

The Impact of Financial Inclusion and Stability on Economic Growth in African Countries

Afrika Ülkelerinde Finansal Kapsayıcılık ve İstikrarın Ekonomik Büyüme Üzerindeki Etkisi

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ABSTRACT

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This study investigates the effect of financial inclusion and financial stability on economic growth in a panel study of 30 African countries over the period between 2004 and 2020. Data were analyzed using the panel ARDL model. The panel ARDL estimation results demonstrate that financial inclusion has a statistically significant positive long-term effect on economic growth, though its short-term impact is insignificant. The study also found that the effects of financial inclusion on economic growth vary across different income levels. Specifically, there is a positive association in low-income countries, a negative association in lower-middle-income countries, and a positive but insignificant effect in upper-middle-income countries. On the other hand, the financial stability measured by the bank Z-score has a significant negative impact on long-run economic growth and a positive one in the short run. The effect is negative for low-income countries, positive for lower-middle-income countries, and negative but insignificant for upper-middle-income countries. Thus, the study findings suggest financial inclusion and financial stability policies should be tailored to the country's income level in African countries.

ÖZET

Anahtar Kelimeler:

Finansal Kapsayıcılık,

Finansal İstikrar,

Ekonomik Büyüme,

Panel ARDL,

Afrika

Jel Kodları:

G20, G21, O40

Bu çalışma, 2004-2020 yılları arasında 30 Afrika ülkesinde finansal kapsayıcılığın ve finansal istikrarın ekonomik büyüme üzerindeki etkisini araştırmaktadır. Veriler panel ARDL modeli kullanılarak analiz edilmiştir. Panel ARDL tahminlerinin sonuçlarına göre, finansal kapsayıcılığın uzun vadeli ekonomik büyüme üzerinde önemli bir pozitif etkisi olduğu, ancak kısa vadede anlamlı bir etkisinin olmadığı gözlemlenmiştir. Çalışmada ayrıca, finansal kapsayıcılığın ekonomik büyüme üzerindeki etkilerinin farklı gelir düzeylerine göre değiştiği tespit edilmiştir. Özellikle düşük gelir düzeyinde pozitif bir ilişki, alt-orta gelir düzeyinde ise negatif bir ilişki ve üst-orta gelirli ülkelerde pozitif olmakla birlikte istatistiksel olarak anlamlı olmayan bir etki gözlenmiştir. Diğer taraftan, finansal istikrarın (banka Z-skorunun) ekonomik büyüme üzerindeki etkisi uzun vadede negatifken, kısa vadede pozitif olduğu bulunmuştur. Bu etkinin düşük gelirli ülkeler için negatif, alt-orta gelirli ülkeler için pozitif ve üst-orta gelirli ülkeler için ise negatif ancak istatistiksel olarak anlamlı olmadığı ortaya konmuştur. Dolayısıyla, çalışmanın bulguları, Afrika ülkelerinde finansal kapsayıcılık ve finansal istikrar politikalarının ülkenin gelir düzeyine göre şekillendirilmesi gerektiğini önermektedir.

1. INTRODUCTION

Financial inclusion and the stability of the financial system are considered the key tools for achieving sustainable economic growth. In recent times, the global economy has rapidly progressed, and the financial market system has become more dynamic and complex. As a result, financial inclusion has appeared as a focus of economic policymakers to reduce poverty and enhance economic growth (Ardic et al., 2011). Financial inclusion refers to having a widespread access to and usage of a range of quality formal financial services such as savings, payments, borrowing, and insurance at an affordable cost by all segments of the population (Patwardhan, 2018). Developing countries mostly suffers to address basic formal financial services to its majority portion of populations. According to Demirgüç-Kunt et al. (2015), only 24% of adults in Africa have formal bank accounts at financial institutions, while there are large regional and gender gaps in the access and usage of basic financial services. However, this number has recently grown to 55%, and the gender gap is significantly reduced due to the increase in access to and usage of financial innovations such as mobile money platforms (Demirgüç-Kunt et al., 2021).

