



MACROECONOMIC STABILITY AND FINANCIAL INCLUSION IN AFRICA, MODERATION ROLE OF INSTITUTIONAL QUALITY

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Abstract

Financial inclusion and macroeconomic stability have become a developmental policy issue of recent times. This study examined the empirical impact of financial inclusion on macroeconomic stability in Africa using secondary data extracted from world development indicators, international monetary fund (IMF) spanning 2002 to 2021 covering 41 Africa countries sampled by convenient sampling technique. Using two-step generalized method of moments (GMM) estimator, the study established a significant relationship between financial inclusion and macroeconomic stability variables. It is also revealed that, there is evidence of significant relationship between the governance quality variables and financial inclusion as well as macroeconomic stability. The findings recommend that Africa governments should consider formulating policies to enhance financial inclusion and building strong institutions. This will go a long way to improve macroeconomic stability in African countries.

Keywords: financial inclusion, inflation, account ownership, foreign exchange, exports

INTRODUCTION

The goal of inclusive finance is to increase the number of people and medium state enterprises that can gain access to and make use of financial services. In this regard, the goal of inclusive finance is financial inclusion, which is achieved when all people can take advantage of a wide range of low-cost financial services from a variety of reliable, responsible, and long-term financial service providers. After Muhammad Yunus received the Nobel Peace Prize in 2006 for his ground breaking work in microfinance, the concept of financial inclusion spread

around the world (Saliya, 2022; Agbloyor, Asongu, Muriu, & Yawson, 2022; Saleem, 2022). His main endeavour was to open banks to the poor, who had previously been denied access to conventional banking services. Microfinance was a novel idea at the time, but it has since become standard practice in efforts to alleviate poverty. For instance, the United Nations' Sustainable Development Goals highlight universal access to financial services as a means to speed up development. According to the Findex, 1.7 billion adults were still unbanked in 2017 with denied access to formal financial services such as bank accounts. Rural dwellers, young people, and women constituted the largest share of this unbanked population. Contributory factors include poverty, bank branch proximity and cumbersome account-opening procedures (Özer, 2022; Kshetri, 2021; Mule, Wafula, & Agusioma, 2021).

In the poorest economies, only 35% had access to minimal transaction accounts for secured and efficient payments in 2020 according to the report by the World Bank Group (WBG). Mhlanga (2022) however established that fintech could be leveraged to increase access to financial services to the unbanked. The advent of digital technologies underpins the current widespread availability of financial services. A case in point is the novel concept of Mobile Money, which electronically stores money on mobile phones and offers millions of people in the global south access to their foremost financial services. Mobile money's rapid growth in inclusive finance has spawned a number of related industries, the most prominent of which is mobile money credit, also known as digital lending (Afriyie, 2022). With the advantage of online lending platforms, people can get loans without in-person visitations to banks. The vast majority of digital lending is conducted using apps that may be downloaded on mobile devices or Unstructured Supplemental Service Data. No collateral is also required for the borrower to gain access these credit facilities.

It is not just in developing countries that the need of ensuring that households have access to financial services has been emphasized. Smith and Wesselbaum (2022) estimated six per cent of adults in high-income economies without bank accounts in 2014. During the 2008 financial crisis, many middle- and upper-class households lost their bank accounts in the developed countries. Only about a third of businesses in developing Asia say they have access to a bank loan or line of credit, and only about a quarter of the population has access to either (Hamilton, Burry, Mok, Barker, Grove, & Williamson, 2014). Even though the economies of Asia and the Pacific are growing, the problem of making financial services accessible to underprivileged and low-income people still exists. Overall indicators of financial development show that the region is further along than other developing regions (Verma & Giri, 2022). This is especially true of the banking sector. On the contrary, this obscures a great deal of the heterogeneity within Asian economies. The most commonly cited challenges to financial

inclusion are related to cost, accessibility, and issues with identification (Gammage, Kes, Winograd, Sultana, Hiller, & Bourgault, 2017).

In terms of economic growth, Africa trails only Asia during the past decade, with average annual rates of above 5%. The Arab Spring showed that this progress had not resulted in widespread affluence and better living conditions for the majority of Africans. Inclusive growth is necessary for its long-term social and political viability. Africa has fallen behind other regions of the world in terms of financial inclusion, which is crucial to the continent's overall progress in the field of inclusive development (Mpofu & Mhlanga, 2022). In Africa, only about one in four adults have access to a bank account. A greater number of people will not be able to save money, invest, start businesses, and provide for their families if access to financial services is broadened. This justifies why fostering inclusive and long-term economic growth performance is predicated on financial inclusion. Simply put, financial inclusion describes all efforts to ensure that people from all socioeconomic backgrounds have equal access to and ability to afford formal financial services. Due to low and/or inconsistent incomes, their gender, where they live, what they do for a living, or their lack of financial knowledge, certain groups of people have historically been shut out of the official financial sector. To circumvent these, it is essential provide the needed financial resources and harness the latent potential of financially excluded or under-served businesses and people. This would build needed capabilities, improve their human and physical capital, pursue income-generating activities, and control the associated risks. Access to savings and risk management tools, as well as a secure and reliable financial system that allows individuals and enterprises to take an active role in the economy, are all components of financial inclusion (Ali, 2022).

