SIMON DIEDONG DOMBO UNIVERSITY OF BUSINESS AND INTEGRATED DEVELOPMENT STUDIES

FINANCIAL DEVELOPMENT, FOREIGN BANK PRESENCE, INCLUSIVE GROWTH AND FOREIGN DIRECT INVESTMENT NEXUS IN AFRICA

KHADIJAH IDDRISU

2023

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BY

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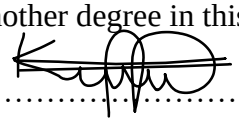
THESIS SUBMITTED TO THE SCHOOL OF BUSINESS, DEPARTMENT OF BANKING AND FINANCE, SIMON DIEDONG DOMBO UNIVERSITY OF BUSINESS AND INTEGRATED DEVELOPMENT STUDIES, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DOCTOR OF PHILOSOPHY IN BUSINESS ADMINISTRATION, FINANCE OPTION

OCTOBER, 2023

DECLARATION

Student

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this University or elsewhere:

Candidate's Signature: 

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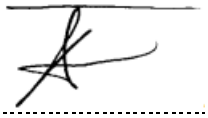
Principal Supervisor's Signature  Date: 18-10-2023

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ABSTRACT

This thesis aims to provide a comprehensive analysis of the relationship between foreign bank presence (FBP), financial development, inclusive growth and foreign direct investment (FDI) in Africa. The study used data from 28 African countries for three objectives from 2000 to 2018 and 49 African countries for the final objective over 24 years, from 1997 to 2020, due to data availability. The first objective examines the moderation role of FBP on Financial Technology (Fintech)-inclusive finance nexus using quantile regression. The second objective ascertains the effect of FBP and institutional quality on financial development using Generalised Method of Moment (GMM). Objective three assesses the extent to which the nexus between FBP and inclusive growth is being impacted by the financial development using GMM. Two stage least square was used to investigates the joint effect of financial development and globalisation on FDI inflows. The study sourced data on FBP from Bank Scope, financial development index and Fintech variables from International Monetary Funds, globalisation variables from Konjunkturforschungsstelle and the rest of the variables were obtained from the World Bank database. The study finds that both measure of Fintech (mobile phone used to pay bills and send money) induce inclusive finance, however the former enhances inclusive finance more than the latter. FBP insensate Fintech-inclusive finance nexus. The results indicate that institutional quality plays a significant role in the FBP-financial development nexus. The study also finds that FBP promotes inclusive growth and financial development magnifies this effect. Both financial development index and globalisation impact FDI in Africa positively. While globalisation and financial development work together to stimulate FDI, the study revealed that political globalisation has a stronger impact on the financial development-FDI nexus. The paper suggests that African countries should promote inclusive finance by creating a favourable environment for Fintech, strengthening financial sector regulators, and enhancing absorptive capacity. Policymakers should also focus on creating an environment that promotes globalisation, and FDI inflows while protecting small domestic firms that create employment in Africa. This study enhances the knowledge of international finance and economics, with a particular focus on developing countries.

Keywords: *Foreign bank presence; Financial development; Inclusive growth; Inclusive finance; Fintech; Quantile regression; GMM; Globalisation; 2SLS; Africa: FDI*

JEL codes: *F36; 016;043; D31; D63; E44*

DEDICATION

This thesis is dedicated to God Almighty and Uncle Nige

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LIST OF ACRONYMS

2SLS	Two Stage Least Squares
ADB	Asian Development Bank
AfCFTA	African Continental Free Trade Area
ANOVA	Analysis of Variance
ASEAN	Association of Southeast Asian Nations
ATM	Automated Teller Machine
BLUE	Best Linear Unbiased Estimated
BRI	Belt and Road Initiative
BS	Bank Scope
COVID-19	Coronavirus Diseases 2019
CPI	Consumer Price Index
EMNE	Emerging Multinational Enterprise
FBP	Foreign Bank Presence
FDI	Foreign Direct Investment
FE	Fixed Effect
FII	Financial Institution Index
Fintech	Financial Technology
FMI	Financial Market Index
FT1	Mobile Phone Used to Pay Bills
FT2	Mobile Phone Used to Send Money
G20	Group of Twenty
GDP	Gross Domestic Product
GDPC	GDP per capital
GFD	Global Financial Database
GLS	Generalised Least Squares
GMM	Generalized Method of Moment
GSM	Global System for Mobile communication
HDRO	Human development Report Office
ICT	Information Communication Technology