Bringing sustainable economic growth to Africa remains a pressing challenge (Anyanwu, 2014). Economic growth in African countries is significantly influenced by several factors such as population growth, trade openness, investment, education, governance, financial development, political instability, corruption, infrastructure, and research and development (Anyanwu, 2014; Fayissa & Nsiah, 2013; Gyimah-Brempong, 2002; Gyimah-Brempong et al., 2006; Odhiambo & Ntenga, 2016; Owusu-Manu et al., 2019; Savvides, 1995; Yakubu et al., 2020; Younsi & Nafla, 2019). Despite these challenges, reports show that the African countries exhibited progress in their level of economic growth and resilience in tackling the aftermaths of the coronavirus pandemic and other shocks in global financial conditions.

Over the last few decades, the financial landscape in African countries has also shown progress due to liberalization reforms, infrastructure developments, financial technology, and financial inclusion (Demirgüç-Kunt et al., 2021; Mu & Lin, 2016). Nevertheless, the financial system is challenged by the impacts of political instability, low institutional quality (Anayiotos & Toroyan, 2009), infrastructural inefficiency (Beck et al., 2011), regulatory quality, and government domestic debt arrears (Kulu et al., 2022).

Financial inclusion promotes economic growth by granting access to basic financial services to firms and households (Bazarbash & Beaton, 2020), stimulating entrepreneurship and innovation (Ajide, 2020), enhancing domestic financial markets (Jima & Makoni, 2023), reducing poverty (Inoue, 2019), supporting national development goals (Chibba, 2009), and narrowing gender gaps (Bhatia & Singh, 2019; Swamy, 2014), reducing income inequality (Kling et al., 2022; Neaime & Gaysset, 2018; Omar & Inaba, 2020; Verma & Giri, 2022), improving financial stability (Khan et al., 2022), and improving social inclusion and social justice (Ozili, 2020). According to Kim (2016), financial inclusion helps to offset the negative impacts of income inequality on economic growth. Likewise, studies by Mohieldin et al. (2019) and Boachie et al. (2023) have found that economic growth is positively associated with financial inclusion. Other studies have concluded that financial inclusion has no impact on economic growth and vice versa (Lucas, 1988; Stern, 1989).

With the realization of its potential to promote sustainable economic growth, there is growing scholarly attention, regulatory focus, and policy priority toward financial inclusion. However, there is a significant gap in the existing body of literature in the following areas: First, there is a dearth of comprehensive empirical evidence that effectively examines the effect of financial inclusion and financial stability on economic growth (Feghali et al., 2021; Mu & Lin, 2016). While individual studies have tried to shed light on specific aspects of this relationship, a comprehensive and integrated analysis is lacking, hindering a holistic understanding of how these variables influence economic growth over time.

Second, there is a limited utilization of relevant theories to explain the linkages between financial stability and economic growth (Ozili et al., 2023). The lack of a robust theoretical foundation may contribute to methodological inconsistencies. In addition, as demonstrated earlier in this section, the results from available studies are inconsistent and inconclusive, leading to a lack of consensus on the impact of financial inclusion and financial stability on economic growth. This inconsistency may stem from methodological variations that are not adequately addressed in the literature. Lastly, the empirical literature on the relationship between financial inclusion, financial stability, and economic growth in Africa is extremely limited in a few countries, and there are no comprehensive studies.

Thus, this study contributes to the literature and assists in the effort to settle the debate over the topic. The present study is distinguished from prior studies by analyzing the causal relationship between financial inclusion, financial stability, and economic growth from a holistic African perspective and further delves into

investigating the interactions across the three distinct income categories: low-income, lower-middle income, and upper-middle income.

The findings of this study could give additional insights to macroeconomic policymakers, multilateral institutions, and financial inclusion advocates on the appropriate strategies to enhance financial inclusion, maintain financial stability, and elevate economic growth.

The remainder of this paper is organized as follows: Section 2 provides a review of related literature, Section 3 describes the research methodology, Section 4 presents the results and discussions, and finally, Section 5 sets out the conclusions and suggestions.

2. LITERATURE REVIEW

2.1. Theoretical Literature Review

In financial economics research, there is a controversial argument on the direction and relationship between financial inclusion, financial stability, and economic growth. The literature employs two opposing theories, namely supply-leading theory and demand-following theory, to explain the relationship and causality direction between several aspects of financial sector development, including financial inclusion, financial stability, and economic growth.