A significant increase in interest and dedication to promoting financial inclusion has been seen in recent years, as evidenced by the number of countries that have signed on to the Maya Declaration and the G-20 Financial Inclusion Action Plan, as well as the strategies and goals set by individual governments. A clear and uniform definition of financial inclusion is therefore as essential as are data collection initiatives that are connected with the extension of financial inclusion commitments and programs, in order to track progress toward more inclusive financial systems and quantify their impact (Chishimba, 2022; Perlman, 2022). Precise and customized data are crucial for locating policy gaps; understanding served and underserved communities, and prioritizing actions. However, many foreign data sets only cover a small area of Africa, and many African countries have not yet conducted large-scale, nationally-led studies of financial inclusion. Increasing the reach and extent of financial inclusion data on the continent may undoubtedly be expanded. This study provides a more thorough definition of financial inclusion, outlining its main dimensions that need to be measured, outlining existing sources of data on

financial inclusion, and outlining recent initiatives to develop global indicators on financial inclusion and options for national-level data collection with a focus on Africa (Faith, Roberts, & Hernandez, 2022). Both supply-driven factors, such as geographical distances and high transaction costs for banks to operate in distant locations, and demand-driven factors, such as a lack of financial literacy, irregular cash flows, and poor wages, contribute to the widespread absence of financial inclusion. In the Global Findex Survey, plausible justifications by non-users of bank accounts included lack of funds, high costs, lack of identification documents, proximity, lack of trust, religious restrictions, and the convenience of an existing account with a family member. Among these constraints, 76.2% attributed lack of funds as the sole constraining factor to bank account ownership. It has been observed across developing Asia that a paucity of finances was consistently substantial. A little over 21% of people mentioned price and location as important factors. Remote locations, especially people in rural areas, have to travel to access a bank office was another major barrier to financial inclusion, as are the fixed costs associated with opening and maintaining an account by way of required minimum balances (Chien, Hsu, Zhang, Vu, & Nawaz, 2022). Developing Asia is one of the lowest when it comes to financial inclusion, with the exception of Sub-Saharan Africa, on both measures of bank branch density and ATM penetration compared to the population, which together provide a rough indication of the physical barriers to access. Technology and alternative distribution channels have gained popularity in recent decades, and they hold the potential to alleviate some of the problems associated with price and accessibility. These include mobile banking, in which trucks drive through isolated locations and provide financial services on a schedule, mobile phone finance, which enables clients to conduct financial transactions over the phone, and e-finance, which enables consumers to access financial services via the Internet (Jin, 2022; Odra, 2022). According to recent findings from the Global Findex Survey, however, these channels do not appear to be extremely common in emerging Asia. To compare, only 44.8% of respondents in the median high-income economy used wire transfers or the internet to pay bills or make purchases using money from their accounts, while only 2.05% did so in the median developing Asian economy. All of these numbers were below 8% in the median emerging economy of Europe, Latin America, the Middle East, and Sub-Saharan Africa. Furthermore, fewer than 2% of people in developing Asia confirmed they had ever used a mobile payment service to pay bills or send or receive money (Demirgüç-Kunt, Klapper, Singer, & Ansar, 2022).

It could be argued that if a country significantly increases its financial services it will cause market instability. The possibility of a link between financial inclusion and macroeconomic stability was raised by (Saydaliev, Kamzabek, Kasimov, Chin, & Haldarov, 2022). Financial inclusion and its instruments, the author contended, may intrinsically enhance financial market

risk due to an uncontrolled financial system and rapid credit growth. On the other hand, funding from financial inclusion helps small and medium-sized enterprises gain access to operating cash, which in turn helps them grow and function more effectively (Dong & Tao, 2022). These two opposing viewpoints highlight an essential question regarding the potential impact of financial inclusion and financial expansion on macroeconomic stability. For this reason, the connection between financial inclusion and macroeconomic stability is crucial, especially in developing economies with a comparatively a less mature financial sector. There may not be enough effect on macroeconomic dynamics and stability, despite the fact that financial inclusion has improved in recent years and is seen as having a favourable impact on economic growth and development. The impact of financial inclusion on the health of the economy as a whole is discussed, with data from a variety of sources (Ozturk & Ullah, 2022).

Previous studies have shown that a rise in loan availability without corresponding measures to regulate it will lead to a rise in financial instability (Mateev, Tariq, & Sahyouni, 2021). However, the optimal level of financial inclusion that increases macroeconomic stability has not been researched previously, and this paper proposes that there may be such an optimal level. In addition, as far as we can tell, there has been less research into how financial inclusion affects price and output volatility. Although Li and Zhang (2022) provide evidence that suggests a higher level of financial inclusion raises the ratio of output volatility to inflation volatility, financial inclusion's impact on the many major and fundamental indicators was not broken down by the writers. This study fills a gap in the literature by providing empirical evidence for the correlation between financial inclusion and inflation and output volatility (Cama & Emara, 2022; Fang & Chang, 2022). The remainder of the paper is organized as follows. The second section examines pertinent theoretical and empirical investigations. The third section describes the research approach that will be applied to the empirical analysis. In Section 4, data and innovative empirical results are presented, followed by some concluding observations in Section 5.

LITERATURE REVIEW

The idea of financial inclusion is complex, encompassing a wide range of nuanced features that can be used in a variety of ways depending on the specifics of a given research question or national agenda (Bonina, Koskinen, Eaton, & Gawer, 2021). Access, quality, utilization, and welfare are the four pillars around which financial inclusion is built, as outlined by the Alliance for Financial Inclusion (Hasan, Yajuan, & Khan, 2022). Similar to the complexity of defining financial inclusion, defining macroeconomic stability requires multiple considerations. For instance, Fischer (1992) argues that a stable macroeconomic framework includes low and

predictable inflation, an appropriate interest rate, a stable and sustainable fiscal policy, a competitive and predictable real exchange rate, and a perceived balance of payments position. On the other hand, Viana, Lourenço, Black, and Martins (2022) argue that macroeconomic stability is a phenomenon that increases the unpredictability of the macroeconomic structure of a nation. Inflation and growth in output will be used as indicators of economic health in this study. The theory of financial inclusion based on financial literacy posits that increasing the knowledge of people and the comfort with managing their money will encourage them participate in the formal financial system (Amin, Yasin, & Rutkowska-Ziarko, 2022). It proposes that enhancing financial literacy of the populace through education is a potential pathway to achieving financial inclusion. When people learn how to manage their money responsibly, their affinity to banks and credit unions wherever they go will grow. The concept of financial inclusion based on financial literacy has certain virtues. To begin, a higher level of financial literacy might raises the awareness of available institutionalized financial aid (Kang, 2021; Sansone, Rossi, & Fornero, 2019).

