International Journal of Social Economics

Financial inclusion as an enabler of economic growth: Does financial stability matter?

Rachida El Yamani and Younes El Khattab
Hassan II University, Casablanca, Morocco, and
Jihad Ait soussane
Ibn Tofail University, Kenitra, Morocco

Received 2 January 2025
Revised 2 May 2025
Accepted 18 August 2025

Abstract

Purpose – This study aims to examine the moderating role of financial stability in the effect of financial inclusion on economic growth. While financial inclusion is hailed for its potential to stimulate economic growth, excessive inclusion or stability may yield adverse effects. The study seeks to clarify how the interaction of financial inclusion and stability moderates economic outcomes and to offer policy insights for fostering inclusive and stable financial systems conducive to growth.

Design/methodology/approach – The study employs panel data analysis for 62 countries across diverse income levels and regions. Using robust econometric methods, the analysis evaluates the individual and interactive effects of financial inclusion and financial stability on economic growth.

Findings – The results reveal that financial inclusion and financial stability, when analyzed individually, may negatively impact economic growth in certain conditions. Excessive financial inclusion can lead to over-indebtedness, while overly restrictive stability measures may stifle innovation and credit access. However, the interaction between inclusion and stability yields a positive and significant effect on growth.

Originality/value – This study contributes to the literature by highlighting the dual role of financial stability as a moderator of the financial inclusion–growth nexus. Unlike prior studies that emphasize standalone effects, it underscores the complementary nature of inclusion and stability. The findings provide actionable policy recommendations to foster inclusive and stable financial systems while addressing risks associated with over-indebtedness and inefficient resource allocation.

Keywords Financial inclusion, Financial stability, Economic growth, Panel econometrics

Paper type Research article

1. Introduction

Financial inclusion has emerged as a cornerstone of development strategies worldwide, hailed for its potential to foster economic growth, reduce poverty, and promote income equality (Showkat *et al*., 2024). Defined as the availability and accessibility of affordable financial services, such as savings accounts, credit, insurance, and digital payment systems, financial inclusion enables greater participation in economic activities and enhances resilience to financial shocks (Ozili, 2020). These features have made financial inclusion a critical focus for governments, international organizations, and financial institutions alike.

The effect of financial inclusion on economic growth, however, is not straightforward. While financial inclusion can facilitate investments, boost productivity, and increase consumption, its outcomes are often mediated by institutional and structural factors. For example, Demirgüç-Kunt and Klapper (2013) demonstrated that financial inclusion contributes significantly to poverty alleviation and income equality, particularly in developing countries. Yet, this effect depends heavily on the presence of robust financial systems, regulatory oversight, and complementary policies. As Allen *et al*. (2016) have noted, countries that fail to establish a conducive institutional environment may struggle to realize the benefits of financial inclusion.

Furthermore, while the economic benefits of financial inclusion are well-documented, its implications for financial stability remain less clear. Some researchers argue that financial

JEL Classification — G20, G01, O47, C33

International Journal of Social Economics
Vol. 53 No. 5, 2026
pp. 785-799

e-ISSN: 1758-6712
p-ISSN: 0306-8293
DOI 10.1108/IJSE-12-2024-1041

inclusion strengthens stability by diversifying risk and increasing the deposit base (Beck *et al*., 2007), while others caution that rapid and poorly regulated financial inclusion may amplify systemic vulnerabilities, as illustrated during the global financial crisis of 2008. These dual effects necessitate a deeper exploration of how financial stability moderates the effect of financial inclusion on economic growth.

This paper aims to address this gap by investigating the following key question: How does financial stability moderate the effect of financial inclusion and on economic growth? To answer this question, the study uses panel data from a diverse set of countries, spanning multiple income levels and regions. By leveraging this dataset, the study examines cross-country variations in financial inclusion, stability, and growth, providing a comprehensive view of their interactions.

The remainder of this paper is structured as follows. Section 2 reviews the relevant literature on financial inclusion, stability, and economic growth. Section 3 outlines the empirical methodology, including data sources, variable definitions, and econometric techniques. Section 4 presents the results of the analysis. Lastly, section 5 discusses the policy implications of the findings and offers recommendations for future research.

2. Literature review

A substantial body of empirical literature has examined the determinants and implications of financial inclusion. One key focus is identifying the main factors influencing access to financial services. Demirgüç-Kunt and Klapper (2013), using 2011 Global Findex data for over 148 countries, found that higher national income per capita and financial development (measured by private sector credit) positively impact account penetration, while income inequality has a negative effect. They also noted significant disparities between high-income and low/middle-income countries, with access gaps between the poorest and richest adults.

Zins and Weill (2016), focusing on 37 African countries using 2014 Findex data, highlighted that financial inclusion is strongly linked to individual characteristics such as income, education, gender, and age. Wealthier and more educated individuals, particularly men and older adults, are more likely to access financial services. Owen and Pereira (2018) examined the role of banking system structure, showing that increased bank concentration can improve access to financial services, but only in competitive markets.

Datta and Singh (2019) studied 102 countries and found that gross national income, active population, education, and life expectancy all positively influence financial inclusion. Xu (2019) introduced social trust as a key determinant, showing that higher trust and confidence in banks are positively associated with financial inclusion, using data from 2011 to 2014.

Kebede *et al*. (2021), analyzing 17 African countries, revealed that high foreign bank presence tends to negatively impact financial inclusion, but this effect is moderated by strong institutional quality. This result is supported by the study conducted by Vo (2025). Using principal component analysis, which spans the years 2004–2020, the author examined how financial inclusion reacted to the institutional quality index in the long-term for ten Asia–Pacific countries.

Another strand of empirical literature has explored the effects of financial inclusion on economic growth, poverty, inequality, and human development. Kim *et al*. (2018), using a dynamic panel model for 55 of the Organization of Islamic Cooperation countries (1990–2013), found that better access to financial services such as credit and bank accounts significantly boosts gross domestic product (GDP) growth. Their results also indicate that economic growth positively responds to a higher penetration rate of financial institutions. Neaime and Gaysset (2018) focused on eight Middle East and North Africa (MENA) countries (2002–2015), showing that financial inclusion helps reduce income inequality but does not significantly lower poverty levels.

