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MEDIATION ROLE OF ECONOMIC FREEDOM IN THE NEXUS BETWEEN FINANCIAL INTEGRATION AND INCLUSIVE GROWTH IN AFRICA

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Abstract

The financial integration literature has mostly focused on traditional growth measures, which is a narrow form of growth. To enhance the body of knowledge on financial integration, this study addresses a gap in the existing literature by adopting a broader perspective on growth, specifically focusing on inclusive growth. Also, it has largely neglected one of the mechanisms through which financial integration enhances growth. Consequently, this study contributes to the existing knowledge by analysing how economic freedom mediates the relationship between financial integration and inclusive growth in a panel of 40 African countries from 2020 to 2021. The empirical results are based on the instrumental variable generalised method of moments (IV-GMM). The findings show that financial integration promotes inclusive growth in Africa. In addition, the results revealed a partial mediation effect of economic freedom in the financial integration-inclusive growth nexus. The study recommends that policymakers should simplify regulations and cut bureaucratic hurdles for financial institutions and businesses. Strengthening legal frameworks to protect property rights and enforce contracts is essential for economic freedom. This enhances investor confidence, aids financial integration, and promotes inclusive growth.

Keywords: Financial integration; Economic freedom; Inclusive growth; IV-GMM; Africa

JEL Classification: F36; P48; O43; O40; O55

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1. Introduction

The impact of international financial integration on the socioeconomic environment is being studied by researchers and policymakers globally (David et al. 2015; Ahmed 2016; Ekpo and Chuku 2017; Phutkaradze et al. 2019; Iddrisu et al. 2024). The flow of direct investments, foreign capital and commercial transactions between domestic and international markets is often termed financial integration or financial openness (Chinn and Ito 2006; Lane and Milesi-Ferretti 2018; Phutkaradze et al. 2019). Some studies highlight financial integration as crucial for financial development (Ahmed 2016; Taghizadeh-Hesary et al. 2019), while others see it as a catalyst for attracting foreign direct investment (FDI) (Tri et al. 2019; Khalid and Marasco 2019; Iddrisu et al. 2024). Additionally, financial integration is considered a driver of economic activity and growth (Caporale et al. 2023; Chen and Kim 2023; Ekpo and Chuku 2017; Peres et al. 2023; Phutkaradze et al. 2019; Rusek 2004). Despite extensive literature, the link between financial integration and inclusive growth, particularly in Africa facing challenges of non-inclusive growth, remains underexplored.

Inclusive growth is the equitable distribution of economic development and income growth, ensuring that the benefits are shared broadly across all citizens within an economy (Dollar and Kraay 2002; Ramos et al. 2013; Anyanwu 2013; Asongu and Nwachukwu 2016; Asongu and Nwachukwu 2017; Iddrisu et al. 2023b). Unlike traditional economic growth metrics, which focus solely on income increases, inclusive growth encompasses a broader set of variables, including income growth, poverty reduction, equality, education, living standards, infrastructure development and others (Asian Development Bank 2013a; Asian Development Bank 2013b; Asian Development Bank 2013c; Iddrisu et al. 2023e). This concept aligns with global policies like the United Nations' Agenda 2030 [also known as Sustainable Development Goals (SDGs)], underscoring the importance for countries to achieve this type of growth. However, many developing nations, including those in Africa, struggle to reach these inclusive growth targets. For instance, Africa is seen as one of the unequal continents in the world (Iddrisu 2024; Galal 2024). Approximately 54% of the national income was held by the top 10% of earners in Africa in 2021, with their share surpassing that of the bottom 50% by more than six times (Robilliard 2022).

Furthermore, in 2016, about 420 million African youth aged 15-35 encountered employment difficulties: one-third faced unemployment and discouragement, another third had precarious employment, and just one in six held stable wage-paying jobs (African Development Bank 2016). Underemployment affected more than half of the youth labour force in African nations (African Development Bank, 2016). It is evident that many African youth migrate to Europe, Asia, and other continents in search of better employment opportunities (Nomishan 2022; Selotlegeng-Mbe 2023).

African leaders have been cautioned that, without proper intervention, approximately 263 million young people could be excluded from the economic system by 2025 (African Development Bank 2016). Moreover, the continent has the highest extreme poverty rates, with 23 out of 28 poorest countries over 30% (Outreach International 2023). According to 2023 estimates using a $1.90 per day poverty line, Africa's extreme poverty rate is placed at approximately 35.5%, a figure that is 6.8 times higher than the global average (Outreach International 2023). Recent precipitated conflicts and military upheavals in some African countries such as Burkina Faso, Chad, Gabon, Guinea, Mali, Niger and Sudan (World Bank 2020a, 2023) due to non-inclusivity of growth. Achieving the SDGs and The Africa We Want (i.e., the African Agenda 2063[1]) will be difficult without adopting strategies to promote inclusive growth in Africa. However, the African Union and other development partners, such as the International Monetary Fund (IMF), and the World Bank *inter alia*, show how relevant financial integration is in advancing Africa's development (Kose et al. 2003; IMF 2020; Moyo 2020; AU 2023). Thus, it is essential to empirically assess whether financial integration can foster inclusive growth in Africa.

Theoretically, financial integration can directly or indirectly promote economic growth (Kose et al. 2003; Selvarajan and Ab-Rahim 2020). In the case of direct effect, financial integration promotes economic growth in four ways. First, financial integration complements domestic savings (Kose et al. 2003; Phutkaradze et al. 2019). This increases access to capital and efficient capital allocation which fosters entrepreneurial activities, technological advancements, and job creation, contributing to inclusive growth by expanding opportunities across various sectors of the economy. Second, it promotes growth by efficiently allocating risk between domestic firms and foreign firms, which increases the ability to diversify risk and increases liquidity in the capital market (Acemoglu and Zilibotti 1997; Kose et al. 2003). This can incentivise financial institutions to offer more affordable and accessible financial products. This also improves access to financial services such as credit facilities, *inter alia* for underserved populations and small businesses, empowering them to invest in education, healthcare, and other critical areas that contribute to inclusive development. Third, it enhances growth through the transfer of knowledge and technology (Kose et al. 2003; Ahmed 2016; Ekpo and Chuku 2017). This enables businesses and industries to adopt more advanced techniques, processes, and technologies which leads to productivity. Fourth, it spikes the level of growth by boosting the financial development of the host country (Kose et al. 2003; David et al. 2015; Taghizadeh-Hesary et al. 2019). Financial integration also indirectly

[1] Agenda 2063 is a strategic framework aimed at transforming Africa into a global powerhouse of the future. Launched in 2013 by the African Union (AU) on the 50th anniversary of its predecessor, the Organization of African Unity (OAU), Agenda 2063 is a long-term vision for inclusive and sustainable socio-economic development across the continent.

enhances growth in three ways. It indirectly increases growth through the promotion of specialisation (Kose et al. 2003; Timmer et al. 2019). Also, it indirectly leads to growth by strengthening the government's capacity to credibly commit to future policy directions (Kose et al. 2003). In addition, it indirectly promotes growth by influencing the host country's ability to formulate favourable policies.

Analysing the impact of financial integration on inclusive growth in Africa is crucial for several reasons. First, the continent is home to a significant number of small and medium enterprises (SMEs) and entrepreneurs, which are key drivers of inclusive growth (Amoah et al. 2021; Iddrisu et al. 2025). However, these businesses often face challenges in accessing funding (Ayyagari et al. 2017; Quartey et al. 2017). Financial integration can help address this issue by expanding access to capital markets, enabling improved funding opportunities for SMEs and start-ups (Adjasi et al. 2022), thereby fostering their growth and contribution to the broader economy. Additionally, trade and investment are recognized as key drivers of economic growth; however, Africa remains one of the regions with comparatively low levels of both trade and investment (Kyereboah-Coleman et al. 2024). Financial integration can help mitigate this challenge by promoting cross-border investments. As financial systems become more interconnected, capital flows more freely, facilitating investments in infrastructure, technology, and innovation. These investments drive job creation and enhance productivity, while also supporting inclusive economic development across various sectors. Last, most African countries are resource dependence which makes them more volatile (Zallé 2022; Kyereboah-Coleman et al. 2024). However, financial integration allows for better risk management and fosters investments in diverse sectors like manufacturing, services, and agriculture, promoting more balanced and inclusive growth.

There are some empirical studies have investigated the direct effects (see Rusek 2004; David et al. 2015; Ekpo and Chuku 2017; Tri et al. 2019; Khalid and Marasco 2019; Taghizadeh-Hesary et al. 2019; Selvarajan and Ab-Rahim 2020; Caporale et al. 2023; Peres et al. 2023; Chen and Kim 2023). For instance, Rusek (2004) primarily examined the importance of global financial integration, with a particular focus on the European Union and Japan. The study posited that financial integration could strengthen the financial system, contributing to a more expansive, deeper, and liquid financial market. However, this study did not show how it will promote growth. Also, Tri et al. (2017) primarily explored how financial integration can improve FDI inflows in ASEAN, without directly demonstrating its impact on economic growth. The authors concluded that financial integration plays a key role in attracting FDI. Ekpo and Chuku (2017) demonstrated that financial integration can stimulate economic activity in Africa, utilising system generalized method of moments

(SGMM) and local-linear least squares nonparametric regression techniques in their analysis. Khalid and Marasco (2019), in their study of 134 countries over the period from 1989 to 2017, found that financial integration fosters economic growth, as evidenced through the use of the GMM method. However, the study revealed that financial integration had a more pronounced positive impact on growth in high-income countries compared to low-income countries.