When people learn about the formal financial services available today and how they might enhance their lives, they are more likely to open a bank account. Higher level of financial literacy makes it possible for people to make better use of the opportunities presented by the conventional financial system. Financial knowledge in the lives of people would help establish their independence and safety. People who are financially literate are better able to prioritize their needs over their wants, set and stick to budgets, save money for emergencies and future goals like retirement. It is much more cost-effective for governments with limited public money or tax income to educate the populace about financial management and the benefits of using formal financial services if they adopt financial literacy as a national strategy for financial inclusion. There are however several problems with the financial literacy approach of broadening access to credit. To enter the formal financial industry, it addresses the willingness, but not the capacity (Ozili, 2020; Anand, Mishra, Verma, & Taruna, 2020). Financial participation formally can be boosted through education about personal finance, but this does not necessarily translate into increased capacity, where 'capacity' is defined as access to sufficient funds to engage in one or more financial transactions. This suggests that a lack of resources precludes full participation in the official financial system, even among those who are financially knowledgeable.

The notion of financial vulnerability suggests that the poor, the young, women, and the elderly should be prioritized by the financial inclusion initiatives of countries. This theory suggests that vulnerable people are often the most hit by financial crises and economic downturns, making it even more important to bring them fully into the formal financial sector.

Government-to-person social cash transfers deposited into official accounts of vulnerable people is one way to do this. To increase the rate of financial inclusion for vulnerable populations, G2P social cash transfer payments should be made into the formal account of impoverished people, young people, women, and the elderly. In addition, vulnerable people can feel compensated for the current income inequality that affects them when social cash transfer is effective and other tools for achieving financial inclusion are supplied to them. This allows them a chance to catch up to other parts of society. Theoretically, financial inclusion efforts should prioritize the most marginalized members of society (Aziz & Naima, 2021; Huang, Kale, Paramati, & Taghizadeh-Hesary, 2021). The paradigm of financial inclusion based on vulnerable groups has some validity. As a first step, the strategy enlists at-risk people in the formal financial system in an effort to reduce the prevalence of financial exclusion. Second, it is easy to determine which members of the population are economically marginalized if this theory is correct.

Those most at risk can be pinpointed by examining the socioeconomic demographics, gender composition, and age distribution. Third, rather than attempting to bring every member of society into the financial mainstream, it may be more efficient to focus on those closest to the edge. The vulnerable group hypothesis of banking access has certain holes in it (Thiemann, 2022; Behera, Bala, & Rana, 2022). To begin with, the idea does not put a premium on ensuring that all people in a society have access to enough financial resources. For a second, it does not take cognisance of risk-free people outside the banking system. In addition to the vulnerable population, those who are not vulnerable must be able to use the governmental financial services. Third, the discriminately assumption of women as vulnerable implies that men are not. Labelling women as a vulnerable category to the exclusion of males may have unintended financial and social implications in contemporary societies, as women and men compete for equal opportunities (Oluwayomi, 2020; Burt, 2020; Bowes & Kitching, 2020). It could lead to men becoming more hostile toward women in society. Achieving financial inclusion by targeting just disadvantaged people may aggravate social inequality when social policies and financial policies are skewed to favour vulnerable individuals over others. Income inequality may emerge if certain disadvantaged groups enjoy longer periods of exposure to formal financial services than others (Robinson, et al., 2020).

Financial inclusion, according to Fishman, Parker, and Straub (2020) raises economic and financial risks by increasing the size of the pool of borrowers due to loosening credit standards. Without proper regulation, an increase in microfinance lending can dilute the efficacy of the financial sector as a whole and pose serious hazards to the economy. Increased loan availability, say and might lead to a decline in credit quality and an escalation in credit growth

that is out of control. Demirgüç-Kunt, Hess, Klapper, Singer, and Ansar (2020) outlines three key ways in which broadening access to financial services could have a beneficial effect on economic security. First, if a bank increases its lending to small firms, it may reduce the risk of its loan portfolio because the assets of the lender will be more diversified. It would reduce the overall risk of the portfolio and shrink the impact of any single borrower. This would reduce interconnectedness risks in the financial system, as proposed in the previous section. Second, a larger and more consistent deposit base from more small savers would reduce the reliance of banks on non-core financing, which is more vulnerable during times of economic stress. As a result, the likelihood of pro-cyclicality falls. Third, monetary policy transmission could be improved by broader financial inclusion, leading to stronger financial stability.