Mushtaq and Bruneau (2019), in their study of 62 countries (2001–2012), highlighted the role of Information and Communication Technologies, which not only support financial

inclusion but also amplify its poverty-reducing impact. Datta and Singh (2019) provided evidence of a strong positive relationship between their financial inclusion index (FII) and the Human Development Index, particularly in high-income countries. In South Africa, Von Fintel and Orthofer (2020), using income dynamics and tax data, revealed that increased access to financial services reduces wealth inequality and boosts the middle class's wealth share.

Soro and Senou (2023) analyzed the West African Economic and Monetary Union using dynamic fixed effect and pooled mean group estimation. They concluded that digital financial inclusion plays a significant role in reducing income inequality. Emara and El Said (2021), analyzing 44 MENA and emerging economies (1990–2018), confirmed that financial inclusion promotes growth, but institutional quality is essential to fully realize these benefits.

Chen *et al*. (2023) used a quantile-on-quantile approach across ten countries with high financial access (2004–2018), revealing a positive and asymmetric link between financial inclusion and growth. Adedokun and Ağa (2023), in a study of 36 Sub-Saharan African countries (2004–2017), affirmed that improved financial access stimulates economic expansion. Similarly, Huang *et al*. (2023), focusing on 36 Sub-Saharan countries, demonstrated a strong, positive correlation between financial inclusion and human development.

Boachie and Adu-Darko (2024), analyzing 47 African countries (2010–2020), found that human capital significantly enhances the positive growth effect of financial inclusion. Siddiki and Bala-Keffi (2024), studying 153 countries, confirmed that financial inclusion boosts economic activity, particularly in advanced economies, and its effectiveness is influenced by financial development levels.

Additionally, some studies address financial stability concerns. Building on Minsky's (1977) theory, the capitalist economies are inherently vulnerable to financial instability due to internal financial market dynamics and borrowing behavior. The author claims that if credit expansion is not properly controlled, it may shift from prudent to speculative financing, increasing the risk of financial instability. This is why it's crucial to have more stringent regulations to prevent credit expansion from causing systemic problems.

Igan and Pinheiro (2011) contributed to this strand of literature by analyzing the impact of access to loans on the stability of the banking system. The bank-level data used in the study includes 90 countries and covers the period (1990–2005). The authors found that the acceleration of lending activity in times of credit boom tends to destabilize the banking system. In other words, an easy access to credit services combined with loose lending standards lead to deterioration in bank soundness. The adverse effects of expanding credit services to high-risk customers were also emphasized by Mehrotra and Yetman (2015) in their discussion of the link between financial access and financial stability. Similarly, the uncontrolled development of digital finance (i.e. especially online lending) tends to destabilize the financial system by attracting large number of risky clients, as mentioned by Ozili (2018). Conversely, the empirical findings of Neaime and Gaysset (2018) showed that a wider access to account services improves the soundness of the banking system in the MENA region. Indeed, the authors examined a sample of eight countries from 2002 to 2015 and confirmed the existence of a negative and significant association between the number of ATMs and the standard deviation of deposit growth rate. These results are in line with the conclusions of Ahamed and Mallick (2019) who analyzed the effects of financial inclusion on the stability of 2,635 banks over the period 2004–2012. Their empirical work revealed that higher degree of financial inclusiveness leads to a substantial improvement in the stability of the banking system. In order to benefit more from this positive relationship, banks should focus their efforts on reducing their marginal costs and increasing the share of their deposit funding.

Le *et al*. (2019) provided an empirical support to the positive relationship between inclusion and stability in the context of Asian banking industry. Using a dataset of 31 countries from 2004 to 2016, they demonstrated that banks show greater stability when they operate in inclusive financial systems. In such favorable environment, banks are more able to stabilize their deposit base, diversify their assets and reduce their liquidity risk. The Asian banking

systems were the subject of another empirical analysis carried out by Pham and Doan (2020). The authors studied the link between stability and a set of financial inclusion indicators in a sample of 42 economies. The empirical results revealed that a wider usage of saving and account services combined with an easy access to financial institutions play a key role in reinforcing the soundness of Asian banks. Conversely, the study did not confirm the stabilizing effect of an improved access to credit and payment services.

The dataset exploited by Danisman and Tarazi (2020) covers the period 2010–2017, includes 4,168 banks from 28 European countries and integrates multiple individual characteristics such as age, gender and level of education. In light of their findings, the authors claimed that growing financial inclusion, through an improved access to account and digital payment services, supports the resiliency of European banks. This positive effect is mainly obtained by including disadvantaged segments of customers in the banking industry, namely the young unemployed people who live in rural areas. Financial stability is introduced as moderating variable in the research paper of Anarfo *et al*. (2020) who investigated the nexus between financial regulation and financial inclusion with a focus on 48 Sub-Saharan countries. After showing that tight capital adequacy requirements limit access to financial services, the authors emphasized the role played by financial stability in mitigating this negative relationship. Indeed, stable financial institutions tend to preserve their ability to provide financial services despite the various constraints stemming from macroprudential regulation.

The study conducted by Syed (2024) examined the impact of institutional quality, governance, and banking regulation on the shadow economy, financial stability, and financial inclusion in G5 economies. The author supported that financial inclusion and the shadow economy increase financial sector instability, but governance and banking regulation moderate these effects. Indeed, the financial inclusion can reduce the shadow economy size, and when interacting with governance, it exacerbates the negative impact on the shadow economy. This highlights the importance of effective governance and regulatory frameworks for financial stability and inclusive growth. The impact of financial inclusion on financial stability is also analyzed by Sebai *et al*. (2025). According to the results of a panel smooth transition regression model, the authors examined how financial inclusion affects financial stability in 26 emerging economies from 2004 to 2020 within a nonlinear connection. However, the study showed that beyond a certain point, this impact becomes negative, hence the importance of a balanced financial inclusion strategy and an adaptable regulatory framework to mitigate potential risks to overall financial stability.