The supply-leading theory advocates that financial inclusion is one of the key tools to promote economic growth and development in the nation's economy. By expanding access to financial inclusion, communities gain access to fundamental formal financial services such as savings, credit, and insurance. This access is instrumental in fostering economic growth and development (Jima & Makoni, 2023; Sehwat & Giri, 2015). Accordingly, enhancing access to financial services plays a substantial role in supporting sustainable economic growth. This can be done through the mobilization of savings and investment, which in turn leads to the efficient allocation of resources, increased productivity, and overall economic development (Revell & Goldsmith, 1970).

On the other hand, the demand-following theory posits that as an economy experiences higher levels of economic growth, the demand for financial services increases. This increased demand, in turn, promotes financial inclusion. As the economy grows, there is an increase in the need for financial services for savers and investors, leading to the formation of financial institutions, the invention of financial assets, and the establishment of various financial services (Patrick, 1980). The findings of Jima & Makoni (2023) also align with the demand-following theory, emphasizing that economic growth drives financial inclusion.

According to a study conducted by Guha Deb et al. (2019), the causal relationship between the financial sector and economic growth is influenced by the level of economic development and the state of the economy. The study suggests the supply-leading theory and the demand-following theory apply to different types of economies. In developing economies, the supply-leading theory is supported, while in emerging economies, the demand-following theory is maintained.

Research also shows that the relationship between economic growth and financial stability follows the demand-following theory. For instance, Boachie et al. (2023) highlighted that economic growth drives bank stability, and the relationship is unidirectional. Some findings support both theories, suggesting a two-way mutual causality (Ali et al., 2021; Demetriades & Hussein, 1996; Greenwood & Smith, 1997; Jima & Makoni, 2023; Kim et al., 2018). On the contrary, Chang (2002) found an independent relationship supporting neither the demand-following nor the supply-leading theories.

2.2. Empirical literature

Despite the growing body of empirical research on the relationship between financial inclusion and economic growth, the findings of the results remain ambiguous. Some studies have found a positive relationship between financial inclusion and economic growth, suggesting that increased access to financial services can stimulate economic activity and productivity. By granting access to affordable and reliable financial services to underserved areas, financial inclusion promotes financial well-being (Nandru et al., 2021), improves welfare (Hidayat & Sari, 2022), enables them to get formal credit (Chen & Jin, 2017), increases their productivity (Hu et al., 2021; Peprah et al., 2021), expands their businesses (Chauvet & Jacolin, 2017), fosters financial innovation (Qamruzzaman & Wei, 2019), achieves efficiency (Afrin et al., 2017), and thereby contributes to overall economic growth (Kablana & Chhikara, 2013; Lenka & Sharma, 2017; Sethi & Acharya, 2018; Van et al., 2021).

Moreover, the empirical findings of Kablana & Chhikara (2013), Kim et al. (2018), and Van et al. (2021) emphasized that financial inclusion leads to higher economic growth. Similarly, Lenka & Sharma (2017) and Sethi & Acharya (2018) confirmed that financial inclusion has a strong and positive impact on economic growth both in the short run and the long run. A study by Domeher et al. (2022) also asserted that financial inclusion enables users to exploit financial innovation and accelerate economic growth.

In contrast, the findings of Mosley (2001) and Sandberg (2012) concluded that financial inclusion may result in the decapitalization and impoverishment of poor people and increase social inequality. Similarly, Lainez (2016) and Rahman (1999) highlighted that financial inclusion may have negative impacts on the economy by causing financial stress, over-indebtedness, and disempowerment.

The empirical literature on the relationship between financial stability and economic growth is relatively scarce, and the existing evidence is contradictory. A stable financial system positively influences economic growth by providing the foundation for investor confidence, foreign direct investments, and efficient resource allocation (Manu et al., 2011). Moreover, Creel et al. (2015) demonstrated that financial instability has severe negative impacts on economic growth. Similarly, Younsi & Nafla (2019) also demonstrated that financial crises in fragile financial systems deteriorate financial development as well as economic growth. The financial system also channels the adversities in other sectors to impact economic growth (Son et al., 2020). Financial instability leads to increased uncertainty, worsened borrowing conditions, and increased costs of finance, thereby reducing investments as well as economic growth (Carbó-Valverde & Sánchez, 2013).

