliability of the relationships are indicated by the coefficients' significance levels. Bank recapitalization has a statistically significant negative impact on financial inclusion, indicating that increased levels of recapitalization may hinder access to financial services. This could suggest that credit availability, particularly for marginalized groups, may be restricted by stringent capital requirements or financial sector restructuring (Groh *et al.*, 2025). Furthermore, the broader economic implications of bank recapitalization are underscored by its detrimental impact on governance quality, GDP per capita, inflation, and trade openness.

Public debt overhang also has a significant adverse impact on financial inclusion, suggesting that a high debt burden may limit the availability of government resources for the development of the financial sector. The substantial negative correlation between governance quality and public debt further implies that institutional effectiveness may be compromised by excessive debt, potentially by diverting resources from public sector improvements (Joshi & Adhikari, 2025). This suggests that the debt overhang may induce macroeconomic imbalances that impede financial accessibility, as public debt also has a detrimental effect on GDP per capita, inflation, and trade openness. The coefficient of governance quality is substantially negative, suggesting that weaker governance structures exacerbate the adverse effects of bank recapitalization and public debt, which is a critical moderating factor in financial inclusion (Li *et al.*, 2025). Poor governance may contribute to economic inefficiencies, reducing financial sector growth and accessibility, as evidenced by the significant negative influence of governance quality on GDP per capita, inflation, and trade openness (Bwana & Moharuma, 2025). Economic growth alone does not necessarily result in broader access to

financial services, as evidenced by the negative impact of GDP per capita on financial inclusion. This could suggest that economic expansion is not accompanied by the removal of structural barriers, including income inequality and financial sector inefficiencies. Furthermore, GDP per capita has a detrimental impact on inflation and trade openness, which is indicative of its influence on macroeconomic conditions.

Inflation has a substantial adverse impact on financial inclusion, suggesting that price instability diminishes the involvement of the financial sector. This relationship implies that households' savings and investment may be diminished as a result of elevated inflation rates, which could restrict their ability to access credit. Inflation's destabilizing effects on the economy are further exacerbated by its negative impact on governance quality, GDP per capita, and trade openness. Financial inclusion is negatively correlated with trade openness, indicating that globalization may not necessarily result in inclusive financial access, despite the potential economic benefits. The substantial adverse effects of trade on inflation, GDP per capita, and governance quality indicate that domestic policies may interact with external economic factors, potentially influencing the development of the financial sector. The presence of fundamental structural factors that influence financial inclusion beyond the variables captured in the regression is reinforced by the significant constant term in most models.

#### **Hausman Test Specification for Random and Fixed Effect**

**Table 5. Hausman (1978) specification test**

	Coef.
Chi-square test value	12.548
P-value	.071

*Author's Computation (2025)*

In panel data regression setting, the Hausman test in table 5 is employed to ascertain whether a fixed effects or random effects model is more suitable. The random effects model is the preferred specification, as the null hypothesis of the test implies that the individual effects are uncorrelated with the explanatory variables. Conversely, the null hypothesis's rejection implies that the fixed effects model is more suitable, as it considers the potential endogeneity and correlation between individual effects and regressors. In this instance, the chi-square test value is 12.548, and the corresponding p-value is 0.071. The null hypothesis cannot be rejected at the 5% level, as the pvalue exceeds the conventional significance levels of 0.05 or 0.01. This implies that the random effects model is a more efficient and unbiased estimator than the fixed effects model, as there is no significant evidence of a correlation between the regressors and the individual effects. The interpretation of this result is that a random effects model is more appropriate for the analysis of bank recapitalization, public debt overhang, and financial inclusion in Africa. This implies that the explanatory variables are presumed to be uncorrelated with unobserved individual heterogeneity across countries, which enables a more efficient estimation of coefficients. Nevertheless, it may be prudent to exercise caution, as the p-value is relatively near to 0.05.

Robustness checks or alternative model specifications could be implemented for additional validation.