3. Methodology and data

3.1 Model specification and data source

Numerous economic and financial theories support the relationship between financial inclusion, financial stability, and economic growth. Schumpeter's Growth Theory (Schumpeter, 1959), Financial Development Theory (McKinnon, 2010), and Endogenous Growth Theory (Romer, 1986; Lucas, 1988) provide a foundation for understanding how more access to financial services can promote economic growth by encouraging investment, entrepreneurship, and improving resource allocation. However, financial stability is a key moderating factor, according to Minsky's Financial Instability Hypothesis (Minsky, 1977) and Borio's Macroprudential Regulation Theory (Borio, 2003). While financial inclusion can contribute to growth, excessive credit expansion in an unstable financial system may lead to economic downturns, highlighting the need for sound macroprudential regulation. Therefore, the financial system needs to be inclusive and stable in order to fully promote growth (Jima and Makoni, 2023).

The dependent variable: The economic growth is measured by annual percentage growth rate in a country's real GDP per capita. The World Bank provided data for this variable [1].

The key explanatory variable**:** The financial inclusion measured by the FII introduced by Sarma (2008). Three factors were taken into consideration when establishing the Sarma's

(2008) index are: banking penetration, availability, and use, all the data used to calculate the FII are sourced from International Monetary Fund [2]. The calculation of the FII is detailed in Appendix.

The moderating variable: The Bank Z-score (BZS) [3] serves a good proxy to measure for the financial stability as a moderating variable of the effect of financial inclusion on economic growth (Morgan and Pontines, 2014; Hou, 2023). This score is calculated as follows: $Z - Score = \frac{ROA+E/TA}{\sigma ROA}$, where return on assets (ROA) refers to a bank's ROA, E stands for bank equity and TA is used to represent all of the bank's assets. The standard deviation of ROA is denoted by σROA. Higher Z-score value indicates a more stable financial sector with lower overall risk.

The control variables: The augmented Cobb–Douglas model serves as the foundation for the growth model's selection of control variables, which are as follows:

(1) Gross Fixed Capital Formation (FCF) (annual % growth) (FCF): is a measure of an economy's capital stock that reflects the amount spent on growing its fixed assets as well as net changes in stock levels.

(2) Wage and salaried workers (WAGE): As a proxy of labor productivity, total wage and salaried workers (percentage of total employment) (based on an International Labor Organization (ILO) model).

(3) Openness (OPEN): OPEN is calculated by dividing the total of merchandise imports and exports by the GDP to get the merchandise trade as a percentage of GDP.

(4) Inflation, consumer prices (annual %) (INF): The consumer price index, which measures inflation, shows the annual percentage change in the average consumer's cost of purchasing a basket of goods and services.

The data of control variables are sourced from the World Bank [4].

In light of this, we specify our model using the following equation:

$$GDP_{it} = \beta_0 + \beta_1 FII_{it} + \beta_2 BZS_{it} + \beta_3 (FII \times BZS)_{it} + \beta_4 FCF_{it} + \beta_5 WAGE_{it} + \beta_6 OPEN_{it} + \beta_7 INF_{it} + \varepsilon_{it}$$

where GDP per capita is used to measure economic growth; financial inclusion is measured by the FII; financial stability is proxied by the BZS; Gross FCF; Wage and salaried workers (WAGE); Trade Openness (OPEN); and Inflation (INF). Furthermore, the moderating effect of financial stability is captured by the interaction term $FII \times BZS$.

Note that the constant term and the unknown parameters that need to be estimated are indicated by β_0 and β_k (1, 2, 3, . . ., 7) respectively. The ε_{it} is the error term disturbance error term is assumed to be independent and identically distributed.

3.2 Panel data selection

The empirical works on panel data from 62 different countries [5], belonging to different geographical regions (Africa, Americas, Asia, Europe and Oceania), during the period 2004–2022. Although data availability constraints limited the inclusion of years prior to 2004, especially for data relating to financial inclusion indicators, which are only available from 2004. Therefore, in order to guarantee the validity and precision of our analysis, countries without complete data on financial inclusion indicators are not included in the study. Also, all data prior to 2004 are excluded from our study.

3.3 Estimation approach

In our study, we employed the Robust Weighted Least Squares (RWLS) estimation method due to its superior handling of outliers, which can significantly affect ordinary least squares

(OLS) estimates. By assigning different weights to observations, RWLS reduces the influence of outliers on the final estimates (Huber and Ronchetti, 1981). Outliers can have a disproportionate impact on the parameter estimates in OLS, leading to biased results. RWLS addresses this issue by assigning smaller weights to observations with larger residuals, thereby reducing their influence on the final estimates (Huber and Ronchetti, 1981; Rousseeuw and Leroy, 1987).

Moreover, RWLS can provide more efficient estimates than OLS when the assumption of homoscedasticity is violated. By giving less weight to observations with larger errors, RWLS produces more reliable parameter estimates (Rousseeuw *et al*., 1986). This adaptability makes RWLS a robust choice for our analysis, ensuring that the results are reliable even in the presence of non-constant error variances.

In addition, RWLS minimizes the impact of leverage points, which can otherwise skew the regression results. This property further enhances the robustness and reliability of our estimates (Rousseeuw *et al*., 1986). Therefore, the use of RWLS is justified as it provides a more accurate and dependable framework for our data analysis (Rousseeuw *et al*., 1986).