Therefore, based on the existing literature review, the study develops the following research hypotheses:

H₁: Financial inclusion significantly positively or negatively affects economic growth in African countries.

H₂: Financial stability significantly positively or negatively affects economic growth in African countries.

H₃: The impact of financial inclusion and stability on economic growth may depend on the income levels of African countries.

3. METHODOLOGY

To investigate the interplay among financial inclusion, financial stability, and economic growth in African countries, this study employed a quantitative approach. In addition, trade openness, foreign direct investment, aid, and inflation were incorporated as control variables in the analysis. Secondary data were obtained from the World Bank indicators database and the International Monetary Fund's (IMF) Financial Access Survey for 30 African countries (see Table A1), selected based on the availability of comprehensive data covering the period 2004 to 2020.

3.1. Model Specification

This study uses the following panel ARDL model to examine both the long-run and short-run relationships between financial development and economic growth in African economies. We first specify the following benchmark regression model for our study:

$$RGDPG_{i,t} = f(FI_{i,t}, FS_{i,t}, Trade_{i,t}, FDI_{i,t}, Aid_{i,t}, CPI_{i,t}) \quad 1$$

The dependent variables are economic growth proxied by the annual growth rate of real GDP ($RGDPG_{i,t}$), whereas the explanatory variables are the financial inclusion index ($FI_{i,t}$), and financial stability proxied by bank -z-score ($FS_{i,t}$), foreign direct investment scaled by GDP ($FDI_{i,t}$), foreign aid measured by net ODA received % GDP ($Aid_{i,t}$), inflation proxied by consumer price index ($CPI_{i,t}$).

Before running the panel ARDL model, the study first employed Dickey & Fuller (1979); Im et al. (2003); and Levin et al. (2002) panel root tests to check the stationarity of variables. Further, the study used the Johansen (1988) and Kao (1999) co-integration tests to see the long-run co-integration among the study variables. Finally, the study specifies the following panel ARDL model to estimate the long-run and short-run relationship effects of financial inclusion and financial stability on economic growth.

$$\begin{aligned}
 \text{RGDPG}_{i,t} = & \sum_{j=1}^p \sigma_{i,j} \text{RGDPG}_{i,t-j} + \sum_{j=0}^q \beta_{1,i,j} \text{FI}_{i,t-j} + \sum_{j=0}^q \beta_{2,i,j} \text{FS}_{i,t-j} + \sum_{j=0}^q \beta_{4,i,j} \text{Trade}_{i,t-j} \\
 & + \sum_{j=0}^q \beta_{4,i,j} \text{FDI}_{i,t-j} + \sum_{j=0}^q \beta_{5,i,j} \text{Aid}_{i,t-j} + \sum_{j=0}^q \beta_{8,i,j} \text{CPI}_{i,t-j} + \varphi_i \\
 & + \varepsilon_{i,t}
 \end{aligned} \tag{2}$$

Where, $\sigma_{i,j}$ is the coefficient of lagged economic growth, $\beta_{i,j}$ is the coefficient of the regressors. $i=1, 2, \dots, N$; $t=1, 2, \dots, T$; p, q is the optima lag order; $\varepsilon_{i,t}$ is the error term.

We specify the error correction model for the re-parameterized panel ARDL (p, q, q, \dots, q) as follows.

$$\Delta \text{RGDPG}_{i,t} = \theta_i (Y_{i,t} - 1 - \gamma_i X_{i,t}) + \sum_{j=1}^{p-1} \sigma_i \Delta \text{RGDPG}_{i,t-j} + \sum_{j=0}^{q-1} \omega_i \Delta X_{i,t-j} + \varphi_i + \varepsilon_{it} \tag{3}$$

Where X is a set of independent variables θ_i represents the coefficient of the speed of adjustment to the long-run status; γ_i is the vector of long-run relationships, $Y_{i,t} - 1 - \gamma_i X_{i,t}$ is the error correction term; σ_i and ω_i are short-run dynamic coefficients, and φ_i is the fixed effect.