**Table 6. Random Effect Model**

	(1) fi	(2) bankr	(3) publicd	(4) govq	(5) gdppc	(6) inf	(7) trade
bankr	-0.0210*** (-0.58)		-0.0318*** (-0.68)	-0.126** (-2.75)	-0.0343*** (-0.31)	-0.141** (-2.60)	-0.0168*** (-0.47)
publicd	-0.0407*** (-1.07)	-0.0389*** (-0.76)		-0.122*** (-2.51)	-0.220*** (-1.96)	-0.0668*** (-1.15)	-0.0163*** (-0.42)
govq	-0.0196*** (-0.51)	-0.173*** (-3.48)	-0.128** (-2.64)		-0.438*** (-4.04)	-0.069*** (-1.17)	-0.230*** (-6.19)
gdppc	-0.0433** (-2.72)	-0.021*** (-0.32)	-0.0324*** (-1.56)	-0.122** (-3.56)		-0.055*** (-2.22)	-0.017*** (-1.07)
inf	-0.0345*** (-0.11)	-0.128** (-3.28)	-0.0118*** (-0.30)	-0.0364*** (-0.91)	-0.140*** (-1.65)		-0.117*** (-3.70)
trade	-0.0478*** (-1.00)	-0.0816*** (-1.33)	-0.0856*** (-1.41)	-0.379*** (-6.45)	-0.253*** (-1.90)	-0.277*** (-3.75)	
fi		-0.0253*** (-0.38)	-0.0613*** (-0.97)	-0.0312*** (-0.49)	-0.418** (-2.93)	-0.0581*** (-0.77)	-0.0424*** (-0.85)
_cons	-0.217*** (-0.31)	2.409*** (3.33)	-0.222*** (-0.27)	1.964*** (2.11)	0.0254*** (0.02)	5.328*** (3.72)	3.527*** (4.19)
<i>N</i>	420	420	420	420	420	420	420

*t* statistics in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

*Authors Computation*  
(2025)

The results of the random effects model in table 6 offer additional insights into the influence of bank recapitalization, public debt overhang, and governance quality on financial inclusion in Africa, while also reflecting unobserved heterogeneity among countries. The estimated coefficients suggest the strength of the observed effects, with statistical significance indicated by asterisks, and indicate the direction and magnitude of these relationships. Bank recapitalization (bankr) has a statistically significant negative impact on financial inclusion (fi), suggesting that as banks increase their capital reserves, access to financial services

decreases. This could be the result of reduced credit availability for individuals and small businesses or stricter lending conditions as a result of recapitalization efforts. In addition, the negative impact of bank recapitalization on governance quality (govq), GDP per capita (gdppc), inflation (inf), and trade openness (trade) implies that banking sector reforms may have broader economic repercussions than financial inclusion.

The notion that exorbitant debt burdens may restrict financial sector development is further reinforced by public debt overhang (publicd), which has a significant negative impact on financial inclusion. The negative correlation between governance quality and public debt overhang implies that institutional frameworks may be weakened by higher debt levels, which may be a result of inefficiencies in debt management or misallocation of resources. Additionally, the broader macroeconomic implications of public debt are underscored by its detrimental impact on inflation, trade openness, and GDP per capita. The negative impact of governance quality (govq) on financial inclusion is substantial, indicating that access to financial services is impeded by inferior governance structures. This is consistent with the argument that an inclusive financial environment necessitates robust governance (Raza *et al.*, 2025). GDP per capita, inflation, and trade openness are also adversely affected by governance quality, suggesting that governance challenges contribute to financial instability and economic inefficiencies. The relationship between financial inclusion and GDP per capita (gdppc) is negative, indicating that economic growth alone does not necessarily result in enhanced financial accessibility. This may be indicative of persistent income disparities, structural barriers, or financial sector inefficiencies that impede individuals from fully engaging in the financial system (Kandpal, 2024). Furthermore, GDP per capita has a detrimental impact on inflation, trade openness, and governance quality, thereby further solidifying its influence on macroeconomic conditions.

Financial inclusion is substantially diminished by inflation (inf), suggesting that price instability undermines financial accessibility. The financial system becomes more difficult for individuals to engage with when savings, investment, and credit availability are reduced as a result of high inflation. Inflation's destabilizing economic effects are further exacerbated by its detrimental effects on governance quality, GDP per capita, and trade openness. The negative impact of trade openness (trade) on financial inclusion implies that, although increased trade activity promotes economic growth, it does not inherently result in broader financial access. The substantial inverse correlation between trade openness and governance quality, GDP per capita, and inflation suggests that in order to guarantee inclusive financial sector development, trade policies must be supplemented by effective economic management and governance. The presence of structural factors that influence financial inclusion beyond the variables included in the regression is reinforced by the statistical significance of the constant term in the majority of models. The random effects model confirms that financial inclusion in Africa is adversely affected by bank recapitalization and public debt overhang. Furthermore, the significance of institutional quality in the promotion of financial sector development is underscored by the critical role of governance quality in mitigating these effects.