4. Results and discussion

4.1 Descriptive analysis

The descriptive statistics in Table 1 reveal considerable disparity between the mean (3.38) and median (3.73) of the GDP, indicating potential skewness. For GDP, the standard deviation is 4.44, reflecting diverse economic performance, and the negative skewness (−0.97) and positive kurtosis (8.13) indicate a distribution where most values are concentrated on the right with a few extreme values on the left. This evidence is reinforced by the Jarque-Bera test, which highlights the non-random nature of GDP and rejects the null hypothesis of a normal distribution at the 1% significance level. The relative symmetry of the FII can be observed in the proximity of its mean (0.36) and median (0.38). The skewness value close to 0 (−0.04) and the kurtosis value close to 3 (2.67) indicating an almost symmetric distribution. The Jarque–Bera test (4.09) confirms this finding and supports the normality hypothesis.

The distribution of BZS is skewed to the right, as indicated by the greater mean (15.26) than the median (14.26). The non-normality is further supported by positive kurtosis (1.04) and positive skewness (4.27). The Jarque–Bera test (208.79), which emphasizes the existence of outliers and non-random distribution features, strongly rejects the null hypothesis of a normal distribution.

The five control variables, all have right-skewed distributions with significant mean-median disparities, high standard deviations, positive skewness, except for WAGE, positive and kurtosis. The normal distribution null hypothesis is rejected by the Jarque-Bera tests, demonstrating the non-random character of these variables.

Table 1. Descriptive statistics

	GDP	FII	BZS	FCF	WAGE	OPEN	INF
Mean	3.38	0.36	15.26	4.55	61.62	73.36	5.73
Median	3.73	0.38	14.26	4.08	63.48	61.20	3.55
Maximum	24.47	0.86	44.51	135.73	95.75	276.84	557.20
Minimum	−23.51	−0.29	2.12	−67.61	10.13	15.17	−4.48
Std. dev.	4.44	0.20	8.13	13.81	22.51	41.49	22.25
Skewness	−0.97	−0.04	1.04	1.33	−0.35	1.24	20.18
Kurtosis	8.13	2.67	4.27	18.60	2.00	4.70	468.31
Jarque-Bera	1063.63***	4.09	208.79***	8837.25***	52.46***	319.33***	7,698,665***

Note(s): *** indicates a significant level at 1%

Source(s): Authors' own work

Considering the non-normal distribution and possible heterogeneity resulting from outliers, the RWLS estimation approach can be considered appropriate. Because RWLS can handle heteroskedasticity and non-normality effectively and produces more reliable parameter estimates when outliers are present, the empirical results can be relied upon (Rousseeuw and Leroy, 1987).

4.2 Regression analyses

The results of our study on the effect of financial inclusion on economic growth are presented in this part, with an emphasis on the moderating role of financial stability. Two separate estimation results regarding the impact of financial inclusion and financial stability on economic growth are presented in this section. The distinct effects of financial inclusion and financial stability on economic growth are specifically presented in Table 2. The results of the interaction between financial inclusion and financial stability is shown in Table 3.

Starting with Table 2's results, it is clear that the separate effects of financial inclusion and financial stability on economic growth are not significant. This finding implies that, while financial inclusion and stability are unrelated, economic growth is not dependent on them. On the other hand, it is supported by Gross FCF and Trade openness and limited by Wage and salaried workers and inflation.

This result is consistent with Levine's (2005) explanation, which argued that financial inclusion and financial stability affect economic growth through distinct channels. While financial inclusion largely acts by improving access to credit and financial services, financial stability focuses on reducing systemic risks and mitigating crises. The measurable effect on economic growth may be weakened if these effects are separated.

The results presented in Table 3 refer to the case when financial stability, measured by BZS moderate the effect of financial inclusion, measured by FII, on economic growth. It's important to notice that the coefficient of the interaction between financial inclusion and financial stability (FII $\times BZS$) is the variable of interest in Table 3.

As a result, the model displays an adjusted R^2 of 41.13%. According to Wooldridge (2010), an adjusted R^2 close to 50% indicates a reasonable level of explanatory power given the complexity of the economic growth phenomenon, which is determined by numerous external factors that are not observed and have an impact on the economy. Thus, the model's robustness is confirmed. Furthermore, the F statistics is very significant at the 1% level, which increases the model's reliability.

In light of the results presented in Table 3 above, it is evident that financial stability does moderate the impact of financial inclusion on the promotion of economic growth. The coefficient of the interaction between financial inclusion and financial stability (FII $\times BZS$) is positive (0.1304) and significant at level of 1%. This suggests that an improvement in financial inclusion by 1% will result economic growth to increase, on average, by 0.1304%, when

Table 2. The impact of financial inclusion and financial stability on economic growth

Variables	FII	BZS	FCF	WAGE	OPEN	INF	Cons
GDP	−0.906	−0.0173	0.138***	−0.041***	0.008**	−0.018**	5.408***
	(−1.26)	(−1.22)	(18.90)	(−6.45)	(2.21)	(−2.48)	(12.30)
F statistics		85.59***					
R-squared		0.3794					
Adj *R*-squared		0.3750					

Note(s): GDP, FII, BZS, FCF, WAGE, OPEN, and INF denote economic growth, financial inclusion index, Bank Z-score, Gross Fixed Capital Formation, Wage and salaried workers, Trade openness, and inflation rate The *t*-statistics are in parentheses. ** and *** indicate 5% and 1% significance level, respectively

Source(s): Authors' own work

Table 3. The effect of financial inclusion on economic growth, with a focus on the moderating role of financial stability

Variables	FII	BZS	FII ×BZS	FCF	WAGE	OPEN	INF	Cons
GDP	−5.665***	−0.012***	0.1304***	0.158***	−0.042***	0.009***	−0.018**	6.876***
	(−3.44)	(−3.32)	(3.18)	(20.60)	(−6.73)	(2.75)	(−2.51)	(10.68)
F statistics		85.43***						
R-squared		0.4162						
Adj *R*-squared		0.4113						

Note(s): The *t*-statistics are in parentheses. ** and *** indicate 5% and 1% significance level, respectively

Source(s): Authors' own work

financial stability is improved or becomes efficient. This means that well-developed financial systems, which include both financial inclusion and stability, promote economic growth. Furthermore, a stable and inclusive financial system improves investor and consumer confidence and encourages financial institutions to offer inclusive services more widely, thereby stimulating economic growth.

