

Does insecurity influence the financial inclusion-economic growth nexus in Africa? Insight from dynamic panel approach

Journal of
Economic and
Administrative
Sciences

Musa Abdullahi Sakanko

*Department of Entrepreneurship, School of Innovative Technology,
Federal University of Technology Minna, Minna, Nigeria*

Nurudeen Abu

Department of Economics, Baba - Ahmed University, Kano, Nigeria, and

Nazatul Faizah Haron

*Faculty of Business and Management, Universiti Sultan Zainal Abidin,
Kuala Nerus, Malaysia*

Received 10 September 2025

Revised 7 December 2025

26 January 2026

20 March 2026

Accepted 13 May 2026

Abstract

Purpose – Despite notable progress in promoting financial inclusion (FI) to drive economic growth (EG), Africa still lags behind other regions due to structural challenges, including inadequate infrastructure, regulatory barriers and low financial literacy, amongst others. More importantly, rising insecurity (INS) in the form of conflicts, terrorism, kidnapping, communal violence, etc., poses significant threats to the effectiveness of FI in fostering EG via disruption of financial systems, displacement of people, destruction of infrastructure and erosion of investor confidence. This study explores the influence of INS on the FI-EG nexus, particularly in Africa.

Design/methodology/approach – To assess the role of INS on the FI-EG nexus, this research employs the system-Generalized Method of Moments to analyse panel data for 39 African economies, further grouped into Lower Middle Income and Lower Income countries, during the 2004–2023 period. In addition, the study adopts the Principal Component Analysis (i.e. PCA) to construct the FI index.

Findings – The results portray that FI impacts EG positively (0.088/0.066), while rising INS erodes the growth-benefits of FI (–0.150/–0.184) in Africa in the full sample. This empirical evidence is consistent across different income groups. Moreover, agricultural output expansion promotes EG, but excess money supply impacts EG adversely.

Research limitations/implications – The study unravels the significance of ensuring greater security to reap the growth-benefits of FI in Africa.

Originality/value – The research is the first to explore the role of INS (proxied by military expenditure) on the FI-EG nexus in Africa.

Keywords Economic growth, Financial inclusion, Insecurity, System-GMM, Africa

Paper type Research article

1. Introduction

Over the years, researchers have explored the drivers of economic growth (EG) worldwide. The disparity in growth between developed and developing countries is indeed widening (Opoku *et al.*, 2024; Van *et al.*, 2021), and efforts have been made to assess whether the growth influencers recognized in Western nations apply to the African continent. Understanding the nature of EG in Africa is vital, especially as it lags behind other regions in socio-economic progress. Africa's average GDP growth dropped from 4.1% in 2021 to 3.1% in 2023, rising to 3.7% in 2024 and it is anticipated to rise further to 4.3% in 2025 (World Bank, 2024).

Aside from drawing considerable attention to the potential drivers of its growth, Africa is witnessing a gradual increase in financial inclusion (FI) (Mboto *et al.*, 2024). Consequently, FI



Journal of Economic and Administrative
Sciences

© Emerald Publishing Limited

e-ISSN: 2054-6246

p-ISSN: 2054-6238

DOI 10.1108/JEAS-09-2025-0638

JEL Classification — O16, F43, O47

has not only emerged as a key element that can boost EG, but it is also garnering significant global policy and research interests. Developments in financial technology have led to the emergence of a vibrant virtual economy (Singh and Stakic, 2021), and it is intensifying the discourse on FI as a tool for enhancing economic prosperity including achieving the Sustainable Development Goals via improved access to financial services like savings, credit, insurance and digital payments (Adedokun and Ağa, 2023; Daud and Ahmad, 2023; Emaras and El-Said, 2021). Prior research has also recognized FI's potential to spur entrepreneurship, reduce poverty and promote inclusive development (Abu *et al.*, 2022a; Anga *et al.*, 2021; Anifowose and Chummun, 2025; Liu *et al.*, 2021; Nizam *et al.*, 2020; Sakanko, 2020; Sakanko and David, 2020).

Despite global progress, Africa still ranks low compared to other regions in terms of FI. For instance, using account-ownership and digital payment usage, the World Bank (2023) reported that there has been substantial progress across global regions between 2014 and 2021, but with marked disparities in growth rates and adoption levels. In East Asia & Pacific, account-ownership increased modestly from 72% in 2014 to 83% in 2021, while digital payment usage surged from 48% to 78%, signalling greater digital engagement despite already high levels of access. Europe & Central Asia experienced steady growth, with account-ownership rising from 78% to 90% and digital payment usage from 71% to 87%, reflecting broad-based access and deepening digital usage. Similarly, Latin America and the Caribbean recorded significant improvements, as account-ownership rose from 52% in 2014 to 74% in 2021, and digital payments from 44% to 66%, indicating major strides in both access and digital financial engagement. In North America, FI was already high, with account-ownership and digital payments ranging from 94% to 95% and 92%–94%, respectively, demonstrating mature and stable financial systems.

In contrast, Africa's progress remains low. For example, Sub-Saharan Africa (SSA)'s account-ownership rose from 34% in 2014 to 55% in 2021, while digital payment usage jumped from 28% to 50%, largely driven by the expansion of mobile-money services. In similitude, the Middle East & North Africa (MENA) account-ownership increased from 48% in 2017 to 53% in 2021, and digital payments from 38% to 46%, reflecting slower but on-going efforts to improve FI.

Africa's limited success is linked to myriad of challenges. These include: inadequate financial infrastructure, high transaction costs, low levels of financial literacy, limited access to technology, regulatory bottlenecks and entrenched socio-cultural barriers (Eldomiaty *et al.*, 2020; Emara and El-Said, 2021; Sakanko *et al.*, 2024). Additionally, rural-urban disparities, gender inequality and insecurity (INS) further constrain access to financial services (Opoku *et al.*, 2024; Sakanko *et al.*, 2023; Zhang *et al.*, 2024). These problems not only slow down the direct benefits of FI like increased savings, investment and entrepreneurship (Hasan *et al.*, 2021), but also its indirect impacts, including improved income distribution, poverty reduction and economic development (Liu *et al.*, 2023).

In response, many nations in Africa adopted strategies to expand financial access. Some included promoting digital financial services like mobile money, implementing National Financial Inclusion Strategies (NFIS) and expanding agent banking and microfinance networks to underserved regions. Furthermore, regulatory reforms and establishing Fintech-friendly ecosystems have stimulated innovation. Others are complementary measures like financial literacy campaigns, public-private partnerships and targeted programs for women and marginalized groups aimed to improve financial capability and boost inclusive access (African Development Bank, 2025; CBN, 2022; Olga and Gianluca, 2008; Wezel and Ree, 2023).

While these efforts sought to strengthen FI's role as a catalyst for EG and sustainable development in Africa, escalating INS presents a significant challenge to achieving this important goal. No doubt, INS remains one of the continent's main challenges (Abu, 2025; Abu *et al.*, 2022b; Msughter *et al.*, 2023; Sifolo, 2016; Wilhelm-Solomon *et al.*, 2017). Africa's INS is driven, amongst other things, by the activities of terrorist groups in different

parts, including Boko-Haram, the Islamic State of West Africa Province (ISWAP), Jama'at Nasr Al-Islam Wal Muslimin, Ansar Dine, Fulani militias, Al-Shabaab, Ansar Al-Sunna, the Islamic State in Libya, Al-Qaeda in the Islamic Maghreb (AQIM), ISIS-Mozambique, with small Islamist networks emerging in South Africa ([Director of National Intelligence, 2024](#)). Little surprise that African nations have scaled up financial resources to combat INS. Security expenditure increased from \$28.9 billion in 2004 to \$39.3 billion in 2010 and \$44.3 billion in 2014, but it declined to \$40.6 billion in 2020 and \$39.5 billion in 2022, before reaching a record high of \$48.4 billion in 2023 ([SIPRI Military Expenditure Database, 2024](#)).

Rising INS (in different forms like civil wars, armed conflicts, terrorism, kidnappings, communal violence, etc.) dislocate communities, damage infrastructure, discourage financial institutions from operating and reduce investor confidence ([Alhassan et al., 2021](#); [Malik and Nauman, 2013](#); [Mboto et al., 2024](#); [Mogaji, 2024](#); [Murshed et al., 2023](#); [Simeon et al., 2022](#)). These disruptions limit banks' number, mobile money agents and Fintech services, including slowing down economic activity, and heightening the costs of business, all of which result in increased unemployment, reduced income and consumption, and increased poverty ([Posso, 2023](#); [Ozili, 2024](#)). Consequently, they undermine the supportive environment essential for inclusive financial systems that facilitate saving, investing and credit access, critical for individual's survival and EG ([Garang, 2024](#); [Jayasekara, 2021](#); [Malakoutikhah, 2020](#)).