Because people with low incomes tend to be less affected by economic cycles, Tchamyou (2019) argue that allowing them access to the financial system will holistically strengthen the sector. They point to anecdotal evidence that shows financial institutions that focus on serving the poor are better able to withstand macro-crises and keep local economies humming. Because of the labour-intensive nature of their operations, small and medium-sized enterprises and small-scale entrepreneurs are negatively affected by a lack of access to credit (Maheshkar & Soni, 2021). Boadu, Wang, and Sunindijo (2020) points out several threats to economic security that widespread access to financial services will pose. If, in an effort to increase the number of borrowers, lending standards were lowered, that would be the most glaring. The severity of the US subprime mortgage crisis can be directly attributed to this. Second, the reputational risk of banks could rise if they outsource credit evaluation and other activities to pursue smaller borrowers are not capped. Last but not least, an increase in lending by MFIs could increase financial system risks if they are not adequately regulated. Macroeconomic evidence suggests that advanced monetary systems significantly contribute to sustained economic expansion.

Multiple studies have demonstrated a strong negative correlation between indices of financial depth and income inequality, as assessed by the Gini coefficient, at the national level. Increases in the income share of the lowest income quintile across countries from 1960 to 2005 are also correlated with increases in national financial depth (Chakroun, 2020). The percentage of the population living on less than \$1 per day fell more precipitously in the 1980s and 1990s in countries with higher levels of economic development. Almost 30% of the variation in poverty reduction rates across countries can be ascribed to differences in financial development between countries, after controlling for other relevant variables (Nyandoro & Hatti, 2019; Ghodsee & Orenstein, 2021).

Financial development benefits low-income groups not only through their direct use of financial services, but also through indirect positive effects, most notably in the labour market. Deliberate empirical studies have demonstrated, for instance, that deregulation of bank branching can not only intensify competition and improve bank performance, but also increase the incomes of the poor by increasing relative wage rates and working hours of unskilled workers, thereby narrowing the income distribution. Thus, financial development is pro-poverty not only because rising incomes lift more people out of poverty but also because it narrows income gaps. It also contributes narrower income disparities and increased employment possibilities for low-income households to a more united, stable society and, by extension, to market stability (Acosta, Bailey, & Bailey, 2020). This link could be examined further for potential connection to financial system stability through income equality and poverty alleviation. While the challenges associated with measuring financial inclusion are now being addressed more effectively, we still lack a clear understanding of the specific ways in which financial inclusion promotes income equality and reduces poverty, despite recent studies in developing countries with crucial clues. For instance, field studies based on randomized controlled trials are aiding in the identification of the causal pathways by which access to formal financial services improves the lives of the poor in developing nations, particularly with regard to savings products. Savings enhance stability at the individual and household levels, and, given their very large numbers, small savers may contribute to stability at the financial system level. Yet, more research is needed to fully understand the effects of savings on both levels of stability, especially at the level of the financial system.

Bragazzi et al. (2022) used a cross-country survey conducted over the course of two years, a long-time series covering five countries, and firm-based data on access to finance to assess whether financial inclusion may achieve various macroeconomic goals. According to the findings, broad access to financial services helps spur economic expansion. A higher rate of economic growth was found to be associated with more access to a wider range of banking services by businesses and consumers, as well as greater use of these services by women. In addition, sectors reliant on foreign investment tend to expand more rapidly in nations with more financial inclusion. The data also show that marginal returns on growth are decreasing as financial inclusion and depth expand. Malik et al. (2022) explored the association between financial inclusion and macroeconomic stability for 22 emerging and frontier nations in a related study. The research looked at a potential ideal level for these countries using panel threshold estimation method. Below a threshold, as measured by the roughly increasing percentage

of bank branches with more than 100,000 account holders, financial inclusion has a positive effect on financial stability. The authors also state that steady inflation and growth can be maintained with financial inclusion.

Huang, Haseeb, Usman, and Ozturk (2022) assessed the influence of financial inclusivity on economic growth, with a focus on developing and developed economies and the study was confined to developing and developed economies. This research shows that there is a tipping point in the correlation between financial inclusion and growth, suggesting that the link is not linear. Above a threshold level of financial inclusion, the study finds, economic development accelerates over the long run. In a compelling argument for the value of financial inclusion Odugbesan, Ike, Olowu, and Adeleye (2022) highlight the role that easy access to credit plays in encouraging risk-taking and investment that ultimately benefits the economy. In the same vein, Demirgüç-Kunt, Klapper, Hess, Singer, and Ansar (2020) empirically reviewed how financial goods could contribute to economically equitable growth and development. Evidence from the studies indicates that when people have access to formal financial systems, they have more opportunities to savings, investments, and management of financial risks. In addition, certain financial instruments, like digital payment and inexpensive savings accounts, were more helpful than in accomplishing development goals. Dar and Ahmed (2020) emphasize the importance of digitization and technology as they analyse the impact of mobile phones on economic growth in a cross-section of African countries by means of expanded access to formal financial services. According to the results, boosting financial inclusion makes it easier for mobile phone technology to positively impact economic expansion.

METHODOLOGY

The study is primarily based on secondary data extracted from the world development indicators (WDI), and International monetary fund (IMF) database spanning 2002 to 2021 using convenience sampling technique to sample 54 African countries. Due to the scope of the study, the indicated objectives, and the availability of data for the time under consideration, a panel data approach was adopted. Two-step generalized method of moment is used based due the dynamic nature of the series and how efficiently controls endogeneity of lagged dependent variables. In addition, GMM controls for omitted variables bias, unobserved panel heterogeneity and measurement errors. According to Blundell, Bond, and Windmeijer (2001) system GMM correct endogeneity by the introduction of more instruments to improve efficiency. To formally verify the link between financial inclusion and macroeconomic stability in Africa with the

moderating effect of governance qualities, the following dynamic panel data equation is estimated.

$$FII_{it} = \partial(Macro_{it} + GQ_{it}) + \beta X_{it} + \varepsilon_{it} \text{ --- (1)}$$