3.2. Measurement of key study variables

This study used commercial bank branches per 100,000 adults as a proxy for financial inclusion (Nguyen, 2021; Tram et al., 2023). Financial stability is measured using the Z-score, which measures the probability of default in a financial system, with higher values indicating lower stability and vice versa (Creel et al., 2015; Uhde & Heimeshoff, 2009). Several studies used the bank Z-score as a proxy to capture financial stability (Carbó-Valverde & Sánchez, 2013; Creel et al., 2015; Jima & Makoni, 2023). Economic growth is measured by annual real GDP per capita growth, one of the most commonly used indicators in the literature (Alsamara et al., 2019; Kim et al., 2018; Sethi & Acharya, 2018). The description of all the variables used in the study, along with the source of the data, is presented in Table 1 below.

Table 1. Variables Description

Variable ID	Variable name	Data source
Dependent variable		
RGDPG	Real GDP per capita annual growth	World bank indicators
Study variable		
FI	Financial inclusion commercial bank branches per 100,000	Global Findex
FS	Financial stability proxied by bank Z score	Global Findex
Control variable		
TRADE	Trade % GDP (Trade openness)	World bank indicators
FDI	Foreign direct investment, net inflows (% of GDP)	World bank indicators
AID	Net ODA received per capita	World bank indicators
CPI	Consumer price index (Inflation)	World bank indicators

4. RESULTS

4.1. Unit root test

It is essential to perform a unit root test first to check the stationarity of the study variables before running the panel ARDL model. The results presented in Table 2 confirm that all the study variables are stationary at I (0) and I (1). This suggests that the study dataset is suitable for running panel ARDL models.

Table 2. Result of Unit Root Test

Variables	TEST	Levin, Lin & Chu t*	Im, Pesaran and Shin W-stat	ADF - Fisher Chi-square	PP - Fisher Chi-square	Status
RGDPG	At level	-3.27457***	-1.80074***	95.7638***	153.77***	I (0)
FI	At level	-7.03423***	-2.60749***	93.1921***	114.359**	I (0)
FS	At level	-2.85069**	-9.09275**	193.217***	94.6828***	I (0)
TRADE	At 1st	-7.43337***	-7.3319***	160.814***	266.787***	I (1)
FDI	At level	-7.78567***	-1.66175***	77.9142***	123.3***	I (0)
AID	At level	-9.12907**	-2.3219**	84.4059***	134.715***	I (0)
CPI	At 1 st	-7.92627***	-6.26512***	144.302***	208.382***	I (1)

***, **, and * represent 1%, 5%, and 10% significance levels, respectively.

4.2. Cointegration test

The study also performs the Johansen and Kao co-integration tests to check if there is a long-run relationship between the study variables. This helps to justify the use of panel ARDL analysis to estimate both the short-run and long-run effects. The results of both the Johansen and Kao co-integration tests presented in Table 3 confirm that there is co-integration among the study variables at 1% and 5% significance levels. Therefore, it is evident that there is a stable long-run relationship between financial inclusion, financial stability, and economic growth.

Table 3. The Johnsen and Kao Cointegration Test

Johnsen cointegration test					Kao co-integration test		
Hypothesized	Fisher Stat.*		Fisher Stat.*		t-Statistic	P-value	
No. of CE(s)	(from trace test)	P-value	(from max-eigen test)	P-value			
None	0.000	1.0000	0.000	1.0000	ADF Residual	-5.1452***	0.0000
At most 1	374.7***	0.0000	292.1***	0.0000	HAC variance	16.0126	
At most 2	1081.0***	0.0000	957.5***	0.0000		8.6698	
At most 3	1093.0***	0.0000	977.1***	0.0000			
At most 4	370.4***	0.0000	298.5***	0.0000			
At most 5	192.7***	0.0000	192.7***	0.0000			

***, **, and * represent 1%, 5%, and 10% significance levels, respectively.

Therefore, by running the stationarity and co-integration tests, the study confirms that our dataset is suitable for employing a panel ARDL model. This provides a sound statistical basis for the analysis before estimating the ARDL equations.