The growing global interest in FI as a promoter of EG notwithstanding, empirical research on Africa has largely overlooked the role of INS in the FI and EG relation. Interestingly, existing studies account for how INS (manifesting through armed conflict, terrorism, civil unrest and other forms of violence) diminishes FI ([Alhassan et al., 2021](#); [Garang, 2024](#); [Jayasekara, 2021](#); [Malakoutikhah, 2020](#); [Mboto et al., 2024](#); [Murshed et al., 2023](#); [Ozili, 2024](#); [Posso, 2023](#)), and the literature acknowledges the role of INS in slowing down EG ([Ede and Okafor, 2023](#); [Ezeala and Nzewi, 2022](#); [Ogbuke and Usman, 2025](#); [Okafor and Ede, 2023](#)).

Unlike previous studies that focus primarily on the direct link between FI and EG, INS and EG, and INS and FI, the present study advances the literature by integrating INS as a conditioning factor in the FI-growth nexus across 39 African countries. Although [Nizam et al. \(2020\)](#) identified threshold effects in the FI-EG nexus and showed that growth benefits depend on crossing specific levels of inclusiveness, and [Ofoeda et al. \(2024\)](#) demonstrated that institutional quality and financial regulation shape how FI translates into EG, both studies ignored the role of INS in African economies.

To close this gap, this research provides new evidence that high INS can weaken the growth effects of FI using the system-Generalized Method of Moments (GMM) approach. Additionally, the research provides a deeper understanding of the complex interplay between financial access (inclusive finance) and sustainable economic development in fragile and insecure environments.

Following the introduction, [Section 2](#) reviews the literature, [Section 3](#) presents the methodology, [Section 4](#) consists of results and discussion, and [Section 5](#) is for the conclusion.

2. Literature review

In this study, INS is conceived as a multidimensional condition featured by persistent threats to life, property and social stability, arising from armed conflicts, terrorism and communal violence, amongst others. These events disrupt normal economic activities, weaken institutional capacity and create an environment of uncertainty that affects financial access, investment decisions and overall economic performance. Unlike prior studies ([Garang, 2024](#); [Ezeala and Nzewi, 2022](#); [Alhassan et al., 2021](#); [Eldomiaty et al., 2020](#)) that examine each component (such as conflict, war, political instability, terrorism or communal violence) in isolation, this research conceptualizes INS as a composite phenomenon, reflecting the combined and interacting effects of these violence-related threats on EG and FI. The theoretical linkage between or amongst FI, EG and INS is elaborated in the succeeding sub-sections.

2.1 *FI and growth*

The theoretical and empirical foundations of the financial systems and EG relation were laid and popularized by scholars, including [Beck and Levine \(2004\)](#) and [Levine \(2005\)](#). For example, empirical evidence from cross-country studies by [Beck and Levine \(2004\)](#) confirmed that both banking sector development and/or stock market deepening significantly accelerated economic performance. In addition, [Levine \(2005\)](#) argued that nations with well-functioning financial systems tend to experience stronger and more sustained growth because financial institutions mobilize savings, allocate capital efficiently and support productive investment. These studies laid the foundation for the role of financial sector development as a crucial driver of long-term EG, thereby providing the theoretical base for subsequent research on FI.

Beyond general financial development, recent empirical studies specifically examined how expanding access to formal financial services influences macroeconomic performance. For instance, [Demirgüç-Kunt and Klapper \(2012\)](#) showed that broader access to financial services (measured through account ownership, savings and formal financial participation) enhances economic participation, including supporting long-term growth, particularly in developing countries. Similarly, [Dedokun and Ağa \(2023\)](#) provided cross-country evidence that improvements in access to savings, credit and payment systems stimulate productive activities and economic expansion. In a similar fashion, [Daud and Ahmad \(2023\)](#) found that economies with greater FI tended to experience stronger and more stable growth due to higher investment and consumption levels. Studies such as [Emara and El-Said \(2021\)](#) and [Liu *et al.* \(2021\)](#) further concurred that inclusive financial systems enhanced capital accumulation and entrepreneurial activity, thus accelerating growth in emerging economies. At a broader level, [Nizam *et al.* \(2020\)](#), [Singh and Stakic \(2021\)](#), and [Van *et al.* \(2021\)](#) showed that growing financial access contributed to macroeconomic stability and productivity improvement, thus reinforcing the role of inclusive finance in long-term development.

Another strand of literature focuses on the channels/mechanisms through which FI influences EG. First, it is poverty reduction and improved household welfare. For example, [Liu *et al.* \(2023\)](#) reported that improved access to credit and financial services reduces poverty by enabling low-income households to invest in income-generating activities. Second, there is the employment generation and income growth channel. [Opoku *et al.* \(2024\)](#) demonstrated that inclusive financial systems aid employment creation and income improvement, particularly within rural and/or informal sectors where access to finance is traditionally limited. Third, relates to agricultural productivity and households' consumption smoothing mechanism. Evidence from [Sakanko \(2020\)](#) and [Sakanko and David \(2020\)](#) suggested that improved access to financial services enabled households to obtain agricultural inputs, manage financial risks and stabilize consumption. Finally, FI may enhance government revenue mobilization and formal economic participation. [Sakanko *et al.* \(2025\)](#) highlighted that expanding financial access broadens the taxable base via encouraging economic agents to participate more actively in formal financial and economic systems.

Although most studies portrayed a positive nexus between FI and EG, the magnitude of the influence and channels vary across countries, including levels of financial development. Differences in institutional quality, financial infrastructure and regulatory frameworks can influence how effectively FI translates to EG. This suggests that while expanding financial access is important, complementary institutional and policy reforms are necessary to maximize its growth-enhancing effects.

2.2 *Insecurity and FI*

The relationship between INS (in varying forms like conflict, terrorism, kidnapping, violence, etc.) and FI has increasingly attracted attention in recent literature. Empirical studies on this nexus can broadly be classified into two. First, includes the institutional and infrastructural

disruption effects of INS on financial systems. Second, consists behavioural and participation constraints arising from heightened risk perceptions in insecure environments.

2.2.1 Institutional and infrastructural disruptions to financial systems. Some researches emphasize how INS disrupts financial service provision and weakens financial sector operations. For instance, [Alhassan et al. \(2021\)](#) demonstrated that various forms of INS (like conflict and communal violence) undermine FI by disrupting banking activities, including restricting access to financial services in affected areas. Similarly, [Garang \(2024\)](#) showed that persistent terrorism and armed attacks weaken financial systems by constraining mobility, damaging financial infrastructure and reducing trust in formal institutions.

Other empirical evidences indicated that INS significantly hampers the expansion of financial networks. For example, [Murshed et al. \(2023\)](#), [Posso \(2023\)](#), [Mboti et al. \(2024\)](#), and [Ozili \(2024\)](#) revealed that rising incidents of kidnapping, insurgency and violent conflict discouraged financial institutions from expanding their operations into high-risk areas. This leads to reduced branch penetration, limited agent banking services and weaker financial intermediation in fragile and conflict-prone regions, and ultimately lowering FI.

2.2.2 Behavioural and participation constraints in insecure environments. Certain studies focused on behavioural responses of households and firms to INS. In contexts characterized by violence and instability, individuals and/or businesses may become reluctant to engage with formal financial institutions due to increased uncertainty and perceived risks. For example, [Jayasekara \(2021\)](#) and [Malakoutikhah \(2020\)](#) argued that INS heightens risk perceptions among economic agents, thus discouraging participation in formal financial markets and limiting the uptake of financial products like savings accounts, credit facility and insurance services. This behavioural response may further reinforce financial exclusion, particularly among vulnerable populations in rural or conflict-affected regions where financial access is already limited.

While studies indicated that INS impacts FI negatively, the extent of the influence depends on institutional resilience, financial infrastructure and the effectiveness of security and regulatory frameworks. In countries where digital financial services and mobile banking are well developed, the adverse effects of INS on FI may be partially mitigated. This suggests that strengthening financial infrastructure and institutional capacity is essential for sustaining FI in environments characterized by security challenges.

2.3 Institutional quality as a mediator

The literature acknowledges (or recognizes) institutional quality as a mediating factor in the FI and EG nexus ([Chinoda and Kapingura, 2024](#)). It noted that strong governance structures improved the efficiency with which inclusive financial systems translate into EG. Similarly, [Meniago \(2025\)](#) demonstrated that transparent regulatory frameworks and efficient public institutions enhanced the transmission of FI gains to broader macroeconomic performance by improving financial sector oversight and policy implementation.

Others highlighted the importance of institutional stability and credibility in reinforcing the effectiveness of FI initiatives. [Ofoeda et al. \(2024\)](#) showed that nations with credible legal systems and strong supervisory institutions tended to experience greater growth benefits from FI, as institutional stability fosters trust and reduces financial risks. Also, [Yakubu et al. \(2025\)](#) found that improved institutional quality facilitates financial deepening and strengthens the long-run sustainability of the FI-EG nexus in developing countries.