Selvarajan and Ab-Rahim (2020) identified that in 19 Asian countries, financial integration enhances economic growth prior to the crisis (1980-1995); however, this effect diminishes in the post-crisis period as well as over the entire study duration (1980-2015). Caporale et al. (2023) demonstrate that financial integration enhances economic growth across 31 European countries from 2000 to 2021, utilizing dynamic panel data models. However, the impact of financial integration on economic growth is more pronounced in environments with advanced financial development and stronger institutional frameworks. According to Peres et al. (2023), developing and emerging economies which achieve integration into global financial markets with a more balanced and autonomous approach may experience minimal economic growth benefits. Conversely, economies that exhibit greater financial dependence and vulnerability face heightened risks from financial globalization, leading to long-term growth challenges.

The aforementioned studies indicate that financial integration can either stimulate economic growth or boost it to some extent. However, these studies primarily focus on conventional measures of growth, neglecting broader aspects like welfare and equitable distribution. Thus, this study aims to employ a more advanced metric by focusing on the inclusiveness of growth. Also, none of these studies have addressed the indirect effects of financial integration on economic growth. There is a closest study which is Ofori et al. (2023), which examined the moderating effect of economic freedom on FDI-inclusive green growth. However, this study has several limitations. It only addressed one aspect of financial integration, namely FDI, while neglecting other significant variables. Furthermore, although the study employed the Economic Freedom Index (EFI), it disaggregated only 4 of the 12 variables that constitute the EFI. Additionally, the study concentrated on fewer African countries on the moderating role, leaving the mediating role unexplored. Thus, this study addresses the gap by investigating the indirect effects (mediation) of financial integration on inclusive growth. We do this by employing economic freedom which can capture all three major indirect factors discussed earlier. Economic freedom is the ability of individuals to control their economic resources, make voluntary transactions, and pursue prosperity (Berggren 2003; Iddrisu 2024).

This study argues that economic freedom can mediate the direct effect of financial integration on inclusive growth through the following; (1) Financial integration diversifies funding beyond local

banks. Economic freedom cuts reliance on locals, boosts competition, and allocates resources efficiently. This influences entrepreneurship by impacting investment decisions and, consequently, contributes to fostering inclusive growth (Iddrisu 2024); (2) Financial integration often leads to the adoption of improved regulatory standards (Phutkaradze et al. 2019). Better regulation enhances market stability, investor protection, and overall financial system efficiency, contributing to economic freedom. A well-regulated financial system attracts more investment and supports sustainable economic growth (Asongu and Odhiambo 2019; Yang et al. 2023); (3) Financial integration imposes external discipline on domestic economic policies (Kose et al. 2003). Countries seeking to attract and maintain foreign investment are incentivised to adopt sound macroeconomic policies, respect property rights, and maintain stable political environments. Better governance and policies create a conducive environment for economic activities, leading to sustained growth. Exposure to global financial markets introduces innovative financial products and services. Innovation leads to better risk management and investment options, expanding financial freedom. Enhanced financial products improve savings and investment mechanisms for all populaces including marginalised growth, promoting economic growth (Iddrisu et al. 2023b).

The paper provides several contributions. Firstly, the paper examines the direct effect of financial integration on inclusive growth in Africa. The financial integration-growth literature mostly relies on traditional measures of growth which only capture income growth as already discussed. Therefore, this paper contributes to the literature by generating an index (inclusive growth index) which captures a wider measure of growth. This presents an innovative approach to measuring growth beyond income growth and its policy relevance for guiding inclusive development strategies. Secondly, this paper as one of its kind used empirical data to reveal that financial integration can promote inclusive growth through economic freedom in Africa as shown in Figure 1. Policymakers in Africa can use this knowledge to design and implement policies that encourage financial integration while ensuring that the benefits are widely distributed across different segments of society. Using economic freedom as the mediation variable is relevant as this variable can be easily influenced by financial integration (Kose et al. 2003) which goes a long way to promote inclusive growth as suggested by the economic liberalisation theory (Acemoglu and Robinson 2010; Acemoglu and Robinson 2012). Unlike Ofori et al. (2023), who used only 4 out of 12 variables to disaggregate the EFI, we utilized 10 of the 12 variables, due to the unavailability of data for the remaining two components. Therefore, the paper disaggregates economic freedom into the rule of law, government size, regulatory efficiency and open market (Iddrisu 2024), to provide a more granular analysis of how different aspects of economic governance are impacted by financial integration and, consequently, promote inclusive growth. This approach allows for a clearer understanding of which specific factors within economic freedom are most crucial in

driving positive development outcomes. Thirdly, unlike previous studies that try to justify the indirect effect (mediation) of financial integration on growth using theoretical and (or) descriptive statistics (see Kose et al. 2003; Rusek 2004; Peres et al. 2023), our approach is based on a cause-effect identification of the relationship between the variables using the instrumental variable-generalised method of moment (IV-GMM) which caters for endogeneity.

The rest of the paper is structured as follows; Section 2 captures the materials and method. We discuss empirical results in Section 3 and provide a conclusion and policy recommendations for policymakers and other stakeholders in Section 4.

On the theoretical nexus between financial integration and inclusive growth, consistent with Aziakpono (2013) on the linkage between financial integration and economic growth, at the core of the advantages of financial integration and the policy of financial integration are two fundamental theoretical propositions. On the one hand, the first is based on welfare economics with respect to the perspective that markets that are competitive are also integrated and Pareto efficient. On the other hand, the second which is based on the efficient market hypothesis (EMH) posits that information is used by integrated financial markets more effectively (Eatwell, 1996; Khairajani, 2023). Fundamentals of the welfare theory which are consistent with the inclusive growth dimension of the present study, posit that a market that is perfectly competitive is likely to engender outcomes that are Pareto-efficient (Jehle & Reny, 2001; Balbás et al., 2022). It follows that financial integration is associated with competitive markets which are considered as comparatively more efficiency and thus, can lead to more inclusive development prospects in terms of economic growth (Eatwell, 1996), especially when economic operators and governments have the economic freedom (i.e., the moderating variable in this study) to decide on prospects and decisions of financial openness and integration (Henry, 2006; Kose, et al., 2006; Aziakpono, 2013).

2. Materials and method

2.1 Materials

We employed macro data for 40 African countries[2] over 22 years spanning 2000 to 2021 due to the availability of data. The study omits 14 countries and certain years with inadequate data to ensure consistency and comparability across the panel. Including incomplete cases could severely limit the number of countries, reducing the robustness of the analysis. By focusing on countries and years with sufficient data, the study avoids bias and produces more reliable results. Including all 54 countries or recent years with extensive missing data (like 2022 and 2023) would reduce the sample size to 25 countries, limiting the ability to draw valid conclusions across the panel. In addition to these concerns, the selected time frame is highly significant as it encompasses two major crises: the 2008/09 financial crisis and the COVID-19 pandemic. It also coincides with a period during which Africa is actively exploring various pathways to foster inclusive growth and development.

Inclusive growth is used as the main dependent variable and is measured with an inclusive growth index, which was generated through principal component analysis (PCA) using 10 individual variables such as human development, portable water, GDP growth, GDP per person, employment rate, government effectiveness, control of corruption, women in parliament, clean energy and electricity as shown in Table 1. These variables were selected based on the literature (see Ali and Son 2007; Asian Development Bank 2013c; Gyamfi et al. 2022; Iddrisu et al. 2023e; Iddrisu et al. 2023b). While additional variables were available for consideration, some exhibited high rates of missing data and others did not meet preconditions for PCA. One of the key preconditions is excessive correlation, which can result in outliers and multicollinearity, causing the index to be skewed toward variables with high correlations. Additionally, when a variable has numerous missing values, it creates significant gaps in the computed index. To minimize these gaps, variables with substantial missing data were excluded. Consequently, variables such as access to sanitation, infrastructure, voice and accountability, child mortality, school enrolment, gender parity, poverty gap, and health expenditure—identified in the literature—were omitted due to either high correlation or missing data.

[2] The 40 countries include Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Egypt, Equatorial Guinea, Eswatini, Ethiopia, Gabon, Gambia, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, São Tomé and Príncipe, Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe.

PCA is a statistical method that reduces data dimensionality by transforming variables into orthogonal principal components (Chinn and Ito 2006). Since the individual variables have different measurements, we standardised the variables. The variables are transformed to have a mean of 0 and a standard deviation of 1 through standardisation, ensuring equal contribution in PCA by minimising sensitivity to variable ranges. To satisfy PCA requirements, a pre-test was conducted, as detailed in Table A1 in the appendices section. We used the command "*factortest followed by the 10 variables*" in STATA 17 to generate the results of the PCA pre-test. The first test [Kaiser-Meyer-Olkin (KMO)] reveals how the variables used to construct the index form an adequate sample. KMO test yields 0.807, surpassing the threshold of 0.5. Again, there should be correlations and interrelations between these 10 variables. The Bartlett test yielded a chi-square value of 7380.188, significant at 1% ($p<0.01$), indicating interrelatedness among variables (see Table A1). While correlations and interrelations among variables are expected, excessively high relationships risk outliers and multicollinearity (Kyriazos and Poga 2023), prompting the removal of variables with higher correlation coefficients.

To ensure that outlier and multicollinearity do not persist in the variables, the determinant of the correlation matrix should be greater than 0.0001. In our case, the variables do not present the issue of outlier and multicollinearity as the determinant of the correlation matrix is 0.001 greater than 0.0001 (see Table A1). We proceed to construct the index by using the command "*pca*" in STATA 17 followed by the 10 variables. We then apply the "*rotate*" option to perform a varimax orthogonal rotation, which maximises the variance of the squared loadings on each factor. Thereafter, we extracted the index from the components that have an eigenvalue greater than 1 (Iddrisu et al. 2023e). Table A2 and Figure 2 show that the first three components have an eigenvalue greater than 1. As such, these components were used as the index which accounts for 75.2% of the 10 variables. The command "predict ig_index, score" was used to extract the index from the PCA. For easy interpretation of our inclusive growth index, we normalise it within the range of 0 to 100, where values closer to 100 suggest high inclusive growth and the opposite is true.