ID	Identification Card
IG	Inclusive Growth
IMF	International Monetary Fund
INSQ	Institutional Quality Index
KMO	Kaiser-Meryer-Oikin
KOF	Konjunkturforschungsstelle
KYC	Know-Your-Customer
LIML	Limited Information Maximum Likelihood
MENA	Middle East and North Africa
MFD	Financial Development Index
MNBs	Multinational Banks
MNCs	Multinational Corporations
NEPAD	New Partnership for Africa's Development
OECD	The Organization for Economic Cooperation and Development
OLI	Ownership, Location and Internalization
OLS	Ordinary Least Squares
PCA	Principal Component Analysis
POLS	Pooled Ordinary Least Square
RE	Random Effect
ROSCAS	Rotating Savings And Credit Association
SDGs	Sustainable Development Goals
SEC	Security Exchange Commission
SSA	Sub-Saharan Africa
TO	Trade Openness
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
VIF	Variance Inflation Factor
WDI	World Development Indicators
WGI	World Governance Indicators

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The optimum performance of any economic system depends on the efficient real and financial parts working together. Therefore, identifying the factors affecting financial development in any economy is of great importance. Access to finance, and by extension, a well-developed financial sector, is of central relevance in inducing economic growth and development (Bruno & Hauswald, 2014). Financial development is identified as one of the relevant determinants of economic growth in most countries, which also aids in reducing income inequality (Levine, 1999). Hence, policy makers acknowledge financial development when formulating policies to accelerate growth and development. Financial development means improving the conditions to enhance the quality, quantity, and efficiency of financial intermediation services (Choong & Chan, 2011) and all people will benefit from the comprehensive services of financial institutions. Financial institutions and financial markets play an important role in allocating individuals' assets and savings for production, reducing information inequality, transaction costs, and financial constraints (Levine, 2021).

Financial sector can influence welfare by mitigating macroeconomic shocks especially when developed (Kim et al., 2010). The connection between financial development and economic growth continues to pique the interest of economists, both in theoretical and empirical contexts (Acquah & Ibrahim, 2020; El Menyari, 2019). Undoubtedly, the development of the financial sector is viewed as a significant factor in the development of both developed and developing economies (El Menyari, 2019). For instance, financial sectors mobilize savings, and directs them towards more profitable and productive investments (Assefa & Mollick, 2017). Due to the positive effect of financial development on economic growth, some literature, mostly inspired by Mckinnon (1973), have pointed out the relevance of the policy of financial liberalization in decreasing financial constraints, improving the proficiency of financial mediators, and boosting macroeconomic performance. The literature also stresses on the role of financial liberalization and its impacts on economic growth and development (e.g., Arestis et al., 2002; Arestis & Sawyer, 2005; Cubillas & González, 2014; Seck & El Nil, 1993). Countries who embarked on liberalization achieved financial inclusion

(*thereafter*: inclusive finance). For example, India (1990s); China (1980), United Kingdom (1980s), Brazil (1990s and 2000s). The process of promoting usage, availability, and ease of access to a formal financial system for every citizen, including firms in a country is termed as inclusive finance (Sarma & Pais, 2011). According to World Bank (2018), inclusive finance refers to businesses and individuals having the opportunity to obtain sustainable financial products, including savings, micro-credit, payment, remittance, insurance, and others, with transaction accounts considered as the foundation. This suggest that an inclusive financial system may reduce the cost of capital by facilitating productive and efficient allocation of resources. An inclusive financial system might reduce the exploitation brought about by the informal credit sector that charges high interest rates, or it might simply create a conventional credit market for citizens and firms. Consequently, by promoting safe financial saving practices and different kinds of financial services, an inclusive financial system enhances the welfare and efficiency of an economy. In both developing and underdeveloped countries, banks play a crucial role as the primary providers of financial services. Therefore, inclusive finance can be termed as banking sector outreach, as the variations in financial items reach and address the issues of low access to financial resources.