Although there are studies on the FI-EG nexus, the INS-FI link, including FI-EG and institutions as a mediator, research evaluating INS influence on the FI-EG relation in Africa's context is almost non-existent. In addition, existing research overlooked country-specific policy dynamics and institutional heterogeneity that may shape the effectiveness of FI in promoting growth. Moreover, the role of digital FI innovations (like mobile banking, Fintech platforms and digital payment systems) remains insufficiently incorporated into empirical

analysis of many studies. Consequently, including country-specific policy contexts and the evolving digital financial ecosystem could provide deeper insights into how FI translates to sustainable EG across countries.

Addressing this gap, this research uses the system-GMM estimator to assess the impact of INS on the FI-EG relation in 39 African countries. The method system-GMM, amongst other things, addresses endogeneity and unobserved heterogeneity inherent in previous research that relied on static models and/or estimation techniques.

Furthermore, the Principal Component Analysis (PCA) technique was used to generate a composite FI index (i.e. financial inclusion index). The index addresses the weaknesses of individual FI indicator (such as account ownership, mobile money usage or credit access), which rarely capture the multidimensional nature of FI. The PCA method aggregates correlated financial variables into a single index, thereby reducing dimensionality and enhancing the precision of empirical estimates, while minimizing multicollinearity. Additionally, INS is proxied by military expenditure (or spending), as it provides a more objective and internationally comparable measure (Alptekin and Levine, 2012). Military expenditure reflects governments’ direct fiscal response to perceived security threats (SIPRI Military Expenditure Database, 2024). In Africa’s context, defence spending captures both internal INS (such as terrorism, insurgency, civil conflict and internal military operations) and external INS (including border protection, peacekeeping commitments and defence preparedness) (Asongu and Cheikh, 2023; Clements et al., 2021).

3. Methodology

3.1 Theoretical framework

The research relies on the institutional theory to assess how INS influences the FI-EG nexus. The theory portrays that weak institutions often fail to enforce laws, uphold contracts and ensure public safety, leading to breakdown of law and/or order, as individuals or people take justice into their “own” hands (North, 1990). Institutional fragility encourages INS because criminal activities, including corruption and social unrest, flourish in the absence of effective governance (Nsiah and Tweneboah, 2023).

Within the context of the theory, INS functions as a destabilizing force that influences the FI-EG connection via three key institutional channels. First, INS generates instability and heightened risk, resulting in institutional fragility manifested in weak governance structures, poor regulatory enforcement and diminished state capacity. Second, persistent INS erodes public trust, reducing confidence in banks and formal financial systems and discouraging individuals and firms from engaging in formal financial activities. Third, INS restricts financial access by damaging financial infrastructure, increasing the cost of service delivery and excluding vulnerable populations from the financial system. These channels collectively depress FI, as fewer households and businesses are able (and/or willing) to use formal financial services. Ultimately, reduced FI weakens the mechanisms through which investment, entrepreneurship and capital accumulation drive EG, thereby hindering overall economic performance (as depicted in the conceptual model in Figure 1).

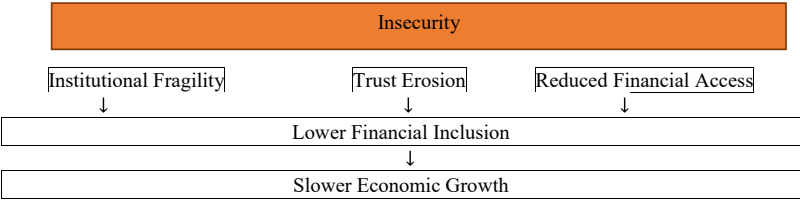


Figure 1. Conceptual model on insecurity, financial inclusion and economic growth interaction

As INS escalates, financial services providers become reluctant to operate in high-risk areas, while individuals avoid formal financial systems due to fears of funds' loss and/or exposure to violence (Ouechtati, 2023). These limit peoples' (especially vulnerable/marginalized populations') access to banking, credit, insurance and digital payment platforms (Emara and El-Said, 2021). Interestingly, Malakoutikhah (2020) documented that INS erodes trust in financial institutions, including reducing individuals' willingness to engage with formal financial systems. Alhassan *et al.* (2021) claimed that regions experiencing violence and conflict tend to have reduced access to banking services, particularly among rural and marginalized populations. Jayasekara (2021) emphasized that INS disproportionately affects women and youth by limiting their mobility and access to digital financial platforms. Murshed *et al.* (2023) highlighted how ongoing conflicts discourage service providers from expanding operations into high-risk environments. Posso (2023) revealed that unstable environments disrupt innovation and awareness campaigns. Similarly, INS increases transaction costs and financial risks, thus deterring innovation in Fintech and mobile banking services (Ozili, 2024). Garang (2024) portrayed that in conflict-affected regions, informal financial practices dominate, thus undermining the effectiveness of monetary policy and formal financial systems. Finally, Mboto *et al.* (2024) noted that INS contributes to financial exclusion by exacerbating poverty and social inequality.

The foregoing suggests that INS not only hinder FI, but it also weakens the foundations for inclusive growth via limiting access to credit, savings and investment opportunities necessary for economic participation and development. Therefore, to explore how INS influences the FI-EG nexus, we specify a dynamic growth model as:

$$EG_{it} = \alpha EG_{it-1} + \beta_1 FI_{it} + \beta_2 INS_{it} + \beta_3 (FI_{it} * INS_{it}) + \beta_4 Z_{it} + \mu_i + \eta_t + \varepsilon_{it} \quad (1)$$

EG = Economic growth, FI = Financial inclusion, INS = Insecurity, FI*INS = Interaction term capturing how INS influences FI's impact on EG, $\mu + \eta$ = unobserved country-specific effect and time-specific effect, respectively. ε = Error term and Z = Control variables including money supply (MS) and agricultural output (AGR). The choice of Z (i.e. control variables) lies in the literature on EG and its drivers. For example, Ezeala and Nzewi (2022) found that INS significantly hampers EG by discouraging both domestic and foreign investment, including disrupting agricultural and industrial activities. Okafor and Ede (2023) emphasized that mounting INS impacts investor confidence adversely and reduces government revenue by undermining tax collection and economic productivity. Others like Ede and Okafor (2023) noted that regions with high INS experienced slower EG. Extending this perspective, Ogbuke and Usman (2025) showed that persistent INS contributes to macroeconomic instability, distorts fiscal planning and limits infrastructural development, thus constraining sustainable EG.

On their part, Van (2020), Hicham (2020), and Tegegne (2021) found a supportive influence of MS on EG, emphasizing that increased MS stimulated investment, consumption and aggregate demand, which in turn drive output expansion. Similarly, Buthelezi (2023) observed that controlled increases in MS enhanced financial intermediation and supported private sector growth in SSA. However, Mahara (2020) and Madurapperuma (2023) reported a negative effect, buttressing that excessive growth in MS can lead to inflationary pressures, currency depreciation and macroeconomic instability, which ultimately dampen long-term EG. Furthermore, Sertoglu *et al.* (2017) signalled a positive influence of AGR on EG, thus highlighting that increased agricultural productivity contributes significantly to GDP. In contrast, Oguwuikie (2018) confirmed an adverse influence of agricultural sector's contribution to EG.

Through the FI and INS interaction (i.e. FI*INS), we can determine how INS influences the FI-EG relation. Thus, the Marginal Effect (ME) of FI on EG can be evaluated via the partial derivative of Eq. (1) as follows:

$$\frac{EG_{it}}{FI_{it}} = \beta_1 + \beta_3 INS_{it} \tag{2}$$

Emphasis is on β_1 and β_3 . If $\beta_1 > 0$ and $\beta_3 < 0$, it suggests that FI boosts EG, but escalation in INS diminishes the positive influence of FI on EG. If $\beta_1 < 0$ and $\beta_3 > 0$, it connotes that FI dampens EG, but rising INS reduces the adverse influence of FI on EG. In addition, if $\beta_1 < 0$ and $\beta_3 < 0$, it signifies that FI hurts EG, and escalating INS aggravates the negative impact. Lastly, if $\beta_1 > 0$ and $\beta_3 > 0$, it symbolizes that FI is growth-enhancing, and rising INS intensifies that positive effect.