The main independent variable of interest is financial integration which is proxied with both *de facto* and *de jure* financial integration (see Table 2). It is important to highlight that de facto financial integration was used as the main proxy in the study because it provides a broader measure of financial integration compared to de jure (Phutkaradze et al. 2019; Ibrahim 2020). Nonetheless, *de jure* integration was also employed as a robustness check to assess its impact on inclusive growth in Africa. Despite its focus on capital openness, de jure integration remains relevant for the continent's financial participation. The *de facto* was measured with the net

investment positions (NIP) index proposed by Lane and Milesi-Ferretti (2006) which explains the movement in external assets and liabilities and has a wider coverage of financial integration. NIP has been updated over time to capture new trends and the current one is Milesi-Ferretti (2022) which provided some updates and revisions to Lane and Milesi-Ferretti (2018). This index is the summation of total external assets and liabilities as a percentage of GDP. Higher values (especially positive) suggest that a country holds more external assets than liabilities and vice versa (Lane and Milesi-Ferretti 2018).

De jure indicators assess policy constraints on cross-border capital transactions, while de facto indicators measure actual global financial integration within a nation using quantity-based measures (Phutkaradze et al. 2019). De jure financial integration was proxied using the Chinn-Ito index (KAOPEN), based on the IMF's AREAER report, proposed by Chinn and Ito (2006). KAOPEN is formulated using dummy variables that classify constraints on international financial movements. It represents the initial standardized principal component, encompassing exchange rates, current and capital account restrictions, export revenue mandates, and measures a country's capital account openness (Chinn and Ito 2006). It assesses how easily financial capital can move in and out of the country. The index comprises two primary data sets: the direct PCA output and the normalised PCA output (Chinn and Ito 2006). The study used normalized PCA output ranging from 0 to 1 for easier interpretation, with higher values indicating less restriction on capital movement or greater financial openness. Conversely, a low KAOPEN score suggests that the country has more stringent controls on capital movements, limiting foreign investments and financial exchanges.

The mediation variable is economic freedom which is proxied with the EFI of the Heritage Foundation (see Table 2). The index represents a market-driven economy operating within a stable legal framework, dependent on voluntary agreements (Berggren 2003). The index includes 12 primary components: property rights, judicial effectiveness, government integrity, tax burden, government spending, fiscal health, business freedom, labour freedom, monetary freedom, trade freedom, investment freedom, and financial freedom. These are organized into four sub-components: rule of law, government size, regulatory efficiency, and open market (Cabello et al. 2021). For policy recommendations, the study analysed sub-components to determine their role in promoting inclusive growth and mediating the financial integration-inclusive growth relationship. Although other proxies exist, the Heritage Foundation dataset was selected for its broader coverage of African countries.

There are five (5) control variables which were used based on African characteristics, the nature of the study and prior literature (Ofori and Asongu 2021; Gyamfi et al. 2022; Ofori et al. 2022; Iddrisu

et al. 2023e; Iddrisu et al. 2023c; Iddrisu et al. 2023d; Iddrisu et al. 2023b). The first control variable is information communication technology (ICT) which is proxied with Mobile cellular subscriptions per 100. ICT fosters an environment where economic benefits and opportunities are more widely distributed, helping to reduce inequalities and drive inclusive growth (Ofori and Asongu 2021). Inflation, as measured by consumer prices (annual %) is used because Africa is one of the continents which has a high inflation rate, hence very expedient to test if these high rates can deter inclusive growth (Iddrisu et al. 2022; Iddrisu et al. 2023a). Population growth was controlled for due to Africa's association with high population levels, necessitating an examination of its impact on inclusive growth (Basedau et al. 2021; Iddrisu et al. 2023e). Africa is endowed with a high labour force (World Bank 2023), and it is laudable to test empirically if this factor can promote inclusive growth. Africa is also one of the recipients of foreign aid; therefore, we used net official assistance as a percentage of GNI as a proxy to examine its impact on inclusive growth. We sourced all the control variables from the World Development Indicators.

2.2 Method

We begin this section by specifying our empirical model following prior studies on inclusive growth and meditation of variables (Gyamfi et al. 2022; Ofori et al. 2022; Bello et al. 2022; Iddrisu et al. 2023e; Iddrisu et al. 2023d; Iddrisu et al. 2023b). We first specify the total effect of financial integration on inclusive growth before disaggregating it to meet mediation effect requirements.

Total effect of financial integration on inclusive growth can be expressed as follows in Equation (1):

$$ig_{it} = \forall_0 + \forall_1 fi_{it} + \forall_2 ict_{it} + \forall_3 cpi_{it} + \forall_4 pop_{it} + \forall_5 lf_{it} + \forall_6 fa_{it} + \omega_i + \epsilon_t + \mu_{it} \quad (1)$$

Where ig_{it} and ig_{it-1} are inclusive growth and its lag. fi_{it} is financial integration including both *de jure* and *de facto*. ict_{it}, cpi_{it}, pop_{it}, lf_{it} and fa_{it} represent ICT, inflation, population growth, labour force and foreign aid respectively. $\forall_{0-7}$ denotes parameters to be estimated whilst ω_i, ϵ_t and μ_{it} represent country-specific effects, time-specific and disturbance terms respectively.

To capture the indirect effect (mediation effect), we followed Baron and Kenny (1986) who provided three steps in estimation and are as follows;

Step 1, the independent variable (financial integration) should promote the mediation variable (economic freedom) as specified below in Equation (2):

$$efs_{it} = \beta_0 + \beta_1 fi_{it} + \beta_2 ict_{it} + \beta_3 cpi_{it} + \beta_4 pop_{it} + \beta_5 lf_{it} + \beta_6 fa_{it} + \omega_i + \epsilon_t + \mu_{it} \quad (2)$$

Whereas efs_{it} is economic freedom which captures both the economic freedom index and its subcomponents.

Step 2: The mediator (economic freedom) should promote the dependent variable (inclusive growth) after controlling for the independent variable as shown in Equation (3).

$$ig_{it} = \alpha_0 + \alpha_1 fi_{it} + a_2 efs_{it} + \alpha_3 ict_{it} + a_4 cpi_{it} + a_5 pop_{it} + a_6 lf_{it} + a_7 fa_{it} + \omega_i + \epsilon_t + \mu_{it} \quad (3)$$

Step 3: The independent variable (financial integration) should influence the dependent variable (inclusive growth) as apparent in Equation (3). Here, the independent variable and mediator are entered as predictors.

If the independent variable's effect on the dependent variable becomes insignificant with the mediator, full mediation occurs. If the effect remains significant, partial mediation is indicated. This approach has also been empirically employed by prior literature (see Nam et al. 2023; Shamsub 2023).

We proceed to discuss our estimation techniques where we first use ordinary least squares (OLS) as our baseline model since Baron and Kenny (1986) used OLS for the mediation. However, there are some limitations of OLS, particularly concerning cross-sectional dependency in panel data, issues are encountered (Jiaqun et al. 2024). For example, as shown in Table A3 in appendix, our data is suffering from autocorrelation[3], cross-sectional dependency[4] and heteroskedasticity[5]. Therefore, using OLS may present bias results, we therefore re-estimated the model with feasible generalised least squares (FGLS) which caters for autocorrelation, heteroskedasticity and cross-sectional dependency but has limitations in dealing with endogeneity. Hence, we extended our attention to a more robust technique such as the instrumental variable generalised method of moments (IV-GMM) which is our main estimation technique and can deal with endogeneity (Chen et al., 2023). Endogeneity may arise due to some factors such as specification error, omission variable and reverse causality (Tchamyou et al. 2019; Ofori and Asongu 2021; Iddrisu et al. 2024). IV-GMM is chosen over other instrumental variable estimators because of multiple

[3] Autocorrelation is the correlation of a variable with itself over successive time intervals.
[4] Cross-sectional dependency is a situation in which the observations across different cross-sectional units are correlated with one another.
[5] Heteroskedasticity refers to a situation in regression analysis where the variance of the error terms (residuals) is not constant across all levels of the independent variable(s).

endogenous variables (i.e., financial integration and foreign aid) in our model. IV-GMM is more effective by allowing the use of multiple instruments and combining them efficiently to address endogeneity across several regressors simultaneously (see Chen et al., 2023; Vo et al., 2020).

While other dynamic models, such as the system GMM, could address endogeneity, we opted for IV-GMM because it allows for testing whether endogeneity remains in the model. Unlike dynamic models, which rely solely on the validity of instruments to address endogeneity, IV-GMM provides a mechanism to assess if endogeneity persists, even when the instruments are valid. This offers a more thorough evaluation of potential endogeneity issues.

3. Discussion of empirical results

3.1 Preliminary Results

We started our empirical results with descriptive statistics (see Table 3) and correlation matrix (see Table 4). We only discuss the variables of interest. Table 3 shows that Africa has a low inclusive growth as shown in the mean of 38%. At the national level, Mauritius leads with a high inclusive growth rate of 89%, whereas the Democratic Republic of Congo trails with only 7.4% (see Figure 3). Additionally, financial integration is evident in both *de facto* and *de jure* forms, with mean values of -49.024 and 0.300, respectively. The negative value of the *de facto* suggests that Africa has more foreign liability (inflows) than assets (outflows) which also implies that Africa is gradually allowing foreign investors. This is supported by the mean value of *de jure* financial integration where there is less restriction on the movement of capital. As illustrated in Figure 4, Mauritius exhibits the highest level of *de facto* financial integration, whereas Botswana and Zambia lead in capital openness or *de jure* financial integration.