Despite policymakers' emphasis on the role of inclusive finance, a significant number of adults worldwide are excluded from access to formal financial services (World Bank, 2022). For instance, about a third of adults (1.7 billion) still do not have bank accounts, and these individuals are mostly women and poor people in rural areas (World Bank, 2022). Moreover, most markets in least developed economies are associated with information asymmetry, causing large financial institutions to cream skim in allocating financial services (Gormley, 2010). Furthermore, the majority of the population has insufficient official documents and information to access financial services, and developing economies are often associated with the problem of information-deficient borrowers (Léon & Zins, 2020). Therefore, it is imperative to identify ways to promote inclusive finance in these countries. As a result, Group of Twenty (G20) policies aim to increase inclusive finance worldwide by implementing the G20 High-Level Principles for Digital Inclusive Finance (World Bank, 2022). Digital inclusive finance (Fintech) has evolved from information technology that incorporates the internet, smartphones, and other technological devices that facilitate faster and cheaper delivery

of financial services (Batunanggar, 2019). As shown in Figure 1.3, Fintech provides a range of services that include e-payment, exchange, and others. Fintech can be classified in terms of innovation as (i) payment, settlement, and clearing (ii) e-aggregator (iii) risk management and investment and (iv) peer-to-peer lending.

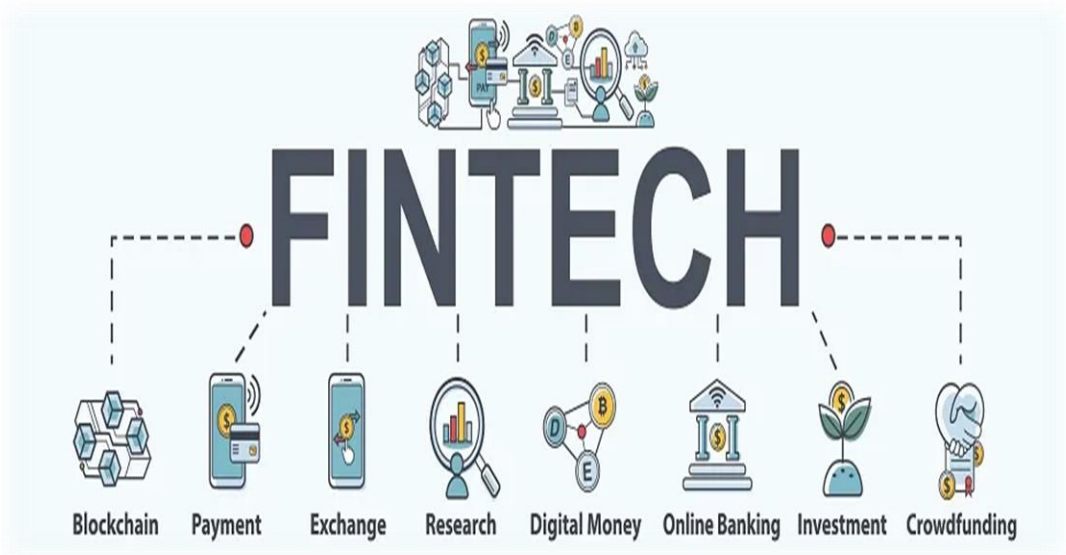

Figure 1.1: Products of Fintech

Source: Status200

Fintech provides comfort and convenience for users with the goal of making financial services more accessible. In other words, these services help more people to easily access financial services at a lower cost, even in rural areas (Dabla-Norris et al., 2015; Ozili, 2018; Zetzsche et al., 2017). Fintech industry, which presently accounts for 2% of the $12.5 trillion in total global financial services revenue, is projected to expand to 7% by 2030. Within this growth, fintech companies are anticipated to represent nearly a quarter of the total valuations of the global banking sector by the year 2030. In 2021, there was an increase in Fintech especially new mobile money accounts, where Sub-Saharan Africa (SSA) accounted for 48%, Europe and Central Asia (2%), Middle East and North Africa (MENA) had 4%, South Asia (5%), and East Asia & Pacific (12%)[1]. Furthermore, the banking sector, one of a country's conventional and conservative sectors, has been confronting difficulties with potentially disruptive technology-based developments and internet-based solutions (Navaretti et al., 2018). To lessen these challenges, most Fintech companies have developed more user-friendly advanced

[1] https://www.gsma.com/sotir/wp-content/uploads/2022/03/GSMA_State_of_the_Industry_2022_English.pdf

applications in the banking industry, prompting increased use of Fintech (Kohtamäki et al., 2019). Additionally, some banks have invested more in innovation to provide financial services through digital applications (Navaretti et al., 2018). This helps the banking sector to become involved in Fintech. For instance, in Africa, banks engage in providing mobile money services by linking mobile money accounts to bank accounts.