3.2 Data
Annual data for 39 African nations (namely Algeria, Angola, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Democratic Republic of the Congo, Congo Republic, Cote d'Ivoire, Egypt, Ethiopia, Gabon, Gambia The, Ghana, Guinea-Bissau, Guinea, Kenya, Lesotho, Liberia, Malawi, Mali, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia and Zimbabwe) spanning 2004 to 2023 were utilized. The FI index (developed using the PCA technique) integrates mobile money transactions access (measured by ATMs per 100,000 adults and commercial bank branches per 100,000 adults), digital adoption (mobile cellular subscriptions per 100 people) and usage (outstanding loans from commercial banks as a percentage of GDP). These metrics, covering both the demand and supply sides of FI, were sourced from the World Bank Financial Survey (2023) via DIALOG <https://www.worldbank.org/en/publication/globalindex/Data>. The PCA enables better comparability across regions, simplifies analysis and minimizes bias that might arise from single/individual variable (Sakanko *et al.*, 2024). FI index has been constructed, using parametric and non-parametric approaches, with the latter criticized for its subjective weight assignment. Thus, the parametric approach is preferred. Following Sakanko *et al.* (2025), the two-stage PCA technique, the first stage estimates sub-indices for three FI dimensions (i.e. mobile money transactions access, digital adoption and usage), while the second stage generates the overall FI using these sub-indices. According to Kaiser (1974), a Kaiser-Meyer-Olkin (KMO) value above 0.6 generally indicates that the data are suitable for dimensionality reduction.
The data were gathered via different sources. Data on INS (captured by military expenditure share of GDP) was obtained from the SIPRI Military Expenditure Database (2024). The data on variables including EG (measured by GDP growth annual %), AGR (proxied by agriculture, forestry and fishing share of GDP) and MS (captured by broad MS share of GDP) were gathered from the World Development Indicators database (2024) Via DIALOG <https://databank.worldbank.org/source/world-development-indicators>.

3.3 Estimation technique
The system-GMM estimator was used to determine the influence of INS on the FI-EG nexus. The technique is suitable for estimating dynamic panel data models, as it addresses endogeneity issues that could arise from omitted variable bias, reverse causality and measurement error (Meniago, 2025). It also permits the use of both level and difference equations, making it more efficient than the difference GMM, especially in cases where the panel dataset has short-time and large cross-sectional dimensions (like in our case, where $t = 19$ and $n = 39$). In addition, the system-GMM accounts for potential serial correlation and heteroscedasticity in the residuals, leading to reliable results.
Upon estimation, two tests are implemented to ascertain the results' validity. First, is the Sargan (1958) test of over-identification of the instrument(s), to determine whether (or not) the instrument(s) are uncorrelated with the error term, and hence valid. The second test for auto/

serial correlation (i.e. AR_1 and AR_2) is to evaluate the instruments' validity (Arellano and Bond, 1991; Ofoeda *et al.*, 2024). Whereas the presence of first-order auto-correlation (AR_1) is not unexpected, the absence of second-order auto-correlation (AR_2) confirms the instruments' validity.

4. Discussion of results

The KMO test results (Table 1) portray coefficients ranging from 0.956 to 0.989, indicating a common underlying construct. The first principal component yields an eigenvalue of 3.915 and explains 97.8% of the variance. The remaining components contribute less than 3%, thus supporting a single-factor representation. Additionally, the KMO value ranges from 0.647 to 0.758, with an overall KMO of 0.691. These confirm data adequacy for factor analysis (see Appendix for detailed Principal Component Analysis).

The descriptive statistics (Table 2) portray the variability and range of values. Mean EG is 4.15% with a standard deviation of 4.49, and a range of -36.39% to 33.63% . The mean FI is 9.80 with minimal dispersion (0.16), and the lowest and maximum values are -0.27 and 0.43 , respectively. Average INS is 1.69 with low variation (1.14), and higher and least values of 0.19 and 7.96, respectively. Average AGR is 3.71% with a standard deviation of 12.30, and values ranging from -65.96% to 246.47% . Mean MS is 34.67%, with a considerable dispersion (23.82%), and a range of 0.02% to 128.86%.

The correlation analysis results (Table 3) reveal a weak positive correlation between EG and FI (0.21). Conversely, EG is negatively correlated with INS (-0.14). AGR has a weak but positive correlation with EG (0.15), and a negative correlation with FI (-0.03), INS (-0.02) and MS (-0.15). MS shows a weak negative correlation with EG (-0.15) and FI (-0.03), but a modest positive correlation with INS (0.28).

The system-GMM results for the One-step and Two-step models (Table 4) reveal that lagged EG (i.e. EG_{-1}) has positive and highly significant coefficients (6.17 and 6.24), signalling that past growth substantially influences current growth at 1% level. Additionally,

Table 1. Results of PCA sampling adequacy

	ATM	MOB	CBB	LOAN	Eigenvalue	Proportion	Cumulative	KMO
ATM	1.000				3.915	0.978	0.978	0.673
MOB	0.987	1.000			0.054	0.014	0.992	0.647
CBB	0.969	0.989	1.000		0.027	0.007	0.999	0.699
LOAN	0.972	0.958	0.956	1.000	0.004	0.001	1.000	0.758
Overall								0.691

Note(s): ATM = ATMs per 100,000 adults, MOB = mobile cellular subscriptions per 100 people, CBB = commercial bank branches per 100,000 adults and LOAN = outstanding loans from commercial banks as a percentage of GDP

Source(s): Authors' computation

Table 2. Descriptive statistics

Variables	Mean	Std. Dev	Minimum	Maximum	Observation
EG	4.154	4.486	-36.392	33.629	780
FI	9.801	0.163	-0.265	0.431	780
INS	1.687	1.142	0.193	7.956	700
AGR	3.711	12.295	-65.959	246.469	764
MS	34.667	23.824	0.023	128.863	725

Source(s): Authors' computation

Table 3. Correlation analysis results

Variables	EG	FI	INS	AGR	MS
EG	1.000				
FI	0.213	1.000			
INS	−0.142	−0.002	1.000		
AGR	0.153	−0.025	−0.022	1.000	
MS	−0.148	−0.032	0.276	−0.032	1.000
Source(s): Authors' computation					

Table 4. Results of system-GMM (full sample)

Dependent variable: EG		
Regressor	One-step Coefficient	Two-step Coefficient
EG ₋₁	6.174*** (1.078)	6.237*** (0.552)
FI	0.088** (0.033)	0.064** (0.029)
INS	−1.218*** (0.361)	−1.315*** (0.195)
FI*INS	−0.150* (0.082)	−0.184*** (0.055)
AGR	0.031** (0.012)	0.029*** (0.003)
MS	−0.048*** (0.022)	−0.043*** (0.012)
ME (FI*INS)	Min/Max = 0.06/−1.11	Min/Max = 0.03/−1.40
Observation	780	780
No. of countries	39	39
Wald test (χ^2)	95.34***	791.53***
Sargan test (χ^2)	29.481	35.827
AR ₁	−	−2.976**
AR ₂	−	−1.088

Note(s): Values in () denote standard errors. ***, ** and * connotes 1%, 5% and 10% level of significance. ME denotes marginal effect, and it shows the impact of financial inclusion on economic growth with a varying degree of insecurity

Source(s): Authors' computation

FI impacts EG positively. EG increases by 0.09% and 0.06% points, respectively, following a 1 unit increase in FI, at 5% level. The outcomes portray that improved access to financial services promotes economic activity. In contrast, INS impacts EG adversely. A 1% point increase in INS reduces EG by 1.22% and 1.32% points at 1% level, highlighting severe economic costs of INS. The interaction term (FI*INS) has negative coefficients (−0.15 at 10% level and −0.18 at 1% level), implying that the positive influence of FI diminishes in insecure environments, possibly due to disruptions in financial system operations and/or reduced investor confidence.

ME computed from the interaction variable (i.e. FI*INS) reveals how FI's impact on EG varies with different degrees of INS. At minimum (lowest) INS, the individual ME of FI on EG is positive (0.06 and 0.03, respectively), portraying that in relatively secure environments, promoting FI contributes to EG positively. In particular, the growth-benefit of FI improves by 0.06% point when INS is lowest and 0.03% point when INS is highest. Conversely, at maximum (or highest) INS, the individual ME is negative (−1.11 and −1.40, respectively). Specifically, the growth-benefit of FI is lessened by 1.11% point at least INS and 1.40% point when INS is highest. This signals that in highly insecure societies, the growth-enhancing effect of FI is reversed, likely due to weakened institutional capacity, disruption of financial services and increased uncertainty, which in turn discourage investment and financial participation.

Furthermore, AGR influences EG positively, with a 1% point rise in AGR increasing EG by 0.03 and 0.03% points at 5% level and 1% level, respectively, thus reinforcing the sector's importance to the economic development of predominantly agrarian economies. However, MS has a statistically significant adverse effect (-0.05 and -0.04 , respectively) on EG at 1% level, suggesting that excessive liquidity may contribute to inflationary pressures or financial inefficiencies that suppress growth. Overall, the findings underscore the importance of improving FI and agricultural productivity, while addressing INS and managing monetary expansion to foster sustained EG.