The mediator, economic freedom, has an average score of 54, reflecting the economic structuring across the African sample. As shown in Figure 5, Mauritius stands out with a high level of economic freedom at 72%, whereas Zimbabwe has the lowest at 34%. When breaking down economic freedom, government size emerges as the highest component on average (refer to Table 2). Table 4 indicates that financial integration, economic freedom components (except government size), and ICT positively correlate with inclusive growth, while other control variables negatively correlate. All variables, except government size, significantly relate to inclusive growth. There is no multicollinearity observed, as the independent variables exhibit weak interrelationships. However, strong correlations are observed among the economic freedom variables, as confirmed by the variance inflation factor (VIF) test for multicollinearity. When all variables are included in a single regression, multicollinearity is indicated among the economic freedom variables. Nevertheless, there is no multicollinearity, as the mean VIF remains below the threshold of 10, consistent with the rule of thumb. To mitigate potential multicollinearity issues with economic freedom variables, we used them in separate models for estimation.

3.2 Economic freedom, financial integration and inclusive growth nexus

This section presents and discusses the empirical results of how the relationship between financial integration and inclusive growth is mediated by the economic structure of a country. The results are presented in Tables 5 to 7 and are based on OLS, FGLS and IV-GMM. The study employed an

IV-GMM estimator as the main estimation technique to address both endogeneity and heteroskedasticity concerns. However, it also used pooled OLS, which is robust against heteroskedasticity but does not account for autocorrelation and cross-sectional dependency. To address these limitations, the model was re-estimated using FGLS, which is robust to autocorrelation, heteroskedasticity, and cross-sectional dependency, but does not handle endogeneity. Thus, using an estimator that addresses endogeneity was necessary. It is important to note that, the results are robust to the various estimators since all the variables of interest exhibit similar signs, but discussions were centred on IV-GMM results. As stated in Section 2.2, mediation depends on three major steps, but our discussion started with the total effect of financial integration before the mediation effect was examined.

3.2.1 Total effect of financial integration on inclusive growth

We started with the discussion of the results of total effect of financial integration on inclusive growth which is detailed in Table 5. According to Column 3 of Table 5, financial integration promotes inclusive growth by 0.046 units, at a 1% significant level ($p=0.001<0.01$). By implication, with every effort made to increase financial integration by a unit, inclusive growth for the African sample will also increase by 0.046, all things being equal. This could be that financial integration reduces transaction costs and improves access to diverse, affordable financial services for all populaces including the underserved and unbanked (Adjasi et al. 2022; Iddrisu et al. 2023a). It enhances risk diversification across borders, promoting financial stability and reducing local economic shocks (David et al. 2015; Iddrisu et al. 2024). This stability fosters sustained economic growth by providing more opportunities for individuals and businesses to access capital, which supports entrepreneurship and innovation (Adjasi et al. 2022; Iddrisu et al. 2023b). This is also crucial for small and medium-sized enterprises (SMEs), which are key drivers of job creation and economic diversification in Africa (Nanivazo et al. 2021; Iddrisu et al. 2022). Our results corroborate with some prior studies although these studies used traditional measures of growth instead of inclusive growth (see David et al. 2015; Ahmed 2016; Ekpo and Chuku 2017).

The control variables showed mixed results, while some promote inclusive growth, others dampen inclusive growth. For instance, ICT induces inclusive growth by 0.101 at a 1% significant level (see column 3 of Table 5). ICT fosters inclusive growth by expanding access to information, boosting economic opportunities, enhancing education and healthcare outcomes, empowering marginalised groups, and driving innovation and sustainability, leading to fairer and more resilient societies. This finding confirms some empirical studies (Ofori and Asongu 2021; Ofori et al. 2022;

Iddrisu et al. 2023e; Iddrisu et al. 2023d). The labour force drives inclusive growth by 0.147 units through offering jobs, fair income distribution, skill development, fostering innovation, ensuring social mobility, enhancing productivity, advancing gender equality, supporting rural development, and promoting environmental sustainability, crucial for sustainable economic development. On the other hand, Inflation diminishes inclusive growth by eroding purchasing power, exacerbating inequality, increasing uncertainty, raising borrowing costs, and disrupting financial stability (Iddrisu et al. 2023b; Iddrisu 2024). Foreign aid also reduces inclusive growth through the concept of the Dutch Disease[6]. This can reduce the competitiveness of local producers, leading to job losses and hindering inclusive growth (Rojík et al. 2024). Population growth similarly hampers inclusive growth by escalating the demand for essential resources such as food, water, energy, and housing. This can lead to resource scarcity, price inflation, and competition for limited resources, particularly in densely populated areas like Africa, exacerbating poverty and inequality (Iddrisu 2024).

3.2.2 Direct and indirect effect (mediation) of financial integration on inclusive growth

After the total effect, we moved on to the discuss the results of the direct and indirect (mediation) effect of financial integration on inclusive growth, which is in three steps. We start with Step 1, which involves analysing the impact of financial integration on economic freedom, as outlined in Table 6. It is shown in Column 11 of Table 6 that a positive effect on economic freedom is exerted by financial integration, with a significant coefficient of 0.23 units. Intuitively, financial integration enhances economic freedom by enabling efficient cross-border capital flow, optimising resource allocation, and fostering competitive markets (David et al. 2015; Vo et al. 2020). It reduces transaction costs through economies of scale and increased competition, lowering the cost of accessing capital and financial services, thus promoting greater economic participation. Integration also necessitates the harmonisation of financial regulations across countries, leading to more transparent, consistent, and efficient regulatory environments. This reduces bureaucratic obstacles and improves the ease of doing business, further supporting economic freedom (Kouretas and Tsoumas 2016).

When economic freedom is broken down into open markets, government size, rule of law, and regulatory efficiency, it is found that all these components are positively influenced by financial integration (see columns 12-15 of Table 6). However, financial integration has a higher impact on

[6] Large inflows of foreign aid can result in exchange rate appreciation, leading to a decrease in the competitiveness of domestic industries.

the open market as its coefficient of 0.26 is higher than the coefficients on the other components (i.e., government size = 0.017; rule of law= 0.20 and regulatory efficiency = 0.20). The facilitation of international capital flow can be attributed to the implementation of various trade policies in Africa, including the African Continental Free Trade Area (AfCFTA) and the New Partnership for Africa's Development (NEPAD) (Iddrisu et al. 2024). Therefore, financial integration can foster transparency in open markets by aligning them with global standards, attracting investors, reducing information gaps, and enhancing investor trust, thus boosting market liquidity and efficiency (Claessens and van Horen 2021; Iddrisu et al. 2023a, 2024).

Attention is turned to step 2, where the impact of economic freedom on inclusive growth is examined while considering financial integration. Findings from Table 7, particularly Columns 11 to 15, show that both economic freedom and its components (with the exception of government size) contribute positively to inclusive growth with significant coefficients of 1.522, 0.844, 1.000 and 1.034 units, respectively. The positive impact of economic freedom on inclusive growth is multifaceted. It fosters entrepreneurship and innovation by reducing regulatory barriers and incentivising investment, driving economic growth and job creation (Iddrisu 2024). Furthermore, it enables efficient resource allocation, enhancing productivity and competitiveness while elevating living standards (Brkić et al. 2020). Economic freedom promotes equal access to opportunities, ensuring inclusivity across socio-economic backgrounds. This equitable participation fuels overall growth and development, empowering individuals to contribute to and benefit from economic activities (Brkić et al. 2020; Iddrisu 2024). In essence, economic freedom nurtures a dynamic environment where innovation thrives, resources are optimally utilised, and opportunities are accessible to all, fostering inclusive and sustainable economic growth.

The last step which examines the direct effect of financial integration on inclusive growth is also shown in Table 7. The results from Table 7 reveal that financial integration has a direct effect on inclusive growth by 0.013, 0.026, 0.048, 0.028 and 0.027 (see columns 11 to 15). The results suggest that financial integration promotes inclusive growth by complementing domestic savings, enhancing financial development, allocating risk and transferring knowledge and technology (Kose et al. 2003; Phutkaradze et al. 2019; Vo et al. 2020).

We continue by computing the coefficient of the meditation effect since all the preconditions have been met and discussed. The computation of the coefficient of the mediation effect is shown in Table 8. The results in Table 8 shows partial mediation, where economic freedom explains part of the relationship between financial integration and inclusive growth, but a significant direct effect remains unexplained. For example, Column (4) of Table 8 shows that economic freedom mediates about 73% of the financial integration-inclusive growth relationship, with the remaining

27% attributed to the direct effect of financial integration. The mediated effect is approximately 2.7 times larger than the direct effect (see Column 5). The findings indicate that in Africa, financial integration significantly impacts inclusive growth indirectly. This implies that some part of financial integration impacts inclusive growth by first influencing economic freedom. Specifically, greater integration of the financial sector across the continent enhances economic freedom, thereby fostering inclusive growth. Furthermore, government size did not mediate the financial integration-inclusive growth nexus when economic freedom was disaggregated. This is because government size could not significantly promote inclusive growth (see Column 3 of Table 7). However, the rule of law exhibited a stronger mediating effect (approximately 58.35%) on the relationship between financial integration and inclusive growth, compared to other factors like open market policies (54.2%) and regulatory efficiency (43.4%) as shown in Column (4) of Table 8. This supports the notion in some studies that financial sector integration enhances the rule of law in the host country, which in turn promotes growth (Kose et al. 2003; Aziakpono 2013; Iddrisu 2024).

3.3 Robustness checks using financial integration-de jure

The sensitive analysis has been conducted by replacing *de facto* (net investment position) with *de jure* (capital openness index). The results are presented in the Appendices Table A4 to Table A7. These results are similar to the already discussed results in Table 5 to Table 8. This implies that our findings are robust to the proxy of financial integration.