In contrast to the results presented in Table 3, the effects of financial inclusion and financial stability (BZS) are negatively significant in Table 3: −5.665 and −0.012, respectively. The separate effect of each variable is negative, which is consistent with previous literature showing that an excessive credit extension may cause a decline in both households and businesses. In the event that borrowers fail to repay their debts, this could lead to financial crises and a downturn in economic activity. In addition, the introduction of too strict financial regulations to guarantee financial stability can reduce the efficiency of the microfinance institutions (Zainal *et al*., 2020). This can limit economic development by restricting access to financing.

For the control variables, the results shown in Table 3 are consistent with those in Table 2.

It is evident that FCF has a notably favorable impact on economic growth, in Table 3, the coefficient of FCF is positive and significant (0.158). This result is in line with Romer's (1990) arguments. The author argued that investment in fixed capital often involves the adoption of new technologies that increase productivity. Also, the coefficient of OPEN is statistically significant (0.009), which means that trade openness allows countries to increase growth opportunities through increased demand following access to larger markets for their goods and services.

On the other hand, the variable (Wage) has a negative impact on growth, its coefficient being statistically significant and negative (0-0.042). This result can be explained by rigidities in the labor market caused by the spread of stable contracts and social protection, making it difficult to adjust labor supply quickly in response to economic shocks (Barro, 1999). The INF shows the same result, with a negative and significant coefficient (−0.018). It is evident that consumers' purchasing power is diminished by inflation, which limits their capacity to spend and boost the economy.

4.3 Discussion of the results

Our findings demonstrate that, in contrast to the generally accepted hypothesis, in some situations financial inclusion and stability may have a negative impact on economic growth. More specifically, we find that slower economic growth is associated with more access to financial services in countries with high levels of financial inclusion. Furthermore, it appears that excessive financial stability negatively associated with economic growth. These findings are supported by Rajan (2011), who affirmed that one of the possible mechanisms revealing the negative impact of financial inclusion is the increase in access to financial services, above a certain level. This could lead to excessive debt for households and businesses, so limiting their ability to make profitable investments. Similarly, the uncontrolled development of digital finance tends to destabilize the financial system by attracting a large number of risky customers, as mentioned by Ozili (2018). According to Levine (2005), in some countries, financial systems may not be sufficiently developed to make effective use of the increased resources resulting from financial inclusion. This could lead to an inefficient use of resources, undermining economic growth. The author also shows that in the absence of financial inclusion, stability can lead to a concentration of financial resources in specific sectors, often the most secure ones, to the detriment of other more dynamic but less secure sectors. This leads to unbalanced and potentially weaker growth.

In fact, the negative effects of separate financial inclusion and stability on economic growth emphasize the significance of integrated policies that support both financial inclusion and financial stability. Mehrotra and Yetman (2015) showed the negative effects of the expansion of credit services to high-risk customers on financial stability. Consequently, an unstable

financial system has a negative impact on economic growth (Creel *et al*., 2015). A balanced approach can ensure that the benefits of financial stability translate into opportunities for economic growth for all societal segments.

Therefore, our results are in line with those of Demirgüç-Kunt and Levine (2009), who suggested that policies to promote financial inclusion need to be accompanied by robust regulations to prevent excessive debt and ensure that financial services are used productively.

Moreover, our findings show that the interaction between financial inclusion and financial stability contributes to economic growth. These results are supported by Demirgüç-Kunt and Klapper (2013), who confirmed that positive effects can compound each other when an economy manages to improve financial inclusion while maintaining financial stability. Getting access to financial services encourages economic activity and innovation, but a stable financial system ensures investors' confidence and resilience in the face of economic downturns. Moreover, the effect of financial inclusion on economic growth may be mitigated by financial stability (Anarfo *et al*., 2020). Benefits of financial inclusion are greater in stable financial systems because financial institutions can effectively manage the risks involved in providing financial services to a larger segment of the population (Levine, 2005).

In summary, the findings highlight the critical role that financial stability plays in enhancing the positive effects of financial inclusion on economic growth. The model's robustness increases the credibility of these findings by offering important insights into the relationship between a stable, inclusive financial system and economic growth.

5. Conclusion

This study investigates the moderating role of financial stability in the effect of financial inclusion on economic growth, using a panel dataset of 62 countries. The findings reveal that the individual effects of financial inclusion and financial stability on economic growth are negative and statistically significant. This result contradicts the generally accepted hypothesis that increasing access to financial services and ensuring financial system stability inherently stimulate economic growth. Our results suggest that excessive financial inclusion or overly stringent financial stability can lead to unintended economic consequences. High levels of financial inclusion may result in over-indebtedness among households and businesses, thereby restricting their ability to make productive investments. Similarly, excessive financial stability measures, such as overly restrictive regulations, may stifle innovation and limit access to credit, particularly for smaller, dynamic sectors of the economy.

However, the interaction between financial inclusion and financial stability paints a more positive picture. When financial stability moderates the impact of financial inclusion, the combined effect becomes significant and positive. The interaction term indicates that an improvement in financial inclusion, in the presence of a stable financial system, leads to economic growth. This suggests that a balanced and well-regulated financial system not only reduces systemic risks but also facilitates the effective utilization of financial resources. These findings align with previous literature, including Demirgüç-Kunt and Klapper (2013) and Levine (2005), which emphasized the complementary nature of financial inclusion and financial stability in driving economic growth.