Where fii_{it} is the measure of financial inclusion, $Macro_{it}$ is the measure of macroeconomic stability, X_{it} is a vector of control variables (exports, and population); β is the coefficient of the parameters; ε_{it} is an error term; $i=1, \dots, N$ represents the country; and $t = 1, \dots, T$ represent time. Finally ∂ is the coefficient of independent variables in the function. In order to adequately estimate the impact of financial inclusion on macroeconomic stability and the moderating role of governance qualities, a second model is formulated as follows:

$$fii_{it} = f(Macro_{it}, ATC_{it}, Acctown_{it}, ATM_{it}, CBank_{it}, GQ_{it}, Export_{it}, Pop_{it}) \text{ --- (2)}$$

The final dynamic model with the lagged dependent variable including the interaction term and the control variables is also formulated as follows:

$$fii_{it} = \beta_1 fii_{it-1} + \beta_2 Macro_{it} + \beta_3 ATC_{it} + \beta_4 Acctown_{it} + \beta_5 ATM_{it} + \beta_6 CBank_{it} + \beta_7 Macro * GQ_{it} + \beta_8 Exports_{it} + \beta_9 Pop_{it} + \varepsilon_{it} \text{ --- (3)}$$

Where Fii_{it} represents financial inclusion index extracted from the WDI and computed through principal component analysis, fii_{it-1} , is the lagged dependent variable of financial inclusion index, $Macro_{it}$ represents Macroeconomic stability index, ATC_{it} represent a proxy of average transaction cost use to measure financial inclusion, $Acctown_{it}$ is account ownership, ATM_{it} is automated teller machine proxy, $CBank_{it}$ is Commercial Bank branches per 100000 adults used for measuring financial inclusion, $Macro * GQ_{it}$ is the interactive term for the moderating effect of export of goods and services as a vector for control variable, and POP_{it} also denotes a vector control variable, ε is the stochastic error term.

Table 1. Variable Definition

SRL	VARIABLE	NOTATION	DESCRIPTION
1.	Financial inclusion index	FII	Financial inclusion is measure as a composite index (i. average transaction cost of sending remittance to specific country of person (%), ii. account ownership at financial institution or with a mobile-money-service provider, primary education or less (% of population age 15+), iii. Automated teller machine (ATC) per 100000 adults, iv. Commercial bank branches per 100000 adults), extracted from world development indicators (WDI)
2.	Macroeconomic stability	Macro	Measured as a composite index (i. foreign exchange, ii. Gross Domestic Product, iii. Inflation, iv. Interest rates, v. Production, and vi. Unemployment, extracted from WDI.

3.	Governance quality	GQ	Governance qualities are measured as a composite index consisting i. control of corruption, ii. Voice and accountability, iii. Governance effectiveness, iv. Rule of law, v. regulatory quality, and vi. political stability and absence of violence
4.	Exports of goods and services	exports	Exports of goods and services (% of GDP), obtained from the WDI
5.	Population	POP	Total population from the WDI

Table 1...

RESULTS AND DISCUSSION

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
atc	419	3.31	2.17	1.05	13.52
acctown	419	5.22	7.14	1.58	70.04
atm	419	4.67	2.96	1.87	15.93
cbank	419	5.74	3.43	2.72	18.11
fexch	419	1.78	0.69	0.86	4.36
gdp	419	2.64	1.05	1.05	7.00
infl	419	1.97	1.05	0.50	6.88
unemp	419	1.67	0.37	0.73	3.07
export	419	45.44	27.31	-24.70	110.68
pop	419	61.28	27.11	-17.79	157.21
vo	419	56.68	44.25	3.78	181.18
po	419	1.49	0.50	0.43	3.56
ge	419	1.90	0.49	0.69	3.96
rq	419	1.33	0.45	0.72	3.08
rl	419	2.02	0.52	1.01	3.15
ccor	419	9.80	3.92	2.29	15.98

There are 419 observations for all the variables being considered in the equation, average transaction cost (ATC) has a mean score to 3.31, stand deviation of 2.17%, and with maximum and minimum values of 13.52 and 1.05 respectively indicating that the data for the ATC is positively skewed towards the higher side. Apart from population which has the highest mean of 61.28, standard deviation of 27.11, maximum and minimum value of 157.21 and -17.79 respectively, the next variable with highest mean is voice and accountability with mean of 56.68, standard deviation of 44.25, and with maximum and minimum values of 18.1, and 3.78 respectively indicating that the data is skewed towards the higher side. The third variable with the highest mean is export of goods and services, with an average mean score of 45.44 and standard deviation of 27.31, maximum and minimum values of 110.68 and -24.70 and indicating that the data is skewed positively towards the upper side. The remainder of the variables exhibit similar characteristics for the mean, standard deviation, maximum and minimum values.

Pairwise correlation

From table 3, account ownership, foreign exchange, gross domestic product and inflation have a negative and significant relationship with average transaction cost, a proxy of financial inclusion. On the other hand, Automated teller machine (ATM), commercial bank branches per 100000 adults, political stability, population, rule of law, regulatory quality, unemployment, and voice and accountability have a positive and relationship with average transaction cost. Apart from relationships between commercial bank branches and ATM, inflation rate and GDP, and unemployment and political stability that have moderate levels of correlation, all the other variables have very low levels of correlation, indicating no multicollinearity in the data.