4. Conclusion and recommendation

To contribute to the literature on shared prosperity and growth in Africa, this study analyses the impact of financial integration on inclusive growth across 40 African countries from 2000 to 2021 due to the availability of data. It disaggregates this effect into direct and indirect components, focusing on the mediation role of economic freedom. This research addresses a notable gap, as most empirical studies have overlooked the broader impacts of financial integration on inclusive growth and have only discussed direct and indirect effects theoretically. The study contributes significantly by employing a comprehensive measure of growth (i.e., an index) that capture important indicators such as income growth, human development, employment, access to energy, access to water, and equality. It also forecasts both direct and indirect effects of financial integration on inclusive growth, using economic freedom (including the economic freedom index and components such as rule of law, government size, open market, and regulatory efficiency) as a mediating variable. Empirical results from IV-GMM analysis indicate that financial integration fosters inclusive growth in Africa, with economic freedom mediating this relationship. Among the components, rule of law has the most substantial mediation effect, while government size shows no mediation effect in the financial integration-inclusive growth nexus. This study contributes to finance-growth theory by demonstrating that financial sector integration can stimulate economic growth. It also highlights the relevance of SDGs focused on inclusive growth and aligns with the African Union's goal of achieving inclusivity. Additionally, the study underscores that financial integration may not directly inclusive growth but can promote inclusive growth through financial freedom.

The paper provides several recommendations based on the main empirical findings. First, as financial integration promotes inclusive growth, we suggest a policy implication that the continent and its development partners should continue with the implementation of financial integration policies. This can be achieved by investing in the development of robust financial systems, including payment systems, digital banking platforms, and financial market infrastructure, to facilitate seamless cross-border transactions and integration. For example, African countries that have not yet invested in innovations such as mobile money interoperability should learn from Ghana and prioritize doing so, as these technologies integrate the financial sector by facilitating financing for SMEs internationally and enhancing remittance flows. Policymakers can also engage both the public and private sectors in financial integration initiatives to ensure diverse input, shared goals, and effective implementation of policies. Policymakers should foster stronger regional financial integration within economic communities like Economic Community of West African States (ECOWAS), Southern African Development Community (SADC), and Common

Market for Eastern and Southern Africa (COMESA) to boost cross-border investment, reduce financial barriers, and enhance economic resilience

Second, as about 73% of the effect of financial integration on inclusive growth is attributed to economic freedom, we recommend that policymakers should implement policies that enhance economic freedom. For instance, policymakers should streamline regulatory processes and reduce bureaucratic hurdles for financial institutions and businesses. Many institutions, particularly those responsible for business registration and issuing permits, are burdened by excessive bureaucracy in some African countries. Therefore, it is essential to streamline these processes and promote decentralization within these institutions. For example, in countries like Ghana, business registration often requires applicants to travel to the capital, Accra, discouraging SMEs in remote areas from formalizing their operations. Even those nearby encounter delays, corruption, and bribery. To address this, policymakers could decentralize the registration process by allowing businesses to register at local government or district assemblies, with final authorization processed at the headquarters. Streamlining these processes and promote decentralization fosters a more open market environment, facilitating easier entry for financial services and investments, thereby promoting economic freedom and amplifying the benefits of financial integration.

Also, strengthening legal frameworks to protect property rights and enforce contracts is crucial for economic freedom, as it boosts investor confidence, facilitating financial integration and promoting inclusive growth. This can be done by establish commercial courts or alternative dispute resolution mechanisms that focus on contract enforcement, providing quicker, fairer, and more transparent resolutions. For instance, Kenya has introduced a Commercial Division within its judiciary to expedite business-related disputes, reducing delays and encouraging investor confidence. It can also be done by implement digital property registration systems to ensure transparency, security, and accessibility in property rights management. Rwanda's success with its digital land registry system serves as an excellent model, dramatically improving property rights protection and reducing fraud. Another way is to Create investor protection programs that guarantee compensation for violations of property rights or breach of contract, backed by legal enforcement. Morocco's investor protection law, which includes legal guarantees and recourse mechanisms, is an example of how legal frameworks can enhance investor security. African leaders should regularly refine economic freedom metrics to monitor financial integration's impact on inclusive growth. Continuous assessment enables policymakers to adjust strategies, maintaining and enhancing economic freedom to support effective financial integration and inclusive growth.

Lastly, policymakers and stakeholders should broaden their focus from traditional growth metrics to a more comprehensive view of economic growth. Relying solely on income growth can create a misleading impression of progress while neglecting other critical aspects of growth. For instance, many African countries emphasise GDP growth as an indicator of economic performance, yet a significant portion of their populations remains impoverished and lacks access to essential social amenities.

5. Limitations and further studies

The established findings evidently leave room for further research, especially as it pertains to reconsidering the examined nexuses within the remit of other SDGs of the United Nations. The study did not address the Russia-Ukraine war due to data limitations; however, future research can explore this area if data availability improves. Moreover, assessing if the established findings withstand empirical scrutiny in other developing countries is a worthwhile future research endeavour. Furthermore, in order to inform scholars and policymakers of more country-specific implications, future research should expand the dataset and use the relevant and robust time series econometrics strategies to assess country-specific tendencies.

References

Acemoglu D, Robinson J (2010) The Role of Institutions in Growth and Development. Review of Economics and Institutions 1(2):1–33. https://doi.org/10.5202/rei.v1i2.14

Acemoglu D, Robinson JA (2012) Why nations fail: The origins of power, prosperity and poverty , 1st edn. Crown Business, New York

Acemoglu D, Zilibotti F (1997) Was Prometheus unbound by chance? Risk, diversification, and growth. Journal of Political Economy 105(4):709–751

Adjasi CKD, Ofoeda I, Iddrisu K, Akinsola F (2022) Cross-Border Banking and Banking Crisis in Africa. In: Abor JY, Adjasi CKD (eds) Palgrave Macmillan Studies in Banking and Financial Institutions. Palgrave Macmillan, Cham, pp 491–514

African Development Bank (2016) Jobs for Youth in Africa: Catalyzing youth opportunity across Africa. Tunisia

Ahmed AD (2016) Integration of financial markets, financial development and growth: Is Africa different? Journal of International Financial Markets, Institutions and Money 42:43–59. https://doi.org/10.1016/j.intfin.2016.01.003

Ali I, Son HH (2007) Measuring Inclusive Growth. Asian Dev Rev 24(1):11–31

Amoah J, Jibril AB, Luki BN, Odei MA, Yawson C (2021) Barriers of SMES' Sustainability in Sub-Saharan Africa: A Pls-SEM Approach. International Journal of Entrepreneurial Knowledge 9(1):10–24. https://doi.org/10.37335/ijek.v9i1.129

Anyanwu JC (2013) Determining the Correlates of Poverty for Inclusive Growth in Africa. Tunisia

Asian Development Bank (2013a) Framework of inclusive growth indicators: key indicators for Asia and the Pacific. Asian Development Bank. Asian Development Bank, Mandaluyong City

Asian Development Bank (2013b) Framework of inclusive growth indicators: key indicators for Asia and the Pacific. Asian Development Bank., Mandaluyong City, Philippines

Asian Development Bank (2013c) Inclusive growth through better governance: A roadmap for policymakers. Asian Development Bank, Mandaluyong City, Philippines

Asongu S, Odhiambo N (2019) Doing business and inclusive human development in Sub-Saharan Africa. African Journal of Economic and Management Studies 10(1):2–16. https://doi.org/10.1108/AJEMS-05-2018-0132

Asongu SA, Nwachukwu JC (2016) The role of governance in mobile phones for inclusive human development in Sub-Saharan Africa. Technovation 55–56:1–13. https://doi.org/10.1016/j.technovation.2016.04.002

Asongu SA, Nwachukwu JC (2017) Globalization and Inclusive Human Development in Africa. Man and the Economy 4(1). https://doi.org/10.1515/me-2017-0001

AU (2023) Africa seeks to accelerate the establishment of African Union Financial Institutions. https://au.int/es/node/43396. Accessed 14 Jun 2024

Ayyagari M, Demirgüç-Kunt A, Maksimovic V (2017) SME Finance

Aziakpono MJ (2013) Financial Integration and Economic Growth: Theory and a Survey of Evidence. Studies in Economics and Econometrics 37(3):61–86. https://doi.org/10.1080/10800379.2013.12097258

Balbás, A., Balbás, B., & Balbás, R. (2022). Pareto efficient buy and hold investment strategies under order book linked constraints. Annals of Operations Research, 311(2), 945-965.

Baron RM, Kenny DA (1986) The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. J Pers Soc Psychol 51(6):1173–1182. https://doi.org/10.1037/0022-3514.51.6.1173

Basedau M, Charlotte H, Woertz E (2021) Population Growth and Security in Africa: Myth or Underestimated Risk?.