4.3. Panel ARDL Estimation Results

4.3.1. Entire Africa Data Set

In this section, the study presents the results of the long-run and short-run effects of financial inclusion and financial stability on economic growth in a panel study of 30 African countries over the period from 2004 to 2020. The results of panel ARDL estimation in Table 4 show that financial inclusion has a significant long-term positive effect on economic growth. This implies that, through greater access to formal financial products and services, financial inclusion enables people to undertake successful business activities, use innovative financial solutions, and increase productivity and efficiency, which increases aggregate economic growth. The findings of this study are consistent with the findings of Boachie et al. (2023); Domeher et al. (2022); Lenka & Sharma (2017); and Sethi & Acharya (2018).

Whereas financial stability measured by bank Z scores is found to have a statistically significant negative effect on long-run economic growth. This agrees with the conclusion that financial instability creates uncertainty, reduces access to capital, reduces investments, and deteriorates overall economic growth (Carbó-Valverde & Sánchez, 2013; Son et al., 2020; Younsi & Nafla, 2019). A stable financial system, on the other hand, enhances productivity, improves capital accumulation, and allows for efficient resource allocation (Creel et al., 2015; Manu et al., 2011). However, the effect is positive and significant in the short run.

Additionally, consistent with the findings of Banday et al. (2021) and Sakyi et al. (2015), the control variables trade openness and foreign direct investment have a statistically significant positive impact on long-run economic growth. Similarly, inflation has a positive association with economic growth. By contrast, foreign aid slows down economic growth, reflecting the effects of aid dependency. The short-run error correction model gives insight into transient growth dynamics before returning to equilibrium. The large, significant adjustment parameter indicates that 77.39% of any deviation in growth from the long-run rate is eliminated each quarter, indicating a high endogenous growth momentum. Changes in financial stability have some short-run predictive power for growth fluctuations in the next quarter, indicating their influence on cyclical swings around equilibrium.

Table 4. Panel ARDL Estimation for the Entire Data Set Schwarz Criterion (SIC) Selection (1, 1, 1, 1, 1, 1, 1)

Long-run model estimation			Short-run model estimation		
Variable ID	Coefficient	P-value*	Variable ID	Coefficient	P-value*
			COINTEQ01	-0.7739***	0.0000
FI	0.1328**	0.0139	D(FI)	0.9987	0.2630
FS	-0.3532***	0.0000	D(FS)	0.2499**	0.0286
TRADE	0.0284**	0.0268	D(TRADE)	0.1107	0.0117
FDI	0.1272**	0.0431	D(FDI)	0.0609	0.6813
AID	-0.0185***	0.0006	D(AID)	-0.0007	0.9423
CPI	0.1193***	0.0034	D(CPI)	-0.1257*	0.0671
			C	3.5561***	0.0001

***, **, and * represent 1%, 5%, and 10% significance levels, respectively.

4.3.2. Income Level Dynamics

The study also analyzed the impact of financial inclusion and financial stability on economic growth in Table 5 across low-income, lower-middle-income, and upper-middle-income countries in Africa. The results in Table 5 confirm that financial inclusion promotes the long-run economic growth of low-income countries in Africa. However, financial instability hinders long-run economic growth in those countries. The short-run effects of both financial inclusion and financial stability are insignificant.

In lower-middle-income countries, financial inclusion has a significant negative impact on long-run economic growth. This suggests that returns diminish as markets approach saturation. Similarly, prior evidence also supports the claim that financial inclusion may have negative effects on the economy through worsening poverty levels, financial stress, over-indebtedness, economic inequality, and disempowerment (Lainez, 2016; Mosley, 2001; Rahman, 1999; Sandberg, 2012). However, the state of financial stability has a significant positive influence on long-run economic growth. The short-run effects are insignificant for both financial inclusion and financial stability.

In contrast to low- and lower-middle-income countries, the effects of financial inclusion and financial stability on economic growth are insignificant both in the long run and in the short run. This implies that the level of financial inclusion and financial stability in upper-middle-income countries is likely to surpass the thresholds where marginal improvements have negligible impacts on their economic growth. Van et al. (2021) also indicates similar evidence, stating that the effect of financial inclusion on economic growth is stronger for countries with lower income levels.