The study offers several policy implications. First, it underscores the importance of integrating financial inclusion and financial stability policies. Policymakers should adopt a balanced approach that promotes access to financial services while maintaining a stable financial environment. Excessive financial inclusion, without adequate risk management frameworks, may lead to over-indebtedness and financial instability, ultimately hampering economic growth. Similarly, overly stringent financial regulations, while ensuring stability, can reduce the efficiency of financial systems and limit access to financing, particularly for small businesses and innovative sectors. Thus, policies should focus on fostering inclusive and innovative financial systems that are resilient and capable of managing systemic risks by adopting regulations that include provisions for microfinance institutions, mobile banking,

and fintech, ensuring that they operate under the same prudential standards. Second, enhancing financial literacy should be a priority for policymakers. As access to financial services expands, it is essential to equip individuals and businesses with the knowledge and skills to use these services effectively. Financial education programs can mitigate the risks of over-indebtedness and ensure that financial resources are used productively. In this context, central banks can implement national financial literacy initiatives, especially aimed at underserved populations, to ensure that new financial services users are aware of the risks associated with financial products. Third, investment in infrastructure and technology is critical for creating an inclusive and stable financial system. Digital financial services can expand access to underserved populations, particularly in remote and rural areas. However, such expansion must be accompanied by robust regulatory frameworks to prevent systemic risks and ensure consumer protection. Fourth, the findings highlight the importance of macroeconomic stability for economic growth. Addressing inflationary pressures and labor market rigidities should be integral to economic policies. Governments must implement measures to control inflation and promote labor market flexibility, enabling economies to adapt more effectively to economic and technological changes.

Despite these valuable insights, this study is not without limitations. First, the analysis focuses on a panel of 62 countries, which may not fully capture the heterogeneity of financial systems and economic contexts across the globe. Future research could expand the sample to include more countries or focus on specific regions to provide a more nuanced understanding of the relationship between financial inclusion, financial stability, and economic growth. Second, while the study uses robust econometric methods, it relies on aggregate data that may not capture the micro-level dynamics of financial inclusion and financial stability. Future studies could benefit from incorporating micro-level data, such as household or firm-level surveys, to explore the mechanisms through which financial inclusion and stability affect economic growth. Third, the study does not account for potential endogeneity issues that may arise from the bidirectional relationship between financial inclusion, financial stability, and economic growth. While the interaction term provides valuable insights, future research could use instrumental variable approaches or dynamic panel models to address potential endogeneity and provide more robust causal inferences.

Future research could explore their social and environmental dimensions, particularly in the context of sustainable development. For instance, examining how financial inclusion and stability contribute to poverty reduction, gender equality, and environmental sustainability could provide a more comprehensive understanding of their role in development.

(The Appendix follows overleaf)

Appendix

Table A1. Authors' detailed calculation of the FII according to Sarma's (2008) methodology

Dimensions	Banking penetration	Availability	Use
Description	This dimension indicating the penetration of the financial system (p) and is measured by the Deposit accounts with commercial banks per 1000 adults (Sarma, 2008). If every person in a country has a bank account, this indicator's value will be equal to 1	Another characteristic of an inclusive financial sector is availability (a). It is represented by the Commercial bank branches per 100,000 adults (a_1) and the number of automated teller machine ATMs (a_2) for 100,000 adults. It is indisputable that automatic gatekeepers play a critical role in improving access to banking services in many economies	This dimension is more concerned with how frequently and how intensely financial products or services are used. As a result, it contains data on loans, deposits, payments, transfers, and remittances. In our study, we used the Outstanding deposits with commercial banks (use_1) and Outstanding loans from commercial banks (use_2) as a percentage of GDP (Sarma, 2008)
Calculation	Each of the three dimensions is calculated from formula (1) below, using the values of the parameters min_i and max_i. $d_i = \frac{cv_i - min_i}{max_i - min_i}$ (1) Were, d_i: the value of the dimension i, cv_i : its current value, min_i : its minimum value, max_i : its maximum value So the formula must ensure that d_i is between 0 and 1 Note: If we have two indicators for each dimension, they are aggregated to obtain a composite score for each dimension using a simple or weighted average of the normalized indicators		
Calculation of the FII	The dimensions (d_1; d_2; d_3) are added together, and the number of dimensions ($n = 3$) is determined using formula (2), below, to get the FII $FII = 1 - \frac{\sqrt{(1-d_1)^2+(1-d_2)^2+(1-d_3)^2}}{\sqrt{3}}$ (2)		

Source(s): Authors' own work

Notes

1. https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?view=chart
2. https://data.imf.org/regular.aspx?key=61063967
3. https://databank.worldbank.org/source/global-financial-development/Series/GFDD.SI.01
4. https://data.worldbank.org/indicator
5. Algeria, Argentina, Armenia, Austria, Bahamas, Bangladesh, Belgium, Bolivia, Bulgaria, Chile, Colombia, Costa Rica, Ecuador, Estonia, Fiji, Rep, Gambia, Georgia, Ghana, Guatemala, Guinea, Guyana, Honduras, Hungary, India, Indonesia, Ireland, Italy, Japan, Jordan, Kenya, Korea, Latvia, Lebanon, Madagascar, Malaysia, Malta, Mauritius, Mexico, Moldova, Mongolia, Morocco, Namibia, Netherlands, Nicaragua, Oman, Pakistan, Paraguay, Peru, Philippines, Rwanda, Seychelles, Solomon Islands, South Africa, Spain, Switzerland, Thailand, Trinidad and Tobago, Türkiye, Uganda, Ukraine, Uzbekistan, Zimbabwe.

References

Adedokun, M.W. and Ağa, M. (2023), "Financial inclusion: a pathway to economic growth in Sub-Saharan African economies", *International Journal of Finance and Economics*, Vol. 28 No. 3, pp. 2712-2728, doi: 10.1002/ijfe.2559.

Ahamed, M.M. and Mallick, S.K. (2019), "Is financial inclusion good for bank stability? International evidence", *Journal of Economic Behavior and Organization*, Vol. 157, pp. 403-427, doi: 10.1016/j.jebo.2017.07.027.

Allen, F., Demirguc-Kunt, A., Klapper, L. and Peria, M.S.M. (2016), "The foundations of financial inclusion: understanding ownership and use of formal accounts", *Journal of Financial Intermediation*, Vol. 27, pp. 1-30, doi: 10.1016/j.jfi.2015.12.003.