Bello AA, Renai J, Hassan A, Akadiri S Saint, Itari AR (2022) Synergy effects of ICT diffusion and foreign direct investment on inclusive growth in Sub-Saharan Africa. Environmental Science and Pollution Research 30(4):9428–9444. https://doi.org/10.1007/s11356-022-22689-3

Berggren N (2003) The benefits of economic freedom: a survey. The independent review 8(2):193–211

Brkić I, Gradojević N, Ignjatijević S (2020) The Impact of Economic Freedom on Economic Growth? New European Dynamic Panel Evidence. Journal of Risk and Financial Management 13(2):26. https://doi.org/10.3390/jrfm13020026

Cabello JM, Ruiz F, Pérez-Gladish B (2021) An Alternative Aggregation Process for Composite Indexes: An Application to the Heritage Foundation Economic Freedom Index. Soc Indic Res 153(2):443–467. https://doi.org/10.1007/s11205-020-02511-8

Caporale GM, Sova AD, Sova R (2023) Financial Integration and Economic Growth in Europe. London

Chen C, Kim Y (2023) Financial integration and economic growth: directional heterogeneity and threshold effect. Digital Economy and Sustainable Development 1(1):21. https://doi.org/10.1007/s44265-023-00017-y

Chen H, Dai Y, Guo D (2023) Financial literacy as a determinant of market participation: New evidence from China using IV-GMM. International Review of Economics & Finance 84:611–623. https://doi.org/10.1016/j.iref.2022.11.034

Chinn MD, Ito H (2006) What matters for financial development? Capital controls, institutions, and interactions. J Dev Econ 81(1):163–192. https://doi.org/10.1016/j.jdeveco.2005.05.010

Claessens S, van Horen N (2021) Foreign banks and trade. Journal of Financial Intermediation 45:100856. https://doi.org/10.1016/j.jfi.2020.100856

David AC, Mlachila M, Moheeput A (2015) Does international integration matter for financial development in Africa? Appl Econ 47(15):1525–1549. https://doi.org/10.1080/00036846.2014.997925

Dollar D, Kraay A (2002) Growth is Good for the Poor. Journal of Economic Growth 7:195–225. https://doi.org/10.1023/A:1020139631000

Eatwell, J. (1996). 'International financial liberalization: The impact on worlddevelopment'. CEPA Working Paper Series 1. New York: New School for Social Research

Ekpo A, Chuku C (2017) Regional Financial Integration and Economic Activity in Africa. J Afr Econ 26(suppl_2):ii40–ii75. https://doi.org/10.1093/jae/ejx030

Galal S (2024) Number of people living in extreme poverty in Africa 2016-2027. https://www.statista.com/statistics/1228533/number-of-people-living-below-the-extreme-poverty-line-in-africa/#:~:text=In%202022%2C%20around%20431%20million,compared%20to%20the%20previous%20years. Accessed 21 Feb 2024Gyamfi NM, Bokpin GA, Aboagye AQQ, Ackah CG (2022) Financial Development, Institutional Quality and Inclusive Growth in Africa. Global Business Review 23(3):584–607. https://doi.org/10.1177/0972150919875367

Henry, B. P. (2006). 'Capital account liberalisation: Theory, evidence, andspeculation'. NBER Working Paper 12698. Cambridge, MA: NBER.

Ibrahim M (2020) Effects of trade and financial integration on structural transformation in Africa: New evidence from a sample splitting approach. Physica A: Statistical Mechanics and its Applications 556:124841. https://doi.org/10.1016/j.physa.2020.124841

Iddrisu K (2024) Foreign bank presence and income inequality in Africa: What role does economic freedom play? Future Business Journal. https://doi.org/DOI : 10.1186/s43093-024-00357-x

Iddrisu K, Abor JY, Banyen KT (2024) Financial development, globalisation and foreign direct investment nexus: an empirical study from Africa. SN Business & Economics 4(6):69. https://doi.org/10.1007/s43546-024-00667-w

Iddrisu K, Abor JY, Banyen KT (2023a) The effects of foreign bank presence on financial development in Africa: The role of institutional quality. Review of Financial Economics. https://doi.org/10.1002/rfe.1183

Iddrisu K, Abor JY, Banyen KT (2022) Fintech, foreign bank presence and inclusive finance in Africa: Using a quantile regression approach. Cogent Economics & Finance 10(1). https://doi.org/10.1080/23322039.2022.2157120

Iddrisu K, Abor JY, Banyen KT (2023b) Foreign bank presence and inclusive growth in Africa: the moderating role of financial development. African Journal of Economic and Management Studies. https://doi.org/10.1108/AJEMS-11-2022-0444

Iddrisu K, Abor JY, Insaidoo M, Banyen KT (2023c) Does China's Flow of FDI and Institutional Quality Matter for Poverty? Evidence from Sub-Sahara Africa. J Asian Afr Stud. https://doi.org/10.1177/00219096231188948

Iddrisu K, Doku JN, Abor JY, Dziwornu R (2023d) Financial inclusion and inclusive growth in Africa: What is the moderation role of financial stability? Cogent Economics & Finance 11(2). https://doi.org/10.1080/23322039.2023.2267857

Iddrisu K, Ofoeda I, Abor JY (2023e) Inward foreign direct investment and inclusiveness of growth: will renewable energy consumption make a difference? International Economics and Economic Policy 20(3):367–388. https://doi.org/10.1007/s10368-023-00562-z

Iddrisu K, Ofoeda I, Issah O, Iddrisu M (2025) Gender Equality and Women's Empowerment in Banking. In: Yakubu IN (ed) Strategic Approaches to Banking Business and Sustainable Development Goals. Sustainable Development Goals Series. Springer, Cham, pp 179–193

IMF (2020) World Bank Group and IMF mobilize partners in the fight against COVID-19 in Africa. In: IMF Press Release

Jehle, G. A., Reny, P. J. (2001). Advanced microeconomic theory, 2nd edition.New York: Addison-Wesley

Jiaqun W, Jotham K, Dossou TAM, Alinsato AS, Asongu SA (2024) Tourism and income inequality in sub-Saharan African countries: the role of democracy. Current Issues in Tourism :1–21. https://doi.org/10.1080/13683500.2024.2321336

Khalid AM, Marasco A (2019) Do channels of financial integration matter for FDI's impact on growth? Empirical evidence using a panel. Appl Econ 51(37):4025–4045. https://doi.org/10.1080/00036846.2019.1588945

Khairajani, D. (2023). Efficient market hypothesis: A conceptual framework. In Emerging Trends and Innovations in Industries of the developing world (pp. 140-145). CRC Press.

Kose A, Rogoff K, Prasad ES, Wei S (2003) Financial Integration and Economic Growth. In: Effects of Financial Globalization on Developing Countries. International Monetary Fund, Washington D.C

Kose, M. A. Prasad, E Rogoff, K,Wei, S (2006). 'Financial globalization: Areappraisal'. NBER Working Paper 12484. Cambridge, MA: NBER

Kouretas GP, Tsoumas C (2016) Foreign bank presence and business regulations. Journal of Financial Stability 24:104–116. https://doi.org/10.1016/j.jfs.2016.04.006

Kyereboah-Coleman A, Boumbouya RK, Marimo M, Latif N (2024) Structure, Composition, and Trends in African Trade. In: Ocran MK, Abor JY (eds) The Palgrave Handbook of International Trade and Development in Africa. Springer International Publishing, Cham, pp 71–88

Kyriazos T, Poga M (2023) Dealing with Multicollinearity in Factor Analysis: The Problem, Detections, and Solutions. Open J Stat 13(03):404–424. https://doi.org/10.4236/ojs.2023.133020

Lane PR, Milesi-Ferretti GM (2006) The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970-2004. Washington, D.C

Lane PR, Milesi-Ferretti GM (2018) The External Wealth of Nations Revisited: International Financial Integration in the Aftermath of the Global Financial Crisis. IMF Economic Review 66(1):189–222. https://doi.org/10.1057/s41308-017-0048-y

Milesi-Ferretti GM (2022) The External Wealth of Nations Database (based on Lane, Philip R. and Gian Maria Milesi-Ferretti, 2018, "The External Wealth of Nations Revisited: International Financial Integration in the Aftermath of the Global Financial Crisis," IMF Economic Review 66, 189-222.)

Moyo M (2020) Africa can finance its development but needs a paradigm shift. In: Africa Renewal. https://www.un.org/africarenewal/magazine/november-december-2020/africa-can-finance-its-development-needs-paradigm-shift. Accessed 14 Jun 2024

Nam H-J, Bang J, Ryu D (2023) Do financial and governmental institutions play a mediating role in the spillover effects of FDI? Journal of Multinational Financial Management 69:100809. https://doi.org/10.1016/j.mulfin.2023.100809

Nanivazo JM, Egbendewe AYG, Marcelin I, Sun W (2021) Foreign bank entry and poverty in Africa: Misaligned incentives? Financ Res Lett 43:101963. https://doi.org/10.1016/j.frl.2021.101963

Nomishan TS (2022) Youth and Desperate Migration: A Historical and Cultural Perspective. In: Youth Exclusion and Empowerment in the Contemporary Global Order: Existentialities in Migrations, Identity and the Digital Space. Emerald Publishing Limited, pp 17–31

Ofori IK, Asongu SA (2021) ICT Diffusion, Foreign Direct Investment and Inclusive Growth in Sub-Saharan Africa. Telematics and Informatics 65:101718. https://doi.org/10.1016/j.tele.2021.101718

Ofori IK, Figari F, Ojong N (2023) Towards sustainability: The relationship between foreign direct investment, economic freedom and inclusive green growth. J Clean Prod 406:137020. https://doi.org/10.1016/j.jclepro.2023.137020

Ofori IK, Osei DB, Alagidede IP (2022) Inclusive growth in Sub-Saharan Africa: Exploring the interaction between ICT diffusion, and financial development. Telecomm Policy 46(7):102315. https://doi.org/10.1016/j.telpol.2022.102315

Outreach International (2023) Poverty in Africa: Real-Life Consequences & Sustainable Solutions. In: Community Developments. The Outreach Blog: From Field. https://outreach-international.org/blog/poverty-in-africa/#:~:text=Africa%20has%20the%20highest%20extreme,estimated%20to%20be%20about%2035.5%25. Accessed 15 Jun 2024

Peres SC, Cunha AM, Peruffo L (2023) International financial integration and economic growth in developing and emerging economies: an empirical investigation. J Post Keynes Econ 46(2):274–302. https://doi.org/10.1080/01603477.2022.2146591

Phutkaradze Z, Tsintsadze A, Phutkaradze B (2019) Financial Integration and Economic Growth: Empirical Evidence from the Republic of Georgia. European Journal of Sustainable Development 8(2):232. https://doi.org/10.14207/ejsd.2019.v8n2p232

Quartey P, Turkson E, Abor JY, Iddrisu AM (2017) Financing the growth of SMEs in Africa: What are the contraints to SME financing within ECOWAS? Review of Development Finance 7(1):18–28. https://doi.org/10.1016/j.rdf.2017.03.001

Ramos RA, Ranieri R, Lammens J-W (2013) Mapping Inclusive Growth

Robilliard A-S (2022) What's New About Income Inequality in Africa?