The diagnostic test for both models (One-step and Two-step) reveals the respective Wald test's statistics (95.34 and 791.53, respectively) to be significant at 1% level, thus, the regressors collectively explain EG behaviour. The Sargan test's results show insignificant coefficients (29.48 and 35.83, respectively). These reveal an absence of over-identification of the instruments or imply that the models contain valid instruments. The AR_1 test's statistic (2.98) is significant at 5% level, hence implying the presence of first-order autocorrelation. However, the AR_2 test's statistic (1.09) is insignificant, thus portraying that there is no second-order autocorrelation, which is desirable. These findings imply that the individual model is robust and well-specified.

Figure 2 discloses the plots that show the ME of FI on EG at varying INS levels. The plots portray a negative relation between INS and EG. As INS increases (i.e. moving from -0.03 (min) to -1.4 (max)), predicted EG declines from about 7 to 4.5%. The downward slope and tight confidence intervals suggest a statistically significant effect. This implies that rising INS dampens economic performance via slowing FI.

To determine the robustness and/or consistency of the results obtained (in Table 4), we sorted the sampled nations based on their income level (i.e. Lower Middle Income and Lower Income countries). The system-GMM results (Table 5) reveal that in the Lower Middle-Income (LMI) countries, EG_{-1} (lagged EG) significantly influences current EG, with coefficients of 10.16 and 6.76 at 1% level. Additionally, FI affects EG positively, where a 1 unit increase in FI causes EG to rise by 0.08% and 0.09% points increase, respectively, at 10% level. However, INS impacts EG negatively (-2.48 at 1% level and -2.72 at 10% level), and the interaction term (FI*INS) is significant and negative in the Two-step model (i.e. -2.40 at 5% level), suggesting that in these countries, the growth-benefits of FI are severely undermined by high INS. The individual ME (i.e. -0.53 and -13.56 , respectively) in the Two-step model, reinforces the notion that high INS reduces the growth-benefits of FI. Specifically,

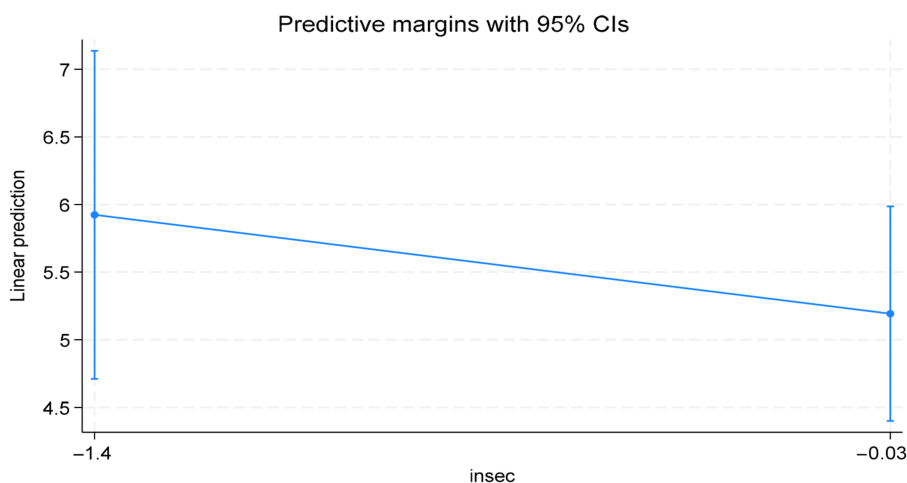


Figure 2. Marginal effect of INS on EG

Table 5. Results of system-GMM (sub-sample)

Dependent variable: EG				
Regressor	Lower Middle Income countries		Lower Income countries	
	One-step Coefficient	Two-step Coefficient	One-step Coefficient	Two-step Coefficient
EG ₋₁	10.163*** (1.648)	6.755*** (2.212)	3.541** (1.723)	2.750** (1.154)
FI	0.083* (0.056)	0.088* (0.057)	0.188*** (0.043)	0.261*** (0.022)
INS	-2.475*** (0.574)	-2.723* (1.472)	-0.496 (0.455)	-1.173*** (0.307)
FI*INS	-1.030 (0.731)	-2.360** (0.990)	-1.062* (0.587)	-0.446 (0.438)
AGR	0.027 (0.029)	0.061* (0.036)	0.040** (0.014)	0.058*** (0.005)
MS	-0.065** (0.023)	-0.033 (0.027)	-0.040 (0.469)	-0.048** (0.018)
ME (FI*INS)		Min/Max (-0.53/ -13.56)	Min/Max (-0.02/ -8.26)	
Observation	300		400	
No. of countries	15		20	
Wald test (χ^2)	62.53***	96.19***	42.67***	1509.58***
Sargan test (χ^2)	176.907	9.451	177.577	16.116
AR ₁	-	-2.805**	-	-1.852**
AR ₂	-	-0.888	-	-1.118

Note(s): Values in () denote standard errors. ***, ** and * connotes 1%, 5% and 10% level of significance. ME denotes marginal effect, and it shows the impact of financial inclusion on economic growth with a varying degree of insecurity

Source(s): Authors' computation

the growth-benefit of FI is reduced by 0.53% point when INS is at its lowest and 13.56% point when INS is at its highest. Moreover, AGR influences EG positively (0.06) at 10% level, suggesting that improved AGR supports EG. Furthermore, MS affects EG negatively (-0.07) at 5% level in the One-step model, implying that EG might be impaired by the inefficiencies or inflationary pressures accompanying excess liquidity.

In Lower Income (LI) countries, EG₋₁ influences EG positively (3.54 and 2.75, respectively) at 5% level. Similarly, FI impacts EG positively (0.19 and 0.26, respectively) at 1% level, thus highlighting FI's supportive role on EG. However, INS hampers EG (-1.17) negatively at 1% level in the Two-step model, indicating the growth-dampening effect of high INS. In addition, the coefficient of FI*INS (-1.06) is significant at the 10% level in the One-step model, and the individual ME (-0.02 and -8.26, respectively) shows that INS erodes the gains of FI. The growth-benefit of FI is lessened by 0.02% point when INS is lowest and 8.26% point when INS is highest. Besides, AGR influences EG positively (0.4 at 5% level and 0.6 at 1% level, respectively), showing that AGR expansion enhances EG. But MS affects EG negatively (-0.05) at 5% level in the Two-step model, thus signalling that excessive MS without corresponding increases in productive investment can slow down EG.

The diagnostic test for both models reveals the respective Wald test's statistic for One-step and Two-step models (62.53 and 96.19, respectively) for LMI countries, and One-step and Two-step models (42.67 and 1509.58, respectively) for LI countries, to be significant at 1% level. Thus, the regressors collectively explain EG's behaviour. The Sargan test's results show insignificant coefficients (176.91 and 9.45, respectively) and (177.58 and 16.12, respectively) for LMI and LI countries, respectively. These show an absence of over-identification of the instruments, implying that the models contain valid instruments. The AR₁ test's statistics (-2.81 and 1.85, respectively) for LMI and MI countries are significant at 5% level, hence, revealing the presence of first-order autocorrelation. However, the AR₂ test's statistics (-0.89 and -1.12, respectively) for LMI and LI countries are insignificant, portraying that there is no second-order autocorrelation, which is desirable. These findings imply that the model is robust and well-specified.

Table 6. Mapping hypotheses

Hypothesis	Statement of hypothesis	Variables	Expected sign/direction	Theory	Outcome
H0 ₁	Financial inclusion positively affects economic growth	FI → EG	Positive	Based on finance–growth theory	Positive
H0 ₂	Insecurity reduces economic growth	INS → EG	Negative	Institutional theory: insecurity weakens institutions	Negative
H0 ₃	Insecurity weakens the effect of financial inclusion on growth	FI*INS → EG	Negative	Interaction effect: insecurity disrupts financial access	Negative

Furthermore, [Table 6](#) presents mapping hypotheses portraying how FI-EG relation is influenced by INS. H0₁ proposes that higher FI should improve EG, supported by the finance-growth theory and the results confirm a positive effect. H0₂ proposes that INS harms EG, consistent with institutional theory and the findings show a negative impact. H0₃ proposes that INS undermines the positive contribution of FI to EG; and this is portrayed by the interaction term. Thus, growing INS reduces the growth-enhancing role of FI.

In sum, the results using system-GMM reveal the supportive role of FI on EG. The outcomes align with studies of [Nizam *et al.* \(2020\)](#), [Van *et al.* \(2021\)](#), [Singh and Stakic \(2021\)](#), [Liu *et al.* \(2021\)](#), [Emara and El Said \(2021\)](#), [Daud and Ahmad \(2023\)](#) and [Adedokun and Ağa \(2023\)](#). Thus, greater access to financial services, like mobile banking, loans/credit, microfinance, integrating digital technologies, including financial literacy, stimulates productive activity and ultimately boosts EG.