One of the ways to develop the financial sector is through allowing the entry of foreign banks. However, many countries implemented restrictions on foreign bank presence (FBP) due to World War I and II especially in 1920s and 1980s (Hodder & Tschoegl, 1985). On the other hand, a notable surge of FBP occurred subsequently, with a significant presence in both developed and developing nations across Latin America and Eastern Europe especially in the 1990s (Eichengreen & Mussa, 1998). In these regions, foreign banks established ownership over a considerable portion of total bank assets. Lower barriers to the exchange of financial services have been observed by allowing foreign-owned financial institutions to operate in the host country (Eichengreen & Mussa, 1998). For instance, since the mid-1990s, due to a growing trend towards globalisation and financial integration, the banking sectors in many developing countries have undergone significant changes (Cull & Martinez Peria, 2007). Among these changes have been a rapid increase in the level of FBP. Between 1995 and 2002, the average portion of banking sector assets held by foreign banks in 104 developing countries increased from 18 percent to 33 percent (Cull & Martinez Peria, 2007). This suggest that rapid progression of foreign banks has accelerated due to increasing international trade volume, higher globalisation prevalence, rising foreign direct investments (FDI), increasing domestic financial market liberalization, and capital market globalisation (Lensink & Hermes, 2004). Foreign banks, as defined by Wu et al. (2010), are financial institutions headquartered in one country but operating in others. The process by which foreign banks begin operating in a host country, either through a new subsidiary or branch or by acquiring domestic banks, is considered foreign bank entry or FBP (Memon et al., 2021). Put simply, FBP refers to the setting up and functioning of foreign banks in a particular country or region, accomplished via branches, subsidiaries, or representative offices (El Menyari, 2019).

Foreign banks can serve as a driving force for financial development through their superior expertise, provision of new financing sources, and facilitation of integration into segmented banking systems. This integration, in turn, can enhance domestic

intermediation efficiency and the availability of credit (Beck et al., 2004; Claessens et al., 2001; Gelos & Roldós, 2004). The proponents of foreign bank entry argue that it has the potential to enhance the accessibility, affordability, and quality of financial services. This implies that foreign banks can introduce new and improved skills, management practices, technology, training methods, and products to the local market. Furthermore, foreign banks may be more likely to lend to borrowers with limited financial information due to increased access to data (Berger et al., 2005; Mester, 1997; Petersen & Rajan, 2002). As a result, the current study aims to explore the potential impact of relaxing restrictions on foreign banks in Africa, and how this measure can foster the development and progress of the region's financial sector.