Table 3. Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) atc	1.000												
(2) acctown	-0.181	1.000											
	(0.000)												
(3) atm	0.398	-0.220	1.000										
	(0.000)	(0.000)											
(4) cbank	0.264	-0.210	0.920	1.000									
	(0.000)	(0.000)	(0.000)										
(5) fexch	-0.261	-0.124	-0.064	0.022	1.000								
	(0.000)	(0.011)	(0.194)	(0.647)									
(6) gdp	-0.154	-0.078	-0.268	-0.135	0.655	1.000							
	(0.002)	(0.112)	(0.000)	(0.006)	(0.000)								
(7) infl	-0.334	-0.083	-0.354	-0.228	0.790	0.885	1.000						
	(0.000)	(0.090)	(0.000)	(0.000)	(0.000)	(0.000)							
(8) po	0.306	0.018	0.304	0.341	-0.135	0.061	-0.109	1.000					
	(0.000)	(0.706)	(0.000)	(0.000)	(0.006)	(0.210)	(0.026)						
(9) pop	0.300	0.051	-0.259	-0.419	-0.199	-0.022	-0.088	-0.088	1.000				
	(0.000)	(0.300)	(0.000)	(0.000)	(0.000)	(0.653)	(0.071)	(0.073)					
(10) rl	0.205	0.022	-0.160	-0.140	-0.207	0.185	-0.005	0.401	0.282	1.000			
	(0.000)	(0.658)	(0.001)	(0.004)	(0.000)	(0.000)	(0.925)	(0.000)	(0.000)				
(11) rq	0.455	0.044	0.173	0.168	-0.452	-0.163	-0.451	0.440	0.394	0.441	1.000		
	(0.000)	(0.369)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)			
(12) unemp	0.131	0.128	0.015	0.078	0.135	0.293	0.176	0.824	-0.084	0.448	0.218	1.000	
	(0.007)	(0.009)	(0.753)	(0.109)	(0.006)	(0.000)	(0.000)	(0.000)	(0.085)	(0.000)	(0.000)		
(13) vo	0.370	0.129	-0.112	-0.190	-0.481	-0.291	-0.381	0.124	0.513	0.480	0.487	0.029	1.000
	(0.000)	(0.008)	(0.022)	(0.000)	(0.000)	(0.000)	(0.000)	(0.011)	(0.000)	(0.000)	(0.000)	(0.561)	

Table 4. Relationship between Macroeconomic Stability and Financial Inclusion in Africa

	(1) ATC	(2) GDP	(3) INFL	(4) FEXCH	(5) ATM	(6) ACCTOWN
l.atc	0.776 ^{***} (3.37)					
atc		0.293 ^{***} (0.54)	-0.0454 ^{***} (-0.32)	0.364 ^{**} (2.90)	0.430 ^{***} (1.25)	2.585 ^{***} (1.55)
acctown	0.0437 ^{***} (0.90)	0.0652 ^{***} (0.85)	-0.0252 ^{**} (-0.66)	0.105 ^{***} (3.86)	0.0573 ^{***} (0.81)	
atm	0.171 ^{***} (0.58)	0.141 ^{***} (0.36)	-0.0344 ^{***} (-0.12)	-0.330 ^{**} (-3.02)		1.319 ^{***} (0.51)
cbank	0.184 ^{***} (0.70)	0.0460 ^{***} (0.17)	-0.0257 ^{***} (-0.13)	0.0497 ^{***} (0.85)	0.435 ^{***} (2.30)	2.199 ^{***} (1.04)
fexch	0.146 ^{***} (1.01)	0.215 ^{***} (0.76)	0.126 ^{***} (1.02)		0.225 ^{***} (1.30)	2.234 ^{***} (1.55)
gdp	0.189 ^{***} (0.85)		0.195 ^{***} (1.14)	0.458 ^{***} (3.46)	0.332 ^{***} (0.97)	3.528 ^{***} (1.85)
infl	0.176 ^{**} (0.70)	0.387 ^{***} (1.31)		0.417 ^{**} (3.07)	0.335 ^{***} (1.15)	3.137 ^{**} (1.93)
unemp	0.879 ^{***} (0.81)	2.599 ^{**} (1.40)	1.955 ^{***} (1.36)	0.673 ^{***} (1.06)	2.267 ^{**} (1.61)	13.92 ^{***} (1.50)
export	0.000638 ^{***} (0.25)	0.00878 ^{***} (1.21)	0.0149 ^{***} (3.50)	0.0111 ^{***} (4.73)	0.000686 ^{**} (0.14)	0.0105 ^{***} (0.32)
pop	0.00425 ^{**} (0.40)	0.00497 ^{***} (0.31)	0.00498 ^{**} (0.74)	0.00457 ^{**} (0.40)	0.00705 ^{**} (0.72)	0.0804 ^{***} (0.60)
ccor	0.000483 ^{***} (0.02)	0.0260 ^{***} (0.29)	0.0829 ^{***} (1.29)	0.126 ^{***} (3.61)	0.0504 ^{***} (0.89)	0.0369 ^{***} (0.09)
vo	0.00555 ^{**} (1.21)	0.00169 ^{***} (0.13)	0.00175 ^{***} (0.40)	0.00665 ^{**} (3.69)	0.00754 [*] (1.24)	0.0530 (1.29)
po	0.456 (0.76)	1.232 ^{**} (1.40)	1.046 (1.31)	0.563 [*] (2.00)	1.153 (1.86)	6.890 ^{**} (1.55)
ge	-0.638 (0.86)	-1.583 (1.56)	-1.018 (1.47)	-0.131 (0.35)	-1.442 (1.52)	9.522 (1.77)
rq	0.592 ^{***} (0.54)	0.691 ^{***} (0.87)	0.319 ^{***} (0.62)	0.517 ^{***} (1.02)	1.319 ^{**} (1.33)	12.01 ^{***} (1.54)