The adverse influence of INS on EG lends credence to prior research outcomes ([Ede and Okafor, 2023](#); [Ezeala and Nzethewi, 2022](#); [Ogbuke and Usman, 2025](#); [Okafor and Ede, 2023](#)). The evidence portrays that escalating INS contributes to the destruction of properties and the displacement of people, creates fear amongst the populace and raises uncertainty and risks in the investment climate, including lowering investors' confidence. These effects extend beyond direct physical losses: INS also disrupts the mechanisms through which FI contributes to growth. These, in turn, hurt EG.

The negative influence of FI-INS interaction on growth shows that in insecure environments, the growth benefits (or gains) of expanding financial access are eroded. Moreover, the supportive influence of AGR on growth aligns with previous studies ([Sertoglu *et al.*, 2017](#)). The finding implies that raising agricultural productivity through innovation, infrastructure development and access to finance for farmers will foster growth.

The diminishing influence of MS aligns with the concerns raised by [Mahara \(2020\)](#) and [Madurapperuma \(2023\)](#). Hence, monetary expansion that is not carefully managed may encourage inflationary pressures and inefficiencies, which in turn lower consumption and investment, thus hindering growth.

In sum, the findings suggest that INS weakens the mechanisms through which FI promotes EG. Economically, rising INS disrupts financial infrastructure and service delivery, as attacks, vandalism and restricted mobility hinder the operations of bank branches, mobile money agents and digital payment systems. When financial services become less accessible, households and/or firms face difficulties in saving, borrowing and financing productive investments, thereby weakening the financial intermediation process that supports EG. In addition, INS encourages capital flight, as investors move funds to safer environments or reduce investment activities. This reduces credit availability and limits business expansion, innovation and employment creation. Furthermore, INS erodes investor's confidence and increases the perceived risks of economic activities, including discouraging both foreign and domestic investments while promoting precautionary

financial behaviour among households and firms. Consequently, the growth-enhancing benefits of FI (improved savings mobilization, credit access and entrepreneurial development) may not fully materialize in highly insecure environments.

From a policy perspective, these findings imply that strengthening national security and institutional stability is essential for maximizing the economic benefits of FI. If governments raise investments in security infrastructure, it will go a long way in protecting financial institutions and boosting economic activities. In addition, promoting resilient and technology-driven financial systems like digital banking and mobile financial services will enhance households' access to financial services/products in addition to aiding economic participation even in fragile (or insecure) environments. Thus, improving security increases the effectiveness of FI in driving EG in Africa.

5. Conclusion

The research employs the system-GMM technique to assess INS's role on the FI-EG nexus in 39 African countries, further grouped into LMI and LI countries, during the 2004–2023 period. The findings portray that FI fosters EG, while escalating INS erodes the growth-benefits of FI in Africa. This empirical evidence is consistent across the different income groups. Besides, improved AGR impacts EG positively, while expansion in MS exerts a negative influence if not properly managed. Based on these outcomes, some recommendations are offered.

First, expanding FI must be complemented by enhanced security to ensure that access to financial services fully translates to EG. Thus, a holistic approach including strengthening Fintech infrastructure in conflict-prone areas, leveraging digital finance tools for rural resilience and coordinating FI efforts with national security is required.

Second, improved investment in agricultural innovation, rural infrastructure and farmers' access to finance should be prioritized to harness the growth potential of the agricultural sector. Lastly, the monetary authorities must carefully manage MS, ensuring that liquidity growth supports productive investments rather than fuelling inflation or financial sector inefficiencies. In essence, coordinated policies targeting security, financial sector deepening and development, agricultural development and monetary stability are essential for fostering sustainable and inclusive growth across African economies.

The contribution of our research notwithstanding, future studies can integrate wider measures of institutional quality (governance effectiveness and regulatory strength) to better capture how institutions shape the FI-INS-growth nexus. Researchers may also examine possible non-linear effects, since FI or INS may affect growth differently at various thresholds. Additionally, using micro-level or household-level data would help reveal behavioural patterns and mechanisms not visible in macro-level analysis, offering deeper policy insights.

corr atm mosc cbb loan
(obs=780)

	atm	mosc	cbb	loan
atm	1.0000			
mosc	0.9870	1.0000		
cbb	0.9689	0.9886	1.0000	
loan	0.9723	0.9579	0.9560	1.0000

pca atm mosc cbb loan

Principal components/correlation Number of obs = 780
 Number of comp. = 4
 Trace = 4
 Rotation: (unrotated = principal) Rho = 1.0000

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	3.9154	3.86136	0.9789	0.9789
Comp2	.0540446	.0274961	0.0135	0.9924
Comp3	.0265485	.0225462	0.0066	0.9990
Comp4	.00400234	.	0.0010	1.0000

Principal components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Comp4	Unexplained
atm	0.5016	0.1037	-0.7033	0.4929	0
mosc	0.5023	-0.3979	-0.2165	-0.7365	0
cbb	0.4998	-0.4760	0.5849	0.4261	0
loan	0.4962	0.7774	0.3411	-0.1818	0

. estat kmo

Kaiser-Meyer-

Variable	measure of sampling adequacy kmo
atm	0.673
mosc	0.6468
cbb	0.6992
loan	0.7576
Overall	0.6913

- Abu, N. (2025), "Long-term asymmetric impacts of insecurity and corruption on tourism development: evidence from Nigeria", *Galacian Journal of Economics*, Vol. 34 No. 1, p. 9367, doi: [10.15304/rge.34.1.9367](https://doi.org/10.15304/rge.34.1.9367).
- Abu, N., Sakanko, M.A., David, J., Gamal, A.A.M. and Obi, B. (2022a), "Does financial inclusion reduce poverty in Niger State? Evidence from Logistic regression technique", *Organizations and Markets Emerging Economies*, Vol. 13 No. 2, pp. 443-466, doi: [10.15388/omee.2022.13.88](https://doi.org/10.15388/omee.2022.13.88).
- Abu, N., Staniewski, M.W., Gamal, A.A.M., Obi, B. and Karim, M.Z.A. (2022b), "Long-term response of FDI to insecurity and corruption: evidence from Nigeria's quarterly data", *Forum Scientiae Oeconomia*, Vol. 10 No. 4, pp. 9-27, doi: [10.23762/FSO_VOL10_NO4_1](https://doi.org/10.23762/FSO_VOL10_NO4_1).
- 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](https://doi.org/10.1002/ijfe.2559).
- African Development Bank (2025), *Africa Digital Financial Inclusion Facility*, ADB, Abidjan, Via DIALOG, available at: <https://www.afdb.org/en/adfi>
- Alhassan, A., Li, L., Reddy, K. and Duppati, G. (2021), "The relationship between political instability and financial inclusion: evidence from Middle East and North Africa", *International Journal of Finance and Economics*, Vol. 2 No. 1, pp. 353-374, doi: [10.1002/ijfe.1793](https://doi.org/10.1002/ijfe.1793).
- Alptekin, A. and Levine, P. (2012), "Military expenditure and economic growth: a meta-analysis", *European Journal of Political Economy*, Vol. 28 No. 4, pp. 636-650, doi: [10.1016/j.ejpoleco.2012.07.002](https://doi.org/10.1016/j.ejpoleco.2012.07.002).
- Anga, R.A., Sakanko, M.A. and Abdullahi, M.A. (2021), "Modelling the effect of financial inclusion on SMEs in Nigeria", *Al-Hikmah Journal of Economics*, Vol. 2 No. 1, pp. 33-43.
- Anifowose, O.L. and Chummun, B.Z. (2025), "A panel data analysis of determinants of financial inclusion in Sub-Saharan Africa (SSA) countries from 1999 to 2024", *Journal of Risk and Financial Management*, Vol. 18 No. 5, p. 275, doi: [10.3390/jrfm18050275](https://doi.org/10.3390/jrfm18050275).
- Arellano, M. and Bond, S. (1991), "Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations", *The Review of Economic Studies*, Vol. 58 No. 2, pp. 277-297, doi: [10.2307/2297968](https://doi.org/10.2307/2297968).
- Asongu, S.A. and Cheikh, T.N. (2023), "Military expenditure, governance, and environmental degradation in Sub-Saharan Africa", *Environmental Processes*, Vol. 10 No. 4, p. 51, doi: [10.1007/s40710-023-00662-7](https://doi.org/10.1007/s40710-023-00662-7).
- Beck, T. and Levine, R. (2004), "Stock markets, banks, and growth: panel evidence", *Journal of Banking and Finance*, Vol. 28 No. 3, pp. 423-442, doi: [10.1016/s0378-4266\(02\)00408-9](https://doi.org/10.1016/s0378-4266(02)00408-9).
- Buthlezi, E.M. (2023), "Impact of money supply in different states of inflation and economic growth in South Africa", *Economies*, Vol. 11 No. 2, p. 64, doi: [10.3390/economies11020064](https://doi.org/10.3390/economies11020064).
- Central Bank of Nigeria (2022), "National fintech strategy. Abuja: CBN", available at: <https://www.afibank.org/wp-content/uploads/2024/10/CBN-National-FinTech-Strategy-2023.pdf>
- Chinoda, T. and Kapingura, F.M. (2024), "Digital financial inclusion and economic growth in Sub-Saharan Africa: the role of institutions and governance", *African Journal of Economic and Management Studies*, Vol. 15 No. 1, pp. 15-30, doi: [10.1108/AJEMS-09-2022-0372](https://doi.org/10.1108/AJEMS-09-2022-0372).
- Clements, B.J., Gupta, S. and Khamidova, S. (2021), "Is military spending converging to a low level across countries?", *Economic Modelling*, Vol. 94, pp. 433-441, doi: [10.1016/j.econmod.2020.10.010](https://doi.org/10.1016/j.econmod.2020.10.010).
- Daud, S.N.M. and Ahmad, A.H. (2023), "Financial inclusion, economic growth and the role of digital technology", *Finance Research Letters*, Vol. 53, 103602, doi: [10.1016/j.frl.2022.103602](https://doi.org/10.1016/j.frl.2022.103602).
- Demirgüç-Kunt, A. and Klapper, L. (2012), "Measuring financial inclusion: the global index database", World Bank Policy Research Working Paper No. 6025, Washington, DC: The World Bank.
- Director of National Intelligence (2024), "Terrorist groups in Africa", *National Counterterrorism Center, USA*, available at: <https://www.dni.gov/nctc/groups.html#africa>