In recent years, foreign banks have expanded their presence significantly in several developing economies. In Argentina and Chile in Latin America and in the Czech Republic, Hungary, Poland in Eastern Europe and most African countries, foreign-controlled banks now hold more than half of total banking assets (Beck et al., 2014a; Léon, 2016). Claessens and Van Horen (2014a) reported a significant increase in the percentage of foreign banks in Africa, which rose from 31% in 1995 to 54% in 2009. This growth was the most substantial among developing and emerging economies, with a 46% share in 2009 compared to the average of 24% in 1995. In 2019, foreign-controlled banks hold 54% of the total number of banks in Africa (El Menyari, 2019). Even the African sample presents evidence that foreign banks have a greater share (more than 50%) in the banking sector in Ghana, Kenya, Mali, Tanzania, and Zambia (see Figure 1.2). In Figure 1.3, it is evident there is upward trend in presence of foreign banks in the African sample. This, therefore, raises concerns as there is potential anticompetitive practices due to their substantial control over banking assets and subsidiaries (Detragiache et al., 2008). This may negatively impact small and medium-sized businesses (SMEs) and diminish the positive effects of FBP on economic output, employment, and income distribution (Ayyagari et al., 2014, 2017)

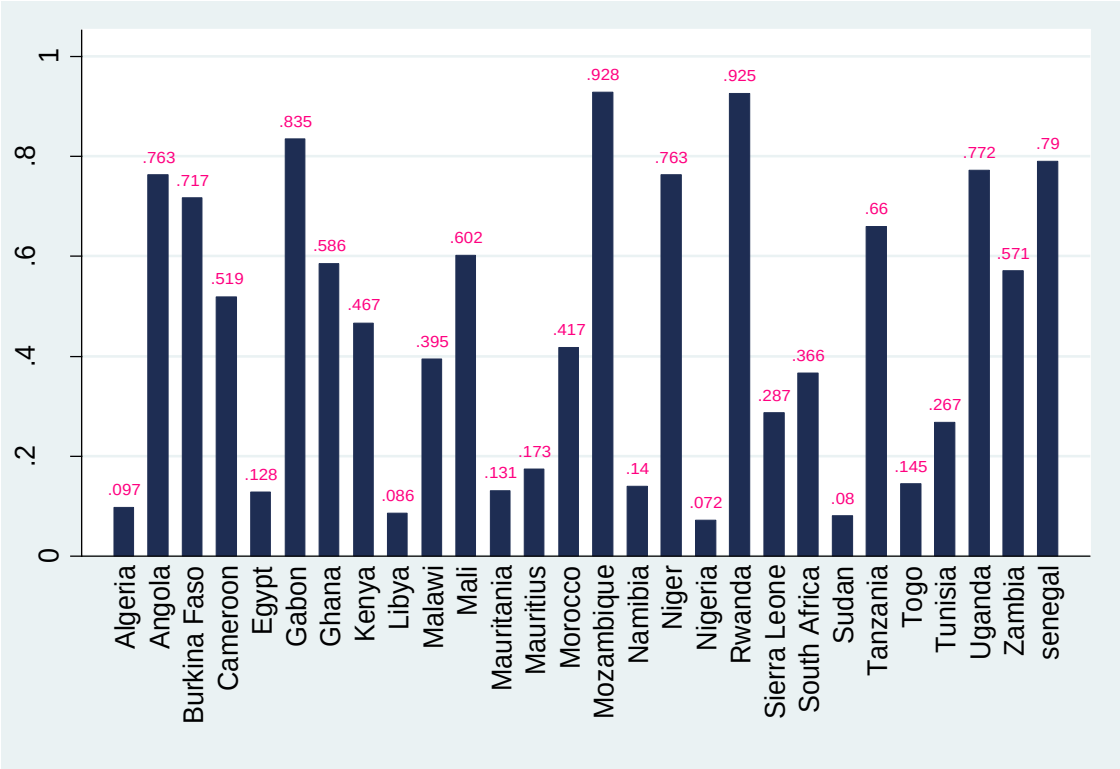

Figure 1.2: In-Country Foreign Bank Presence, 2000-2015
Source: STATA 17 Output from Research Data, 2023