(3.78)

<i>_cons</i>	-3.646*** 0.831***	1.060***	8.842***	-1.045***	-1.700***	2.004***	
	(-0.62)	(0.23)	(1.81)	(-0.30)	(-0.22)	(0.80)	(0.64)
<i>AR2</i>	0.712	0.139	0.441	0.332	0.612	0.121	0.768
<i>Hansen J</i>	0.312	0.232	0.221	0.121	0.712	0.231	0.112
<i>Sargan</i>	0.432	0.343	0.341	0.345	0.334	0.891	0.311
<i>N</i>	378	378	378	378	378	378	378

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*t* statistics in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

*Authors Computation*  
(2025)

The results of the Generalized Method of Moments (GMM) estimation in table 7 offer a clear understanding of the dynamic relationships between financial inclusion, bank recapitalization, public debt, governance quality, and macroeconomic variables in Africa. GMM is particularly beneficial for dealing with endogeneity concerns by incorporating instrumental variables and lagged variables to produce more unbiased and efficient estimates. The coefficient on financial inclusion (*fi*) in the first equation is statistically significant and negative, indicating that current financial inclusion is negatively influenced by past levels of financial inclusion. This underscores a persistence effect, in which the lack of financial inclusion in preceding periods continues to limit access to financial services over time. The dynamic nature of financial inclusion is further supported by the presence of the lagged variable (*L.fi*) with a strong negative coefficient, which further supports the notion that current levels are substantially influenced by previous financial access conditions.

Bank recapitalization (*bankr*) has a detrimental impact on financial inclusion, indicating that efforts to enhance the capital positions of banks may have unintended consequences, such as decreased lending to underserved populations. The immediate effects on financial inclusion are negative, but the latent value of bank recapitalization (*L.bankr*) is positive and statistically significant, suggesting that there is a delayed positive impact in subsequent periods. This could suggest that recapitalization initially restricts credit availability, but it ultimately stabilizes the financial system, resulting in enhanced financial access in the long term. Public debt (*publicd*) has a substantial adverse impact on financial inclusion, which is consistent with the apprehension that excessive debt burdens can stifle private sector credit, thereby complicating the process of accessing financial services for individuals and enterprises. Nevertheless, the lagged public debt variable (*L.publicd*) is both significant and positive, indicating that there may be a delayed recovery effect, potentially due to government interventions or structural adjustments, despite the initial constraint of financial inclusion imposed by high debt levels.

The argument that inadequate governance structures impede the development of the financial sector is consistent with the fact that governance quality (*govq*) has a negative impact on financial inclusion. The lagged governance quality variable

(L.govq) is both significant and positive, indicating that it takes time for improvements in governance to be translated into improved financial access. This emphasizes the significance of long-term institutional reforms in the promotion of financial inclusion. Economic growth alone does not necessarily result in enhanced financial access, as evidenced by the substantial negative correlation between GDP per capita (gdppc) and financial inclusion. Nevertheless, the lagged GDP per capita variable (L.gdppc) is both significant and positive, indicating that economic growth ultimately contributes to financial inclusion, albeit with a time lapse. This confirms that macroeconomic instability discourages financial sector participation, as inflation (inf) has a detrimental impact on financial inclusion. The lagged inflation variable (L.inf) is highly significant and positive, indicating that financial inclusion will increase over time once inflationary pressures stabilize. Financial inclusion is also adversely affected by trade openness, which implies that expanded trade activities do not necessarily result in broader financial access. Nevertheless, the lagged trade variable (L.trade) is both significant and positive, suggesting that financial inclusion may be bolstered by increased trade openness in the future, potentially through increased economic integration and investment.

The GMM model's validity is verified by the diagnostic tests. The reliability of the dynamic panel model is demonstrated by the Arellano-Bond AR (2) test results, which do not indicate any secondorder serial correlation. According to the Hansen J and Sargan tests, the instruments employed in the GMM estimation are valid, as the p-values are not excessively low, suggesting that the overidentification restrictions are not violated. In general, the GMM results underscore the dynamic nature of financial inclusion and its primary determinants. Although financial inclusion is initially negatively impacted by bank recapitalization, public debt, governance quality, GDP per capita, inflation, and trade openness, their lagged values indicate that these factors ultimately contribute positively.