-
- Ede, O. and Okafor, G. (2023), "The impact of kidnapping on foreign ownership of firms in Nigeria", *Thunderbird International Business Review*, Vol. 65 No. 3, pp. 341-354, doi: [10.1002/tie.22328](https://doi.org/10.1002/tie.22328).
- Eldomiaty, T., Hammam, R. and El Bakry, R. (2020), "Institutional determinants of financial inclusion: evidence from world economies", *International Journal of Development Issues*, Vol. 19 No. 2, pp. 217-228, doi: [10.1108/IJDI-08-2019-0147](https://doi.org/10.1108/IJDI-08-2019-0147).
- 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](https://doi.org/10.1016/j.iref.2021.03.014).
- Ezeala, G. and Nzewi, U.C. (2022), "Insecurity and economic growth in Nigeria", *International Journal of Research Publication and Reviews*, Vol. 3 No. 5, pp. 3399-3408.
- Garang, J.A. (2024), "Effects of the civil war on financial inclusion in South Sudan: theory and evidence", *African Journal of Economic and Sustainable Development*, Vol. 9 No. 3, pp. 255-271, doi: [10.1504/ajesd.2024.10061578](https://doi.org/10.1504/ajesd.2024.10061578).
- Hasan, M., Le, T. and Hoque, A. (2021), "How does financial literacy impact on inclusive finance?", *Financial Innovation*, Vol. 7 No. 40, pp. 1-23, doi: [10.1186/s40854-021-00259-9](https://doi.org/10.1186/s40854-021-00259-9).
- Hicham, A. (2020), "Money supply, inflation and economic growth: Co-integration and causality analysis", *Studia Universitatis Babes Bolyai-Oeconomica*, Vol. 65 No. 2, pp. 29-45, doi: [10.2478/subboec-2020-0008](https://doi.org/10.2478/subboec-2020-0008).
- Jayasekara, S.D. (2021), "Deficient regimes of anti-money laundering and countering the financing of terrorism: agenda of digital banking and financial inclusion", *Journal of Money Laundering Control*, Vol. 24 No. 1, pp. 150-162, doi: [10.1108/JMLC-04-2020-0035](https://doi.org/10.1108/JMLC-04-2020-0035).
- Kaiser, H.F. (1974), "An index of factorial simplicity", *Psychometrika*, Vol. 39 No. 1, pp. 31-36, doi: [10.1007/BF02291575](https://doi.org/10.1007/BF02291575).
- Levine, R. (2005), "Finance and growth: theory and evidence", in *Handbook of Economic Growth*, Elsevier, Vol. 1, pp. 865-934, doi: [10.1016/s1574-0684\(05\)01012-9](https://doi.org/10.1016/s1574-0684(05)01012-9).
- Liu, Y., Luan, L., Wu, W., Zhang, Z. and Hsu, Y. (2021), "Can digital financial inclusion promote China's economic growth?", *International Review of Financial Analysis*, Vol. 78, 101889, doi: [10.1016/j.irfa.2021.101889](https://doi.org/10.1016/j.irfa.2021.101889).
- Liu, J., Puah, C.H., Arip, M.A. and Jong, M.C. (2023), "Impacts of digital financial inclusion on urban-rural income disparity: a comparative research of the eastern and western regions in China", *Economies*, Vol. 11 No. 11, p. 282, doi: [10.3390/economies11110282](https://doi.org/10.3390/economies11110282).
- Madurapperuma, W. (2023), "Money supply, inflation and economic growth of Sri Lanka: Co-integration and causality analysis", *Journal of Money and Business*, Vol. 3 No. 2, pp. 227-236, doi: [10.1108/JMB-08-2022-0039](https://doi.org/10.1108/JMB-08-2022-0039).
- Mahara, T.S. (2020), "Money supply-economic growth nexus: evidence from a landlocked country", *Quest Journal of Management and Social Sciences*, Vol. 2 No. 1, pp. 106-115, doi: [10.3126/qjmss.v2i1.29026](https://doi.org/10.3126/qjmss.v2i1.29026).
- Malakoutikhah, Z. (2020), "Financial exclusion as a consequence of counter-terrorism financing", *Journal of Financial Crime*, Vol. 27 No. 2, pp. 663-682, doi: [10.1108/JFC-09-2019-0121](https://doi.org/10.1108/JFC-09-2019-0121).
- Malik, M.S.A. and Nauman, S. (2013), "Factors affecting productivity of infrastructure development project attributable to insecurity due to terrorism", *Hospitals*, Vol. 3 No. 3, pp. 313-319.
- Mboto, H.W., Okoi, I.O., Ndem, B.E., Orok, A.B., Effiong, C., Edom, E.O., Bessong, P.K., Takon, S.M. and Atsaye, F.A. (2024), "Examining the nexus between insecurity and financial inclusion: evidence of mobile banking in Nigeria", *International Journal of Religion*, Vol. 5 No. 11, pp. 3997-4005, doi: [10.61707/xssnre80](https://doi.org/10.61707/xssnre80).
- Meniago, C. (2025), "Digital financial inclusion and economic growth: the moderating role of institutions in SADC countries", *International Journal of Financial Studies*, Vol. 13 No. 1, p. 4, doi: [10.3390/ijfs13010004](https://doi.org/10.3390/ijfs13010004).
- Mogaji, B.S. (2024), "Effect of insecurity on financial stability in Nigeria", *Nigerian Journal of Management Sciences*, Vol. 25 No. 1, pp. 192-208.