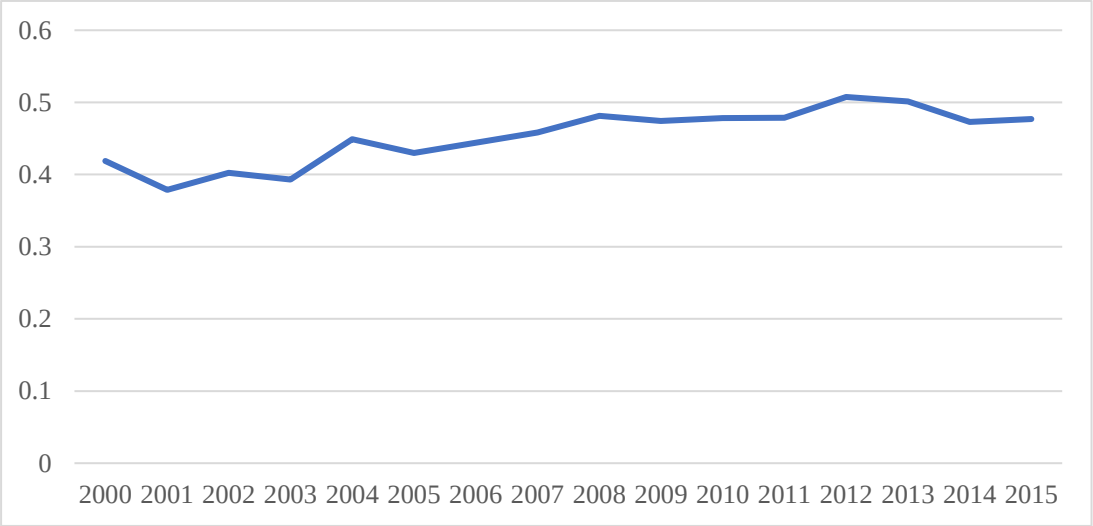

Figure 1.3: Trend of FBP for 28 African Countries, 2000-2015
Source: Microsoft Excel Output from Research Data, 2023

Historically, financial services in Africa have developed in each country through contacts with former colonial rulers (Makina, 2017). During the colonial era, British banks opened branches in the colonies of the British Empire; French banks opened branches in the French colonies; and Portuguese banks opened branches in the Portuguese colonies (Diallo, 2016). As a result, the post-independence African financial sector has been dominated by foreign banks. These banks only provided loans to multinational companies (MNCs) and avoided small domestic companies (Ayyagari et al., 2014, 2017). Their loans were short-term and were mainly used to finance foreign trade and working capital. As expected, there was a lot of dissatisfaction among the population with the credit policies of these banks. Therefore, the governments of independent African countries carried out a series of reforms to address this problem. They created state banks from scratch or nationalized some foreign banks. Most of the loans from state banks were directed to sectors that the government considered useful for national development. In many countries, the financial sector suffered from artificially low interest rates as a result of financial repression, concessional lending incentives, and foreign exchange controls. Financial repression has not resulted in providing financial services to inadequate sectors of the economy (Brownbridge & Harvey, 1998). As a consequence of these reforms, there has been a notable improvement in financial inclusion to some extent.

Income growth is considered a crucial factor for traditional welfare economists, as it is seen as the primary key to individual satisfaction (Deaton, 2008). However, it is important to note that income growth can only provide a temporary boost to life satisfaction (Di Tella & MacCulloch, 2008). Additionally, it has been shown that beyond a certain point, additional income no longer contributes significantly to individual happiness (Ofori & Asongu, 2022; Ofori et al., 2022a; Veenhoven, 1991). This suggests that income is only beneficial for happiness until basic needs are met, and beyond that point, it primarily enables individuals to be free from hunger and provide their children with access to better healthcare. Therefore, it is crucial to provide a form of growth (i.e., inclusive growth) that reduces poverty, inequality, and improves access to clean energy, education, healthcare, among others, especially in Africa (Gyamfi et al., 2022).