Rojík S, Maitah M, Malec K, Abdullahi KT (2024) Impact of foreign aid on Nigerian economy. Cogent Soc Sci 10(1). https://doi.org/10.1080/23311886.2024.2316585

Rusek A (2004) Financial integration and growth in the global economy. International Advances in Economic Research 10(4):278–288. https://doi.org/10.1007/BF02295141

Selotlegeng-Mbe L (2023) Youth and Migration: Perspective of African Countries. In: Recent Trends in Demographic Data [Working Title]. IntechOpen

Selvarajan SK, Ab-Rahim R (2020) Financial Integration and Economic Growth: Should Asia Emulate Europe? Journal of Economic Integration 35(1):191–213. https://doi.org/10.11130/jei.2020.35.1.191

Shamsub H (2023) The Impact of FDI on Innovation in Developing Countries: The Mediating Role of Governance. International Journal of Finance, Economics and Business 2(3):178–194. https://doi.org/10.56225/ijfeb.v2i3.141

Taghizadeh-Hesary F, Phi NTM, Hong HHT, Chu VT (2019) Does Financial Integration Matter for Financial Development? Evidence from the East Asian and Pacific Region. Journal of Economic Integration 34(4):591–618. https://doi.org/10.11130/jei.2019.34.4.591

Tchamyou VS, Erreygers G, Cassimon D (2019) Inequality, ICT and financial access in Africa. Technol Forecast Soc Change 139:169–184. https://doi.org/10.1016/j.techfore.2018.11.004

Timmer MP, Miroudot S, de Vries GJ (2019) Functional specialisation in trade. J Econ Geogr 19(1):1–30. https://doi.org/10.1093/jeg/lby056

Tri HT, Nga VT, Duong VH (2019) The determinants of foreign direct investment in ASEAN: New evidence from financial integration factor. Business and Economic Horizons, 12(2):292–303

Vo DH, Vo AT, Ho CM (2020) Does Financial Integration Enhance Economic Growth in China? Economies 8(3):65. https://doi.org/10.3390/economies8030065

World Bank (2020) Poverty and Shared Prosperity 2020: Reversals of Fortunes. Washington, DC

World Bank (2023) The World Bank in Africa

Yang Z, Vitenu-Sackey PA, Hao L, Tao Y (2023) Economic freedom, inclusive growth, and financial development: A heterogeneous panel analysis of developing countries. PLoS One 18(7):e0288346. https://doi.org/10.1371/journal.pone.0288346

Zallé O (2022) Natural Resource Dependence, Corruption, and Tax Revenue Mobilization. Journal of Economic Integration 37(2):316–336. https://doi.org/10.11130/jei.2022.37.2.316

Figure Legends

Figure 1. The Mediation Role of Economic Freedom on Financial Integration-Inclusive Growth Nexus

Note: a×b is the indirect effect whereas c' is the direct effect. The summation of direct (c') and indirect effect (a×b) is the total effect (c). If only a×b is statistically significant, then there is a full mediation effect. However, if both a, b and c' are significant, then the mediation is partial

Source: Authors' Construct, 2024

Figure 2. Post-PCA Scree plot of Eigenvalues

Source: STATA Output based on Research Data

Figure 3. In-country Inclusive Growth, 2020-2021

Source: STATA Output based on Research Data

Figure 4. In-country Financial Integration, 2020-2021

Source: STATA Output based on Research Data

Figure 5. In-country Economic Freedom, 2020-2021

Source: STATA Output based on Research Data

Data Availability

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request

Competing Statement

The author(s) declare no competing interests.

Ethical Statements

Ethical Approval

Not available for this study

Informed Consent

Not available for this study

Tables

Table 1. Variables Used to Generate Inclusive Growth Index

Variable	Measurement	Source
1. Human development	Human development index which captures education, health and standard of living	HDRO
2. Portable water	People using at least basic drinking water services (% of population)	WDI
3. GDP growth	Gross domestic product (% annual)	WDI
4. GDP per person	GDP per person employed (constant 2017 PPP $)	WDI
5. Employment rate	Employment to population ratio, 15+, total (%)	WDI
6. Government effectiveness	Government Effectiveness: Estimate	WDI
7. Control corruption	Control of corruption: Estimate	WDI
8. Women in parliament	The proportion of seats held by women in national parliaments (%)	WDI
9. Clean energy	Access to clean fuels and technologies for cooking (% of population)	WDI
10. Electricity	Access to electricity	WDI

Note: HDRO denotes Human Development Report Office, WDI is World Development Indicators

Table 2. Summary of Data Description

Variables	Measurements	Sources
Dependent variable		
Inclusive growth	Inclusive growth index via principal component analysis from 10 variables as shown in Table 1	Authors
Independent variables		
Financial Integration-*de facto*	International investment positions which reveal the movements in external assets and liabilities	Milesi-Ferretti (2022)
Financial Integration-*de jure*	The Chinn-Ito Capital Openness Index uses binary variables to categorize restrictions on cross-border financial flows	Chinn and Ito (2006)
Mediation variables		
Economic freedom index	The economy's market orientation thrives on voluntary contracts in a stable legal framework.	HF
Rule of law	Average of property rights and government integrity	HF
Government size	Average of tax burden and government spending	HF
Regulatory efficiency	Average of business, labour and monetary freedom	HF
Open market	Average of trade, investment and financial freedom	HF
Control variables		
ICT	Mobile cellular subscriptions per 100	WDI
Inflation	Inflation, consumer prices (annual %)	WDI
Population growth	Population growth (annual %)	WDI
Labour force	Labour force participation rate, total (% of total population ages 15+) (modelled ILO estimate)	WDI
Foreign aid	Net ODA received (% of GNI)	WDI

Note: HF denotes Heritage Foundation, WDI is World Development Indicators

Table 3. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Inclusive growth	1,041	38.04805	18.81291	6.92e-10	100
Financial integration-*de facto*	1056	-49.024	119.536	-496.111	1370.919
Financial integration-*de jure*	1056	0.300	0.297	0.000	1.000
Economic freedom index	981	54.747	7.202	21.4	77
Regulatory efficiency	985	61.179	8.71	18.433	126.667
Open market	981	51.337	10.526	18.267	82.667
Rule of law	981	32.758	11.487	10	70.05
Government size	984	74.098	9.63	24.1	94.5
ICT	1056	51.466	42.374	0.000	168.924
Inflation	1056	9.202	32.782	-89.172	557.202
Population growth	1056	2.399	1.064	-9.702	5.785
Labour force	1056	63.115	11.725	39.427	88.35
Foreign aid	1056	7.673	8.397	-.652	79.533

Note: Obs is observation; Std. Dev. is standard deviation; Min is minimum, and Max is maximum.
Source: STATA Output based on Research Data

Table 4. Pairwise Correlation Matrix and Variance Inflation Factor

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	VIF
(1) IG	1.000													
(2) NIP	0.395***	1.000												1.30
(3) KA	0.267***	0.121***	1.000											1.37
(4) EFI	0.685***	0.414***	0.360***	1.000										20.68
(5) RE	0.596***	0.335***	0.270***	0.738***	1.000									3.62
(6) OM	0.570***	0.315***	0.297***	0.838***	0.489***	1.000								6.25
(7) RL	0.736***	0.328***	0.317***	0.765***	0.579***	0.616***	1.000							4.75
(8) GS	-0.032	0.115***	0.172***	0.340***	0.073**	0.130***	-0.061*	1.000						2.81
(9) ICT	0.298***	0.174***	0.079**	0.288***	0.182***	0.325***	0.322***	0.063**	1.000					1.46
(10) CPI	-0.116***	-0.117***	0.039	-0.174***	-0.172***	-0.162***	-0.073**	0.015	-0.070**	1.000				1.10
(11) Pop	-0.430***	-0.254***	0.000	-0.194***	-0.257***	-0.159***	-0.369***	0.244***	-0.221***	0.048	1.000			1.40
(12) Lab	-0.159***	-0.100***	-0.024	-0.068**	-0.192***	0.025	-0.162***	0.093***	-0.342***	0.078**	0.299***	1.000		1.44
(13) ODA	-0.264***	-0.278***	0.079**	-0.272***	-0.303***	-0.199***	-0.321***	0.026	-0.330***	0.002	0.152***	0.300***	1.000	1.37
Mean VIF														3.97

Note: IG is inclusive growth; NIP is financial integration-de facto; KA is financial integration-de jure; EFI is economic freedom index; RE represent regulatory efficiency; OM is market openness; RL is rule of law; GS denotes government size; ICT is information communication technology; CPI is inflation; Pop is population growth; Lab is labour force; ODA is foreign aid; VIF is variance inflation factor; ***p<0.01; **p<0.05; *p<0.10.
Source: STATA Output based on Research Data

Table 5. Financial Integration (NIP) and Inclusive Growth Nexus

	(1)	(2)	(3)
	OLS	FGLS	IV-GMM
Financial Integration-*de facto* (NIP)	0.041***	0.010***	0.046***
	(0.005)	(0.003)	(0.006)
ICT	0.074***	0.019	0.101***
	(0.013)	(0.014)	(0.014)
Inflation (CPI)	-0.035***	-0.005	-0.028*
	(0.011)	(0.005)	(0.017)
Population growth (Pop)	-5.742***	-0.321	-5.497***
	(1.136)	(0.237)	(1.153)
Labour force (Lab)	0.086*	-0.177**	0.147***
	(0.051)	(0.077)	(0.051)
Foreign aid (ODA)	-0.251***	-0.045*	-0.270***
	(0.084)	(0.027)	(0.079)
Constant	46.651***	50.258***	40.163***
	(3.501)	(5.107)	(3.757)
Observations	1,041	1,041	951
R-squared	0.318		0.343
Hansen test p-value			0.9210
Endogeneity Test p-value			0.2393
Instruments	n.a	n.a	ICT CPI Pop Lab ODA L2.NIP L.NIP L.ODA