rl	0.0661*** (0.31)	0.137*** (0.22)	-0.432** (-1.15)	1.042*** (5.87)	0.0272** (0.07)	2.159*** (1.42)	Table 4...
l.gdp		0.547*** (1.52)					
l.infl			0.803*** (3.44)				
l.fexch				1.102*** (9.20)			
l.atm					0.606*** (3.85)		
l.acctown						0.193*** (2.06)	
_cons	0.443*** (0.48)	1.206*** (0.69)	0.00953*** (0.01)	1.980*** (3.68)	1.150*** (0.78)	14.52*** (3.19)	
N	377	377	377	377	377	377	
AR2	0.91	0.92	0.9	0.97	0.77	0.93	
Sarg0an	0.80	0.72	0.77	0.88	0.82	0.83	
Hansen	0.55	0.55	0.46	0.18	0.54	0.62	
No of Instr	24	23	23	23	23	24	
No of groups	42	42	42	42	42	42	
Prob>ch ²	0.000	0.000	0.000	0.000	0.000	0.000	

The current value of average transaction cost (ATC), a proxy for financial inclusion, is dependent on the preceding value of ATC; this is shown by the considerable lag values of ATC, GDP, inflation, foreign exchange, ATM ownership, and account ownership at the 1% level. Furthermore, the average transaction cost is positively correlated with GDP in African nations. Prompt financial transactions are facilitated by an efficient payment system, which benefits the economy, society, and the people directly involved in the transaction. According to Perić, Smiljanić, and Kežić (2022) there is a modestly positive relationship between mobile money and monetary aggregates, the consumer price index, and private sector credit. This further implies that when mobile transaction costs are improved and reduced, more people will desire to utilize the service, resulting to an increase in the GDP of African nations. According to table 4, there is a positive and statistically significant correlation between having an account and having higher average transaction costs. If most people use mobile money, the average transaction fee could rise. Billions of people will get access to these services thanks to the worldwide efforts of Sustainable Development Goal 1 (no poverty), Goal 5 (gender equality) by extension SDG8 (decent work and economic growth). These goals, including increasing financial inclusion and using other mobile services, can be

accomplished all at once with mobile money. Digital utility payments were available in 75% of the world's nations by 2020; so, utility payments can be used as an additional bridge to increase financial inclusion. A negative and statistically significant correlation was found between inflation and all measures of financial inclusion. This data points to the possibility that financial inclusion can assist bring down inflation and keep prices steady in the economy. According to research by Sugozi, Yasar, and Verberi (2022) both output and prices are more responsive to shifts in interest rates in economies where a larger proportion of the population has access to formal financial services. This is because interest rates have such an impact on consumer spending. When food accounts for a large portion of overall consumption spending and financial inclusion is limited, the central bank focuses on headline inflation rather than core inflation. Financial integration of more individuals implies more people are able to expand production of goods and services, which in turn increases the availability of foreign exchange and boosts economic growth. To put it simply, commercial banks are information collectors that compile economic, statistical, and financial data relevant to business and industry.

Table 5. Macroeconomic Stability and Financial Inclusion in Africa,
Moderation Role of Institutional Quality

Variable	(1) FII	(2) FII	(3) FII	(4) FII	(5) FII	(6) FII
L.fii	0.783*** (3.59)	0.778** (2.62)	0.697*** (1.47)	0.697*** (1.29)	0.806** (2.74)	0.802** (2.83)
acctown	0.0362*** (0.68)	0.0435*** (0.62)	0.0647*** (0.57)	0.0331 (0.53)	0.0351*** (0.48)	0.0375 (0.59)
atm	-0.215 (-0.54)	-0.159 (-0.39)	-0.0984*** (-0.35)	-0.112*** (-0.39)	-0.176 (-0.41)	-0.169*** (-0.54)
cbank	0.210*** (0.67)	0.183 (0.55)	0.176 (0.61)	0.136*** (0.53)	0.188 (0.54)	0.178 (0.66)
fexch	0.157*** (0.94)	0.141*** (0.77)	0.119*** (0.92)	0.125 (0.95)	0.147 (0.79)	0.140*** (1.00)
gdp	-0.159 (-0.78)	-0.179*** (-0.70)	-0.245*** (-0.61)	-0.199 (-0.53)	-0.147*** (-0.50)	-0.163 (-0.62)
infl	0.162*** (0.68)	0.165 (0.54)	0.220*** (0.55)	0.222*** (0.47)	0.130*** (0.40)	0.150 (0.52)
unemp	0.811 (0.64)	0.822*** (0.56)	0.184 (0.09)	0.0388*** (0.02)	0.815 (0.66)	0.807 (0.75)