Anarfo, E.B., Abor, J.Y. and Osei, K.A. (2020), "Financial regulation and financial inclusion in Sub-Saharan Africa: does financial stability play a moderating role?", *Research in International Business and Finance*, Vol. 51, 101070, doi: 10.1016/j.ribaf.2019.101070.

Barro, R.J. (1999), "Inequality, growth, and investment", doi 10.3386/w7038.

Beck, T., Demirgüç-Kunt, A. and Levine, R. (2007), "Finance, inequality and the poor", *Journal of Economic Growth*, Vol. 12 No. 1, pp. 27-49, doi: 10.1007/s10887-007-9010-6.

Boachie, C. and Adu-Darko, E. (2024), "The effect of financial inclusion on economic growth: the role of human capital development", *Cogent Social Sciences*, Vol. 10 No. 1, 2346118, doi: 10.1080/23311886.2024.2346118.

Borio, C. (2003), "Towards a macroprudential framework for financial supervision and regulation?", *CESifo Economic Studies*, Vol. 49 No. 2, pp. 181-215, doi: 10.1093/cesifo/49.2.181.

Chen, Z., Ali, S., Lateef, M., Imran Khan, A. and Khalid Anser, M. (2023), "The nexus between asymmetric financial inclusion and economic growth: evidence from the top 10 financially inclusive economies", *Borsa Istanbul Review*, Vol. 23 No. 2, pp. 368-377, doi: 10.1016/j.bir.2022.11.004.

Creel, J., Hubert, P. and Labondance, F. (2015), "Financial stability and economic performance", *Economic Modelling*, Vol. 48, pp. 25-40, doi: 10.1016/j.econmod.2014.10.025.

Danisman, G.O. and Tarazi, A. (2020), "Financial inclusion and bank stability: evidence from Europe", *The European Journal of Finance*, Vol. 26 No. 18, pp. 1842-1855, doi: 10.1080/1351847x.2020.1782958.

Datta, S.K. and Singh, K. (2019), "Variation and determinants of financial inclusion and their association with human development: a cross-country analysis", *IIMB Management Review*, Vol. 31 No. 4, pp. 336-349, doi: 10.1016/j.iimb.2019.07.013.

Demirgüç-Kunt, A. and Klapper, L. (2013), "Measuring financial inclusion: explaining variation in use of financial services across and within countries", *Brookings Papers on Economic Activity*, Vol. 2013 No. 1, pp. 279-340, doi: 10.1353/eca.2013.0002.

Demirgüç-Kunt, A. and Levine, R. (2009), "Finance and inequality: theory and evidence", *Annual Review of Financial Economics*, Vol. 1 No. 1, pp. 287-318, doi: 10.1146/annurev.financial.050808.114334.

Emara, N. and El Said, A. (2021), "Financial inclusion and economic growth: the role of governance in selected MENA countries", *International Review of Economics and Finance*, Vol. 75, pp. 34-54, doi: 10.1016/j.iref.2021.03.014.

Hou, S. (2023), "The nonlinear relationship between banks competition and financial stability in China", *Applied Economics Letters*, Vol. 30 No. 3, pp. 331-335, doi: 10.5539/ijef.v13n9p33.

Huang, W., Gu, X., Lin, L., Alharthi, M. and Usman, M. (2023), "Do financial inclusion and income inequality matter for human capital? Evidence from sub-Saharan economies", *Borsa Istanbul Review*, Vol. 23 No. 1, pp. 22-33, doi: 10.1016/j.bir.2022.09.002.

Huber, P.J. and Ronchetti, E.M. (1981), *Robust Statistics*, John Wiley & Sons, New York, Vol. 1 No. 1.

Igan, M.D.O. and Pinheiro, M. (2011), "Credit growth and bank soundness: fast and furious?", IMF Working Papers. Vol. 11 No. 278, 2011/278, doi: 10.5089/9781463925956.001.

Jima, M.D. and Makoni, P.L. (2023), "Causality between financial inclusion, financial stability and economic growth in sub-Saharan Africa", *Sustainability*, Vol. 15 No. 2, 1152, doi: 10.3390/su15021152.

Kebede, J., Selvanathan, S. and Naranpanawa, A. (2021), "Foreign bank presence, institutional quality, and financial inclusion: evidence from Africa", *Economic Modelling*, Vol. 102, 105572, doi: 10.1016/j.econmod.2021.105572.

Kim, D.-W., Yu, J.-S. and Hassan, M.K. (2018), "Financial inclusion and economic growth in OIC countries", *Research in International Business and Finance*, Vol. 43, pp. 1-14, doi: 10.1016/j.ribaf.2017.07.178.

Le, T.-H., Chuc, A.T. and Taghizadeh-Hesary, F. (2019), "Financial inclusion and its impact on financial efficiency and sustainability: empirical evidence from Asia", *Borsa Istanbul Review*, Vol. 19 No. 4, pp. 310-322, doi: 10.1016/j.bir.2019.07.002.

Levine, R. (2005), "Finance and growth: theory and evidence", *Handbook of Economic Growth*, Vol. 1, pp. 865-934.

Lucas, R.E., Jr (1988), "On the mechanics of economic development", *Journal of Monetary Economics*, Vol. 22 No. 1, pp. 3-42, doi: 10.1016/0304-3932(88)90168-7.

McKinnon, R.I. (2010), *Money and Capital in Economic Development*, Brookings Institution Press, Washington, DC.

Mehrotra, A. and Yetman, J. (2015), "Financial inclusion—issues for central banks", *BIS Quarterly Review*.

Minsky, H.P. (1977), "The financial instability hypothesis: an interpretation of Keynes and an alternative to "standard" theory", *Challenge*, Vol. 20 No. 1, pp. 20-27, doi: 10.1080/05775132.1977.11470296.