Table 5. Income Level Dynamics Schwarz Criterion (SIC) Selection Model (1, 1, 1, 1, 1, 1)

Variable	Low-income		Lower-middle income		Upper-middle income	
	Coefficient	P-value*	Coefficient	P-value*	Coefficient	P-value*
Long-run model estimation						
FI	1.1637***	0.0000	-0.1382***	0.0075	0.1716	0.4916
FS	-0.2021***	0.0000	0.1523**	0.0224	-0.6587	0.1918
TRADE	0.1519***	0.0000	0.0510***	0.0035	0.0064	0.9384
FDI	-0.1623***	0.0000	0.4726***	0.0000	0.0649	0.8314
AID	0.0469***	0.0000	-0.0145***	0.0046	0.0167	0.4937
CPI	0.0043	0.8768	0.0703***	0.0025	-1.2245**	0.0241
Short-run model estimation						
COINTEQ01	-0.7723***	0.0018	-0.7540***	0.0000	-0.3961	0.3163
D(FI)	2.4233	0.1968	-0.2874	0.7911	1.0030	0.1452
D(FS)	-0.1162	0.5564	-0.1120	0.3418	0.7627	0.1170
D(TRADE)	0.1998*	0.0681	0.0597	0.1076	0.1053	0.6692
D(FDI)	0.0017	0.9936	0.0478	0.8322	0.6512	0.3460
D(AID)	-0.0631**	0.0152	0.0098	0.5691	-0.0036	0.8916
D(CPI)	-0.1095*	0.0816	-0.1404	0.1400	0.4383	0.5677
C	-7.4366***	0.0041	-3.3014***	0.0005	3.3546	0.4641

***, **, and * represent 1%, 5%, and 10% significance levels, respectively.

5. CONCLUSION

The relationships between financial inclusion, financial stability, and economic growth have increasingly attracted attention in recent financial economics research, though empirical findings on their precise nature remain ambiguous. This study investigates the impacts of financial inclusion and financial stability on economic growth in a panel study of 30 African countries over a period from 2004 to 2020. The study uses the panel RADL model for the analysis. The panel ARDL estimation results demonstrate that financial inclusion plays a pivotal role in boosting long-run economic growth in African countries. But the short-run effect is insignificant. Whereas financial stability, as measured by the bank Z-score, has a significant negative effect on economic growth in the long run and is positive in the short run. Furthermore, the results also reveal that the impacts of financial inclusion and financial stability on economic growth vary across income levels. Specifically, financial inclusion has a significant long-term positive effect on growth in low-income African countries, highlighting the importance of policies that increase access to basic financial services. However, the effect of financial inclusion on economic growth is negative in lower-middle-income countries. Contrastingly, financial stability positively influences long-run growth in lower-middle-income countries yet negatively impacts growth in low-income countries, and the effects become statistically insignificant in upper-middle-income countries, implying thresholds at which marginal changes in financial inclusion have a negligible impact on economic growth.

Thus, the results of the present study suggest that governments and policymakers in African countries should follow tailored financial inclusion initiatives and reforms based on specific dynamics to expand access to financial services for the marginalized sections of their population. This can stimulate long-term economic growth, and a nuanced approach is required that calibrates appropriate financial inclusion and stability policies in different economic settings.

This study is not immune to certain limitations as it relied entirely on macroeconomic indicators, which may mask the micro-level dynamics between financial inclusion, stability, and growth. Furthermore, due to the lack of comprehensive data on the variables, many countries are excluded from the sample. Also, the effects of financial inclusion and financial stability may vary in different contexts, such as country-specific factors, extraordinary events, crises, policy changes, and changes in the global economy. Thus, further research can be conducted considering these factors.

AUTHORS' DECLARATION:

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AUTHORS' CONTRIBUTIONS:

The entire research is written by the author.

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APPENDIX**Appendix 1. List of sample countries**

Algeria	Eswatini	Niger
Angola	Gabon	Nigeria
Benin	Ghana	Rwanda
Botswana	Kenya	Senegal
Burkina Faso	Lesotho	Sierra Leone
Burundi	Madagascar	South Africa
Cabo Verde	Mali	Tanzania
Cameroon	Mauritius	Togo
Côte d'Ivoire	Morocco	Tunisia
Egypt, Arab Rep.	Mozambique	Uganda