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
Source: STATA Output based on Research Data, 2024

Table 6. Financial Integration (NIP) on Economic Freedom Nexus

	OLS					FGLS					IV-GMM				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
VARIABLES	EFI	OM	GS	RL	RE	EFI	OM	GS	RL	RE	EFI	OM	GS	RL	RE
Financial integration- *de facto* (NIP)	0.020***	0.021***	0.016***	0.019***	0.017***	0.006***	0.006**	0.005*	0.007***	0.007***	0.023***	0.026***	0.017***	0.020***	0.020***
	(0.003)	(0.004)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.004)	(0.005)	(0.003)	(0.004)	(0.004)
ICT	0.036***	0.079***	0.032***	0.054***	0.006	0.034***	0.061***	0.038***	0.035***	-0.015	0.042***	0.082***	0.030***	0.074***	0.018***
	(0.005)	(0.008)	(0.007)	(0.009)	(0.007)	(0.006)	(0.011)	(0.011)	(0.010)	(0.009)	(0.006)	(0.008)	(0.007)	(0.010)	(0.007)
Inflation (CPI)	-0.036***	-0.052***	0.010	-0.014	-0.045***	-0.029***	-0.038***	-0.021***	-0.012**	-0.033***	-0.024**	-0.058***	0.067***	0.003	-0.030
	(0.009)	(0.007)	(0.026)	(0.011)	(0.013)	(0.003)	(0.006)	(0.006)	(0.005)	(0.005)	(0.010)	(0.013)	(0.017)	(0.011)	(0.025)
Population (Pop)	-0.513*	-0.791***	2.675***	-2.943***	-1.216***	-0.125	-0.402*	0.798***	-0.381*	-0.323	-0.408	-0.556*	2.682***	-2.639***	-1.070***
	(0.265)	(0.292)	(0.471)	(0.584)	(0.316)	(0.132)	(0.225)	(0.253)	(0.214)	(0.209)	(0.265)	(0.295)	(0.518)	(0.564)	(0.336)
Labour force (Lab)	0.078***	0.213***	0.046	0.079***	-0.028	0.004	0.086*	0.103**	-0.137***	-0.126***	0.095***	0.239***	0.048	0.104***	-0.013
	(0.018)	(0.029)	(0.028)	(0.030)	(0.021)	(0.029)	(0.050)	(0.047)	(0.049)	(0.043)	(0.018)	(0.030)	(0.029)	(0.030)	(0.019)
Foreign aid (ODA)	-0.162***	-0.164***	0.073	-0.326***	-0.255***	-0.046**	-0.034	-0.015	-0.053*	-0.085***	-0.158***	-0.159***	0.041	-0.292***	-0.227***
	(0.033)	(0.048)	(0.054)	(0.056)	(0.047)	(0.019)	(0.032)	(0.036)	(0.030)	(0.030)	(0.032)	(0.050)	(0.054)	(0.052)	(0.044)
Constant	51.328***	37.959***	63.209***	35.024***	68.405***	53.779***	43.748***	64.501***	41.984***	71.907***	49.566***	35.788***	63.013***	30.842***	65.909***
	(1.236)	(2.021)	(1.635)	(2.169)	(1.597)	(1.990)	(3.374)	(3.223)	(3.325)	(2.899)	(1.316)	(2.173)	(1.726)	(2.235)	(1.498)
Observations	981	981	984	981	985	981	981	984	981	985	898	898	901	898	902
R-squared	0.270	0.239	0.110	0.283	0.215						0.276	0.242	0.115	0.309	0.217
Hansen Test (P-value)	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	0.3881	0.3846	0.7147	0.5676	0.4538
Endogeneity test (p-value)											0.9116	0.0544	0.4220	0.1481	0.6945
Instruments											ICT CPI Pop Lab ODA L2.NIP L.NIP L.ODA				

Note: EFI is the economic freedom index; RE represent regulatory efficiency; OM is market openness; RL is the rule of law; GS denotes government size; ICT is information communication technology; Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1
Source: STATA Output based on Research Data, 2024

Table 7. Financial Integration (NIP), Economic Freedom and Inclusive Growth Nexus

	OLS					FGLS					IV-GMM				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Financial integration- *de facto* (NIP)	0.012***	0.025***	0.042***	0.024***	0.026***	0.013***	0.016***	0.011***	0.014***	0.013***	0.013***	0.026***	0.048***	0.028***	0.027***
	(0.003)	(0.004)	(0.006)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.007)	(0.004)	(0.004)
ICT	0.006	-0.004	0.059***	0.008	0.053***	0.006	0.009	0.009	0.013	0.031**	0.025**	0.021	0.090***	0.018	0.070***
	(0.011)	(0.012)	(0.014)	(0.010)	(0.012)	(0.013)	(0.014)	(0.014)	(0.013)	(0.013)	(0.011)	(0.013)	(0.015)	(0.011)	(0.013)
Inflation (CPI)	0.033	0.021	-0.024	-0.008	0.019	0.014**	0.005	-0.007	-0.002	0.005	0.043	0.055	0.002	0.003	0.032
	(0.025)	(0.020)	(0.021)	(0.016)	(0.025)	(0.007)	(0.007)	(0.006)	(0.007)	(0.007)	(0.034)	(0.035)	(0.039)	(0.035)	(0.038)
Population (Pop)	-4.789***	-4.926***	-5.707***	-2.628***	-4.468***	-0.859***	-0.788***	-0.256	-0.677**	-0.551**	-5.039***	-5.076***	-5.395***	-2.681***	-4.579***
	(0.891)	(1.010)	(1.206)	(0.651)	(0.984)	(0.279)	(0.284)	(0.251)	(0.273)	(0.267)	(0.929)	(1.063)	(1.185)	(0.699)	(1.036)
Labour force (lab)	-0.032	-0.090*	0.088*	0.011	0.119**	-0.161***	-0.193***	-0.191**	-0.102*	-0.120*	-0.007	-0.069	0.137***	0.030	0.158***
	(0.043)	(0.047)	(0.050)	(0.041)	(0.047)	(0.060)	(0.062)	(0.077)	(0.061)	(0.065)	(0.044)	(0.047)	(0.051)	(0.042)	(0.047)
Foreign aid (ODA)	-0.227***	-0.331***	-0.458***	-0.146**	-0.214***	-0.090**	-0.108***	-0.066*	-0.090**	-0.073*	-0.170**	-0.267***	-0.412***	-0.142**	-0.172**
	(0.075)	(0.085)	(0.090)	(0.063)	(0.072)	(0.040)	(0.041)	(0.036)	(0.039)	(0.039)	(0.072)	(0.081)	(0.087)	(0.065)	(0.071)
Economic freedom index	1.516***					0.782***					1.522***				
	(0.067)					(0.067)					(0.070)				
Open market		0.822***					0.371***					0.844***			
		(0.047)					(0.041)					(0.049)			
Government size			0.022					-0.069**					-0.002		
			(0.061)					(0.034)					(0.062)		
Rule of law				0.997***					0.475***					1.000***	
				(0.043)					(0.040)					(0.048)	
Regulatory efficiency					0.964***					0.388***					1.034***
					(0.090)					(0.042)					(0.061)
Constant	-29.071***	17.707***	47.391***	13.518***	-17.280***	9.188*	35.159***	57.208***	31.657***	23.418***	-32.370***	12.812***	42.553***	11.530***	-25.553***
	(4.857)	(3.969)	(4.897)	(3.506)	(6.630)	(5.437)	(4.534)	(5.594)	(4.442)	(5.347)	(5.029)	(4.138)	(5.011)	(3.642)	(5.520)
Observations	973	973	976	973	977	973	973	976	973	977	894	894	897	894	898
R-squared	0.575	0.489	0.325	0.594	0.484						0.588	0.512	0.347	0.599	0.517
Hansen test (p-value)	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	0.6274	0.8467	0.7915	0.4967	0.6573
Endogeneity test (p-value)											0.9031	0.6945	0.109	0.0300	0.2101
Instruments	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	ICT CPI Pop Lab ODA L2.NIP L.NIP L.ODA				

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; IG is inclusive growth; ICT denotes Information communication technology
Source: STATA Output From Research Data

Table 8. Computation of Mediation Effect

	(1)	(2)	(3)	(4)	(5)
Mediator	**Indirect effect a*b**	**Direct effect c'**	**Total effect (a*b)+c'**	**Percentage of the mediation**	**Size of the mediation**
EFI	0.023*1.522 = 0.035	0.013	0.035+0.013 =0.048	0.035/0.048 = 72.9%	0.035/0.013 = 2.692 times
Open market	0.026*0.844 = 0.022	0.026	0.022+0.026 = 0.048	0.026/0.048 = 54.2%	0.022/0.026 = 0.846 times
Rule of law	0.020*1.000 = 0.020	0.028	0.020+0.028 = 0.048	0.020/0.048 = 58.3%	0.020/0.028 = 0.714
RF	0.020*1.034 = 0.021	0.027	0.021+0.027 = 0.048	0.021/0.048 = 43.8%	0.021/0.027 = 0.777

Note: a is the coefficient of financial integration on economic freedom which is in Table 6; b is the coefficient of economic freedom on inclusive growth which is in Table 7; c' is the coefficient of financial integration on inclusive growth which is in Table 7

Source: Authors' Computation