export	0.000499 ^{***} (0.17)	0.000662 ^{***} (0.14)	0.00364 ^{***} (0.30)	0.000728 ^{***} (0.25)	0.000396 ^{**} (0.15)	0.000446 ^{***} (0.18)
pop	-0.00732 ^{***} (-0.34)	-0.00383 ^{***} (-0.23)	0.0159 (0.25)	-0.0406 ^{***} (-0.36)	-0.00633 (-0.27)	-0.00459 (-0.29)
vo	0.00334 (0.13)	0.00530 ^{***} (1.02)	0.00476 ^{***} (1.16)	0.00682 (1.12)	0.00532 ^{***} (0.96)	0.00531 (1.22)
PO	-0.476 (-0.69)	-0.421 (-0.39)	-0.116 (-0.12)	-0.160 ^{***} (-0.23)	-0.428 (-0.58)	-0.426 (-0.71)
GE	-0.562 (-0.67)	-0.590 (-0.66)	0.145 (0.07)	-0.0224 (-0.02)	-0.576 (-0.70)	-0.578 (-0.80)
RQ	0.519 (0.45)	0.562 (0.42)	0.532 ^{***} (0.43)	-1.970 ^{***} (-0.31)	0.475 ^{***} (0.35)	0.472 (0.40)
RL	0.00834 ^{***} (0.03)	0.0643 (0.15)	0.262 (0.34)	0.0928 (0.21)	-0.0424 (-0.06)	0.0324 (0.09)
CCOR	0.00609 (0.16)	0.000122 (0.00)	-0.0347 (-0.28)	-0.0404 (-0.30)	0.00998 (0.14)	0.000589 (0.02)
FII*Vo	0.0000493 ^{***} (0.11)					
FII*Po		0.000224 ^{***} (0.03)				
FII*Ge			0.00945 ^{***} (0.29)			
FII*Rq				0.0381 ^{***} (0.33)		
FII*RI					0.00106 ^{***} (0.13)	
FII*Ccor						-0.00769 ^{***} (-0.06)
_cons	0.210 ^{***} (0.15)	0.494 ^{***} (0.36)	1.553 ^{***} (0.36)	2.087 ^{***} (0.34)	0.269 ^{***} (0.15)	0.314 ^{***} (0.21)
AR2	0.96	0.95	0.97	0.94	0.96	0.93
Sargan	0.84	0.78	0.781	0.81	0.82	0.83
Hansen	0.55	0.53	0.48	0.19	0.54	0.62
No of Instr	24	23	23	23	23	24
No of groups	42	42	42	42	42	42
Prob>Ch2	0.000	0.000	0.000	0.000	0.000	0.000
N	378	378	378	378	378	378

According to Table 5, there is a strong correlation between citizen voice and accountability in regards to financial inclusion in Africa; both citizen voice and accountability are critical aspects of governance; citizens require an effective voice to convey their views, and governments can be held accountable for their actions, allowing for a quicker response from the government to citizens' financial demands. Financial exclusion and macroeconomic stability, according to Sabry (2022) analysis, can be hampered by a lack of voice and accountability, which in turn may lead to weak institutional framework, cronyism, and favouritism in resource allocation.

There is a positive, significant correlation between political stability and financial inclusion, and when the former exists, the latter can be maintained. Economists are unanimous that the rate of financial inclusion of a state rises more quickly when the economy and government are both stable. Mansour (2022) claims that, a robust correlation exists between political stability and economic participation. However, inadequate financial inclusion can lead to the collapse of the government with political upheaval because of the uncertainty that comes with an unstable political environment. Financial inclusion is positively and significantly related to the efficiency of government. Governments can significantly affect macroeconomic stability and encourage individual financial access by making large-scale changes to financial inclusion through interest rate manipulations. A stronger currency brought on by good governance may improve profits and share prices for a while, but will eventually depreciate assets and push up interest rates. Increasing financial access by lowering the cost of credit participation may attract comparatively untalented agents, lowering family and business incomes, as Glasser (2022) has argued. When regulatory quality is high enough, more people will be able to gain access to financial services because they will feel more confident in the system. This will lead to even higher levels of productivity and robust macroeconomic growth. In the absence of strict oversight and regulation, new studies show that broader access to credit threatens the health of the banking system. In contrast to corporations that are not subject to any sort of oversight, investors are more likely to put their money into businesses that have established regulatory frameworks and procedures in place. Given the importance of the link between rule of law and financial inclusion, it stands to reason that a well-functioning government system is necessary for full financial inclusion to be realized. In conclusion, there is an inverse correlation between the control of corruption and financial inclusion, suggesting that the former improves the latter.

There is typically a robust and considerable correlation between financial inclusion and the quality of government. Acadia and Vogt (2022) who conducted similar research also discovered a strong correlation between financial development and governance qualities. Serapelwane and Manyedi (2022) who studied the results of financial inclusion on human

development also concluded that financial literacy should not take a second seat to institutional qualities in the pursuit of effective financial inclusion.

CONCLUSION RECOMMENDATIONS AND POLICY IMPLICATIONS

Using dynamic panel two-step system GMM techniques, this research examined the effect of financial inclusion on macroeconomic stability in Africa, with governance quality acting as a moderator. Results showed that governance qualities moderated the association between financial inclusion and macroeconomic stability. As a result, African governments at all levels should prioritize deepening the access to and utilization of formal financial services by their citizenry. Financial inclusion and macroeconomic stability in Africa can be greatly improved by expanding access to and making better use of financial services in tandem with strategic policy changes to holistically restructure the financial system. As part of their national development objectives, African nations should make a determined push to ensure that all citizens have access to basic financial services. To achieve this goal, this must be ingrained in working legislative and regulatory measures. There is hope that the new rules will lead to lower average transaction costs (ATCs), greater account penetration, and the launch of more commercial banks and ATMs. The economies of Africa will benefit from this since it would help strengthen macroeconomic stability. The framework should also mandate banks to provide basic or low-fee accounts and allow the introduction of new microcredit-specific legislation while simultaneously attempting to improve or minimize cumbersome requirements for account ownership in commercial banks.

Governments can also do more to promote financial inclusion by increasing financial literacy education. To enable the strengthening and management of financial inclusion challenges, governments will also need to form coalitions with policymakers, business participants, and the academic community. However, critical financial variables and data accessibility are not fully explored in the study. The usage, access, and availability of financial services to people take up much of the attention within the financial inclusion idea, while other factors, such as service quality, financial literacy, and the existence of financial infrastructure, are often overlooked. With the emphasis on African countries in this study, a more comprehensive in-depth study on individual countries would have deepened the findings of the study.

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