Morgan, P. and Pontines, V. (2014), "Financial stability and financial inclusion", ADBI Working Paper 488, SSRN, available at: https://ssrn.com/abstract=2464018

Mushtaq, R. and Bruneau, C. (2019), "Microfinance, financial inclusion and ICT: implications for poverty and inequality", *Technology in Society*, Vol. 59, 101154, doi: 10.1016/j.techsoc.2019.101154.

Neaime, S. and Gaysset, I. (2018), "Financial inclusion and stability in MENA: evidence from poverty and inequality", *Finance Research Letters*, Vol. 24, pp. 230-237, doi: 10.1016/j.frl.2017.09.007.

Owen, A.L. and Pereira, J.M. (2018), "Bank concentration, competition, and financial inclusion", *Review of Development Finance*, Vol. 8 No. 1, pp. 1-17, doi: 10.1016/j.rdf.2018.05.001.

Ozili, P.K. (2018), "Impact of digital finance on financial inclusion and stability", *Borsa Istanbul Review*, Vol. 18 No. 4, pp. 329-340, doi: 10.1016/j.bir.2017.12.003.

Ozili, P.K. (2020), "Theories of financial inclusion", in *Uncertainty and Challenges in Contemporary Economic Behaviour*, Emerald Publishing, pp. 89-115.

Pham, M.H. and Doan, T.P.L. (2020), "The impact of financial inclusion on financial stability in Asian countries", *The Journal of Asian Finance, Economics and Business*, Vol. 7 No. 6, pp. 47-59, doi: 10.13106/jafeb.2020.vol7.no6.047.

Rajan, R.G. (2011), *Fault Lines: How Hidden Fractures Still Threaten the World Economy*, Princeton University press, New Jersey.

Romer, P.M. (1986), "Increasing returns and long-run growth", *Journal of Political Economy*, Vol. 94 No. 5, pp. 1002-1037, doi: 10.1086/261420.

Romer, P.M. (1990), "Endogenous technological change", *Journal of Political Economy*, Vol. 98 No. 5, Part 2, pp. S71-S102, doi: 10.1086/261725.

Rousseeuw, P.J. and Leroy, A.M. (1987), *Robust Regression and Outlier Detection*, John Wiley & Sons, New York.

Rousseeuw, P.J., Hampel, F.R., Ronchetti, E.M. and Stahel, W.A. (1986), *Robust Statistics: The Approach Based on Influence Functions*, John Wiley & Sons, Chichester.

Sarma, M. (2008), "Index of financial inclusion (No. 215)", Working paper.

Schumpeter, J.A. (1959), *The Theory of Economic Development: an Inquiry into Profits, Capital, Credit, Interest (...)*, Harvard University Press, New Brunswick, NJ.

Sebai, M., Talbi, O. and Guerchi-Mehri, H. (2025), "Optimal financial inclusion for financial stability: empirical insight from developing countries", *Finance Research Letters*, Vol. 71, 106467, doi: 10.1016/j.frl.2024.106467.

Showkat, M., Nagina, R. and Nori, U. (2024), "Towards sustainable development: financial inclusion and women's economic empowerment in India", *Gender in Management: An International Journal*, Vol. 40 No. 2, pp. 292-313, doi: 10.1108/gm-05-2024-0229.

Siddiki, J. and Bala-Keffi, L.R. (2024), "Revisiting the relation between financial inclusion and economic growth: a global analysis using panel threshold regression", *Economic Modelling*, Vol. 135, 106707, doi: 10.1016/j.econmod.2024.106707.

Soro, K. and Senou, M.M. (2023), "Digital financial inclusion and income inequality in WAEMU: what causality for what heterogeneity?", *Cogent Economics and Finance*, Vol. 11 No. 2, 2242662, doi: 10.1080/23322039.2023.2242662.

Syed, A.A. (2024), "The moderating role of governance, banking regulation, and supervision on shadow economy, financial inclusion, and financial stability nexus: a case of G5 economies", *Economic Change and Restructuring*, Vol. 57 No. 6, p. 176, doi: 10.1007/s10644-024-09754-2.

Vo, D.H. (2025), "Long-term effects of institutional quality on financial inclusion in Asia–Pacific countries", *Financial Innovation*, Vol. 11 No. 1, p. 59, doi: 10.1186/s40854-024-00727-y.

Von Fintel, D. and Orthofer, A. (2020), "Wealth inequality and financial inclusion: evidence from South African tax and survey records", *Economic Modelling*, Vol. 91, pp. 568-578, doi: 10.1016/j.econmod.2020.02.001.

Wooldridge, J.M. (2010), *Econometric Analysis of Cross Section and Panel Data*, 2nd ed., MIT press, Cambridge, Massachusetts London.

Xu, X. (2019), "Trust and financial inclusion: a cross-country study", *Finance Research Letters*, Vol. 35, 101310, doi: 10.1016/j.frl.2019.101310.

Zainal, N., Kamarudin, F., Hook, L.S., Bakri, M.H., Sufian, F. and Nassir, A.M. (2020), "Regulation, supervision and social and financial efficiency of microfinance institutions in ASEAN-5 countries", *Malaysian Journal of Economic Studies*, Vol. 57 No. 2, pp. 253-273, doi: 10.22452/mjes.vol57no2.5.

Zins, A. and Weill, L. (2016), "The determinants of financial inclusion in Africa", *Review of Development Finance*, Vol. 6 No. 1, pp. 46-57, doi: 10.1016/j.rdf.2016.05.001.

Further reading

Fischer, S. (1993), "The role of macroeconomic factors in growth", *Journal of Monetary Economics*, Vol. 32 No. 3, pp. 485-512, doi: 10.1016/0304-3932(93)90027-d.

Gujarati, D.N. and Porter, D.C. (2009), *Basic Econometrics*, 5th ed., McGraw-Hill, New York, NY.

Solow, R.M. (1956), "A contribution to the theory of economic growth", *The quarterly journal of economics*, Vol. 70 No. 1, pp. 65-94, doi: 10.2307/1884513.

Corresponding author

Jihad Ait soussane can be contacted at: jihad.aitsoussane@gmail.com