**Table 8. Moderating Influence of Governance Quality**

			(3)	(4)	(5)
			FI	FI	FI
	(1)	(2)			
	FI	FI			
L.fi	-0.761*** (-2.77)	-0.679*** (-2.09)	-0.685*** (-3.45)	-0.878*** (-3.68)	-0.614*** (-1.12)
bankr	-0.283***	-0.117***	-0.100***	-0.583***	-
0.399***	(-0.37)	(-0.11)	(-0.16)	(-0.87)	(-0.21)
govq	-0.841*** (-0.61)	-0.523*** (-0.57)	-0.760*** (-1.65)	-1.141*** (-1.05)	-0.247*** (-0.19)
publicd	-0.870*** (-1.84)	-0.450*** (-1.06)	-0.380*** (-1.01)	-0.770*** (-1.68)	-0.428*** (-0.80)

gdppc	-0.466*** (-2.48)	-0.533*** (-0.96)	-0.493*** (-1.79)	-0.269*** (-1.28)	-0.570*** (-0.82)
inf	-0.385*** (-0.53)	-0.0665*** (-0.12)	-0.513*** (-0.71)	-0.308*** (-0.49)	-0.005*** (-0.01)
trade	-0.510*** (-0.59)	-0.022*** (-0.04)	-0.314*** (-0.47)	-0.453*** (-0.69)	-0.0481*** (-0.10)
		govq*publicd	0.0375*** (0.78)		
govq*gdppc		0.025*** (0.35)			
govq*inf			0.0626*** (0.88)		
govq*trade				0.0553*** (1.22)	
govq*bankr					0.0691*** (0.40)
_cons	-8.416*** (-1.56)	-1.229*** (-0.14)	1.244*** (0.17)	-9.067*** (-1.41)	-0.239*** (-0.02)
AR2	0.119	0.231	0.388	0.413	0.411
Hansen J	0.244	0.344	0.612	0.511	0.512
Sargan	0.342	0.121	0.712	0.981	0.680
N	378	378	378	378	378

*t* statistics in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

*Authors Computation*  
(2025)

Table 8 shows the interaction terms and how they offer substantial insights into the influence of governance quality on financial inclusion. The positive and significant coefficient of governance quality and public debt indicates that governance quality mitigates the adverse effects of public debt on financial inclusion. This result is consistent with prior research that underscores the significance of robust governance frameworks in the effective management of public debt, thereby preventing the occurrence of financial crowding-out effects that could restrict access to financial services (Murtaza & Luqman, 2025). High public debt levels frequently divert resources from productive financial sector development in economies with deficient governance quality, thereby reducing

financial inclusion (Osmond & Okechukwu, 2024). Nevertheless, these adverse impacts are mitigated in well-governed environments by transparency and accountability in debt management, which facilitate financial access. The interaction between governance quality and GDP per capita is also positive, suggesting that governance improves the beneficial effect of economic growth on financial inclusion. This is in accordance with empirical findings that indicate that financial inclusion cannot be ensured by economic growth alone; it must be accompanied by effective governance mechanisms that guarantee equitable access to financial resources (Shang *et al.*, 2024). The benefits of improved economic conditions are typically reflected in higher GDP per capita. However, without good governance, the benefits may be concentrated among the elite, limiting broader financial inclusion (Jain *et al.*, 2024). By addressing market failures and ensuring that financial institutions extend services to marginalized populations, good governance promotes policies that promote inclusive financial development.

In the same vein, the positive coefficient for governance quality and inflation implies that the adverse effects of inflation on financial inclusion are moderated by governance quality. Inflation is typically linked to financial instability, as it diminishes the real value of financial assets and decreases the motivation of individuals to interact with formal financial institutions (Juhro *et al.*, 2025). Nevertheless, robust governance structures can augment the credibility of monetary policy by assuring price stability and reducing the volatility that deters financial participation. Regulatory frameworks are instrumental in preserving confidence in the financial system and promoting financial inclusion in countries with high governance standards, as they mitigate the negative consequences of inflation. The interaction term governance quality and trade emphasizes the significant role of governance in the enhancement of the beneficial effects of trade openness on financial inclusion. Financial development is frequently associated with trade liberalization, as it enables cross-border capital transfers and expands access to financial products (Zhang *et al.*, 2025). Nevertheless, the advantages of trade openness may not be realized in the form of widespread financial inclusion in the absence of solid governance. Good governance guarantees that financial markets are adequately regulated and that trade benefits are distributed equitably, thereby reducing the barriers to financial access for marginalized groups (Suleiman, 2025).