- Msughter, A.E., Hile, M.M. and Yar'Adua, S.M. (2023), "Ethical issues and insecurity in Africa: the media dimension", *Konfrontasi: Jurnal Kultural, Ekonomi dan Perubahan Sosial*, Vol. 10 No. 2, pp. 58-68, doi: [10.33258/konfrontasi2.v10i2.272](https://doi.org/10.33258/konfrontasi2.v10i2.272).
- Murshed, M., Ahmed, R., Al-Tal, R.M., Kumpamool, C., Vetchagool, W. and Avarado, R. (2023), "Determinants of financial inclusion in South Asia: the moderating and mediating roles of internal conflict settlement", *Research in International Business and Finance*, Vol. 64, 101880, doi: [10.1016/j.ribaf.2023.101880](https://doi.org/10.1016/j.ribaf.2023.101880).
- Nizam, R., Karim, Z.A., Rahman, A.A. and Sarmidi, T. (2020), "Financial inclusiveness and economic growth: new evidence using a threshold regression analysis", *Economic Research-Ekonomska Istrazivanja*, Vol. 33 No. 1, pp. 1465-1484, doi: [10.1080/1331677X.2020.1748508](https://doi.org/10.1080/1331677X.2020.1748508).
- North, D.C. (1990), *Institutions, Institutional Change, and Economic Performance*, Cambridge University Press, United Kingdom.
- Nsiah, A.Y. and Tweneboah, G. (2023), "Determinants of financial inclusion in Africa: is institutional quality relevant?", *Cogent Social Sciences*, Vol. 9 No. 1, 2184305, doi: [10.1080/23311886.2023.2184305](https://doi.org/10.1080/23311886.2023.2184305).
- Ofoeda, I., Amoah, L., Anarfo, E.B. and Abor, J.Y. (2024), "Financial inclusion and economic growth: what roles do institutions and financial regulation play?", *International Journal of Finance and Economics*, Vol. 29 No. 1, pp. 832-848, doi: [10.1002/ijfe.2709](https://doi.org/10.1002/ijfe.2709).
- Ogbuke, K.N. and Usman, A.Y. (2025), "Impact of kidnapping on economic security in Enugu State, Nigeria", *International Journal of Conflict and Security Management*, Vol. 1 No. 3, pp. 112-122.
- Oguwuikie, W.T. (2018), "Effect of agricultural output on economic growth in Nigeria (1981-2016)", *International Journal of Advanced Studies in Ecology, Development and Sustainability*, Vol. 5 No. 1, pp. 39-53.
- Okafor, G. and Ede, O. (2023), "Kidnapping rate and capital flight: empirical evidence from developing countries", *International Journal of Finance and Economics*, Vol. 28 No. 3, pp. 2590-2606, doi: [10.1002/ijfe.2551](https://doi.org/10.1002/ijfe.2551).
- Olga, M. and Gianluca, M. (2008), "Examining trust in mobile banking transactions: the case of M-PESA in Kenya", *Social Dimensions of Information and Communication Technology Policy*, Vol. 282, pp. 287-298.
- Opoku, E., Poku, K. and Domeher, D. (2024), "Financial inclusion, human capital development and economic growth in Africa: an examination of the transmission channel", *Sage Open*, Vol. 14 No. 3, pp. 1-19, doi: [10.1177/21582440241271285](https://doi.org/10.1177/21582440241271285).
- Ouechtati, I. (2023), "Financial inclusion, institutional quality, and inequality: an empirical analysis", *Journal of the Knowledge Economy*, Vol. 14 No. 2, pp. 620-644, doi: [10.1007/s13132-022-00909-y](https://doi.org/10.1007/s13132-022-00909-y).
- Ozili, P.K. (2024), "Impact of terrorism on financial inclusion: evidence from the most terrorized countries in the world", *Safer Communities*, Vol. 23 No. 4, pp. 299-316, doi: [10.1108/SC-08-2023-0037](https://doi.org/10.1108/SC-08-2023-0037).
- Posso, A. (2023), "Terrorism, banking, and informal savings: evidence from Nigeria", *Journal of Banking and Finance*, Vol. 150, 106822, doi: [10.1016/j.jbankfin.2023.106822](https://doi.org/10.1016/j.jbankfin.2023.106822).
- Sakanko, M.A. (2020), "Financial inclusion and women participation in gainful employment: an empirical analysis of Nigeria", *Indonesian Journal of Islamic Economics Research*, Vol. 2 No. 1, pp. 1-13, doi: [10.18326/ijier.v2i1.3517](https://doi.org/10.18326/ijier.v2i1.3517).
- Sakanko, M.A., David, J. and Onimisi, A.M. (2020), "Advancing inclusive growth in Nigeria: the role of financial inclusion in poverty, inequality, household expenditure and unemployment", *Indonesian Journal of Islamic Economics Research*, Vol. 2 No. 2, pp. 1-13, doi: [10.18326/ijier.v2i2.3914](https://doi.org/10.18326/ijier.v2i2.3914).
- Sakanko, M.A., Yahaya, A.U. and Abdullahi, S. (2023), "Financial literacy and financial inclusion", *Zakariya Journal of Social Science*, Vol. 2 No. 1, pp. 1-10, doi: [10.59075/zjss.v2i1.227](https://doi.org/10.59075/zjss.v2i1.227).
- Sakanko, M.A., David, J., Abu, N. and Gamal, A.A.M. (2024), "Financial inclusion and underground economy nexus in West Africa: evidence from dynamic heterogeneous panel techniques", *Economic Change and Restructuring*, Vol. 57 No. 8, 8, doi: [10.1007/s10644-024-09589-x](https://doi.org/10.1007/s10644-024-09589-x).

- Sakanko, M.A., Abu, N., Gamal, A.A.M. and Mohammed, R.S. (2025), "Investigating the channels of transmission between financial inclusion and poverty reduction in Sub-Saharan Africa", *Scientific Annals of Economics and Business*, Vol. 72 No. 2, pp. 213-236, doi: [10.47743/saeb-2025-0011](https://doi.org/10.47743/saeb-2025-0011).
- Sargan, J.D. (1958), "The estimation of economic relationships using instrumental variables", *Econometrica*, Vol. 26 No. 3, pp. 393-415, doi: [10.2307/1907619](https://doi.org/10.2307/1907619).
- Sertoglu, K., Ugural, S. and Bekun, F.V. (2017), "The contribution of agricultural sector on economic growth of Nigeria", *International Journal of Economics and Financial Issues*, Vol. 7 No. 1, pp. 547-552.
- Sifolo, P.P.S. (2016), "A reflection on tourism and the related security implications on the African continent", *African Journal of Hospitality, Tourism and Leisure*, Vol. 5 No. 3, pp. 1-10.
- Simeon, I.A., Olajide, A.M. and Godwin, I.G. (2022), "Impact of security challenges on bank performance in Nigeria", *International Journal of Business and Management*, Vol. 10 No. 3, pp. 1-6, doi: [10.24940/theijbm/2022/v10/i3/bm2203-001](https://doi.org/10.24940/theijbm/2022/v10/i3/bm2203-001).
- Singh, D. and Stakic, N. (2021), "Financial inclusion and economic growth nexus: evidence from SAARC countries", *South Asia Research*, Vol. 41 No. 2, pp. 238-258, doi: [10.1177/0262728020964605](https://doi.org/10.1177/0262728020964605).
- SIPRI Military Expenditure Database (2024), "Military expenditure by country", available at: <https://www.sipri.org/databases/milex/sources-and-methods>
- Tegegne, Y.E. (2021), "Impact of broad money supply on the economic growth of Ethiopia", *Research Journal of Finance and Accounting*, Vol. 12 No. 5, pp. 20-45.
- Van, D.D. (2020), "Money supply and inflation impact on economic growth", *Journal of Financial Economic Policy*, Vol. 12 No. 1, pp. 121-136, doi: [10.1108/JFEP-10-2018-0152](https://doi.org/10.1108/JFEP-10-2018-0152).
- Van, L.T.H., Vo, A.T., Nguyen, N.T. and Vo, D.H. (2021), "Financial inclusion and economic growth: an international evidence", *Emerging Markets Finance and Trade*, Vol. 57 No. 1, pp. 239-263, doi: [10.1080/1540496X.2019.1697672](https://doi.org/10.1080/1540496X.2019.1697672).
- Wezel, T. and Ree, M.J.J. (2023), "Nigeria-Fostering financial inclusion through digital financial services: Nigeria", *International Monetary Fund*, Vol. 094, pp. 60-76.
- Wilhelm-Solomon, M., Kankonde Bukasa, P. and Núñez, L. (2017), "Vital instability: ontological insecurity and African urbanisms", *Critical African Studies*, Vol. 9 No. 2, pp. 141-151, doi: [10.1080/21681392.2017.1341082](https://doi.org/10.1080/21681392.2017.1341082).
- World Bank (2023), *Global Findex Database*, World Bank, Washington, DC, available Via DIALOG, available at: <https://www.worldbank.org/en/publication/globalfindex/Data>
- World Bank (2024), *World Development Indicators Database*, World Bank, Washington, DC, Via DIALOG, available at: <https://databank.worldbank.org/source/world-development-indicators>
- Yakubu, I.N., Yussif, A.R. and Abdul-Rahaman, M. (2025), "The impact of financial inclusion on economic growth: does institutional quality matter?", in Yakubu, I.N. (Ed.), *Strategic Approaches to Banking Business and Sustainable Development Goals. Sustainable Development Goals Series*, Springer, Cham, doi: [10.1007/978-3-031-80744-2_7](https://doi.org/10.1007/978-3-031-80744-2_7).
- Zhang, Y., Li, K., Pang, Y. and Coyte, P.C. (2024), "The role of digital financial inclusion in China on urban-rural disparities in healthcare expenditures", *Frontiers in Public Health*, Vol. 12, 1397560, doi: [10.3389/fpubh.2024.1397560](https://doi.org/10.3389/fpubh.2024.1397560).

Further reading

- Blázquez, M. and Moro-Egido, A.I. (2023), "The impact of financial insecurity on self-reported health: Europe in cross-national perspective", *Economic Analysis and Policy*, Vol. 80, pp. 1123-1137, doi: [10.1002/jfe.2559](https://doi.org/10.1002/jfe.2559).

Corresponding author

Nurudeen Abu can be contacted at: abu.nurudeen@yahoo.com

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgrouppublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com