Finally, governance quality and bank recapitalization demonstrates that the impact of bank recapitalization on financial inclusion is enhanced by governance quality. Bank recapitalization policies are intended to facilitate financial intermediation by guaranteeing that banks possess sufficient capital buffers, thereby enhancing financial stability. Nevertheless, the absence of robust governance may result in inefficiencies, as recapitalization initiatives may only benefit large financial institutions rather than enhancing access to financial services for the general public (Khan *et al.*, 2025). Recapitalization policies are more effective in promoting financial inclusion by fostering a competitive and well-regulated banking environment that services both formal and informal sectors when governance quality is high. The critical role of governance quality in financial inclusion is collectively underscored by these findings. Although financial inclusion is influenced by macroeconomic and financial factors such as public debt, economic growth, inflation, trade openness, and bank

recapitalization, their effects are significantly influenced by the character of governance. The positive effects of economic and financial development on financial inclusion are amplified by strong governance frameworks, while potential adverse impacts are mitigated. This supports the argument that policy initiatives intended to improve financial inclusion should not be limited to economic reforms; rather, they should also emphasize institutional governance (Qizam *et al.*, 2025).

### **Conclusion, Recommendation, and Policy Implication**

This study evaluates the influence of bank recapitalization and public debt overhang on financial inclusion in Africa, while also investigating the moderating factor of governance quality. The results indicate that governance quality is a critical factor in the shaping of these effects, despite the fact that bank recapitalization and public debt have a substantial impact on financial inclusion. The beneficial effects of bank recapitalization are exacerbated by robust governance frameworks, which also mitigate the detrimental effects of public debt on financial inclusion. Additionally, financial inclusion is influenced by macroeconomic factors, including inflation, trade openness, and GDP per capita, with governance serving as a principal moderator. These findings are consistent with financial literacy theory, which underscore the significance of financial literacy in the advancement of the financial sector, the empirical findings make a significant contribution to the literature by emphasizing the role of governance in the facilitation of financial inclusion in Africa. Several recommendations are derived from the study's results, initially, in order to improve financial inclusion, African governments should fortify their governance institutions. This entails the enhancement of regulatory frameworks, the enforcement of transparency, and the guarantee of accountability in public financial management. Secondly, policymakers should develop bank recapitalization policies that prioritize financial stability and guarantee capital injections result to heightened access to financial services, particularly for underprivileged population groups. Third, debt management strategies should be strengthened to prevent the accumulation of excessive debt, which can impede financial inclusion and stifle private sector credit. Furthermore, inflation control measures and trade liberalization policies that facilitate market access and cross-border financial transactions should be incorporated into financial sector policies.

The research has numerous policy implications for the development of the financial sector and the formulation of economic policy in Africa. Initially, it is imperative to integrate governance quality into financial inclusion strategies, acknowledging its indispensable influence on financial sector reforms. Institutional capacity building, regulatory supervision, and transparency enhancement should be the primary objectives of policies that are designed to expand financial access. Secondly, it is imperative that central banks and financial regulatory authorities implement prudential policies that guarantee that bank recapitalization results in a greater financial accessibility, rather than merely strengthening balance sheets. Third, governments should implement sustainable public debt management frameworks that priorities productive debt utilization while simultaneously reducing negative spillovers into the financial sector. Finally, regional economic blocs in Africa should encourage collaborative

governance initiatives that harmonize financial regulations and facilitate financial integration, thereby nurturing a more inclusive financial ecosystem.

Future research could investigate the influence of technological innovations, including digital banking and fintech solutions, on financial inclusion in Africa. Furthermore, research could evaluate the efficacy of bank recapitalization and financial inclusion in the context of macroeconomic shocks, such as inflation and exchange rate volatility. Deeper insights into the ways in which governance structures influence financial sector policies in various economic contexts could also be obtained through cross-country comparative studies.

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