It has therefore been contended that these issues of inequality, poverty, and unemployment can be minimized when inclusive growth strategies are pursued

(Anyanwu, 2013). The goal of inclusive growth is to ensure that the benefits of economic growth are accessible to all, particularly those who are disadvantaged or living in poverty, to the greatest degree feasible [Asian Development Bank (ADB), 2013] . Inclusive growth takes a long-term perspective and focuses on generating decent work to increase the income of marginalized groups (Ianchovichina & Lundström Susanna, 2009). Inclusive growth refers to a form of economic expansion that empowers every individual or group within society to actively participate in and contribute to the growth process, irrespective of their individual circumstances, ensuring equal opportunities for all (Ali & Son, 2007). The creation of economic opportunities and ensuring equal access to opportunities by all groups of society is essential and critical for economic development. The concept of inclusive growth can also be seen as the process and outcome where all groups of people have participated in the organization of growth and have benefited equitably from it (Prasanna, 2016). Equitably implies that resources are distributed fairly or pro-poor, where the poor receive more resources or income than the rich (Anand et al., 2013; Dollar & Kraay, 2002).

Suryanarayana (2008) identified inclusive growth as the situation where the portion of society deprived of physical and human endowments can benefit from economic resources or income. The determination and measurement of inclusive growth frequently require the consideration of multiple factors, such as income, poverty eradication, employment, and equitable distribution of resources (Anand et al., 2013; Klasen, 2010; Ramos et al., 2013). Policymakers and researchers have argued that growth is expedient but insufficient to improve the welfare of a nation's populace (Fourie, 2014). Therefore, traditional growth will be useful only if its effect is felt by the poor and it is able to reduce the levels of poverty, income and resource inequality (Oyinlola & Adedeji, 2019). Instead of focusing on economic growth based on traditional models, it is necessary to focus on growth that balances the economy and sustainable development.

The emergence of coronavirus diseases 2019 (COVID-19) and other factors has caused most developing countries, to shift their focus from traditional income growth to building shared prosperity (i.e., growth that creates happiness). Africa is one of the continents in the world that has experienced rapid economic growth (World Bank, 2020). For instance, among the six fastest-growing economies in the world, five out of

six countries are African countries (World Bank, 2020). However, it has been identified that Africa still battles with issues of inequality, poverty, and unemployment (Bhorat et al., 2017). For example, poverty is highly associated with SSA, thus hindering the region from attaining its target of reducing the share of people living in extreme poverty by 2030 (World Bank, 2020). The poverty rate in Africa has not just remained higher than in most other low-and-middle-income nations; it has also declined more slowly (Christiaensen & Hill, 2019). Despite financing constraints to implement growth agenda that focus on reducing employment, inequality and poverty (i.e., inclusive growth agenda), the current pandemic which is COVID-19 has affected the ability to implement this agenda (World Bank, 2020). Hence, failure to implement the inclusive growth agenda could affect Agenda 2030 and Africa's Agenda 2063 (i.e., The Africa We Want). For instance, non-inclusive growth has led to political chaos in some African countries, including coups d'état in Burkina Faso, Mali, Guinea, Chad, Niger and Gabon (Ofori & Asongu, 2022; World Bank, 2020). Hence, it is imperative to assess the extent to which the influx of FBP can help develop the financial sector and contribute to the inclusiveness of growth.

Financial development does not only influences FBP and inclusive growth but also decisively contributes to the growth of FDI (Islam et al., 2020; Sam Quarm et al., 2020). In fact, the internalisation theory by Coase (1937) and the eclectic theory by Dunning (1977, 1980, 2000, 2009) stipulate that one of the important factors that attract FDI is financial development. This is because a well-developed financial system provides easier access to capital for foreign investors. This includes robust banking systems, capital markets, and financial institutions that facilitate the flow of funds and provide various financing options for investment projects. FDI denotes the capital inflows directed towards obtaining a permanent management stake of at least 10% in an enterprise operating in a foreign economy (World Bank, 2023). FDI comprises equity capital, reinvestment of earnings, other short-term and long-term capital, which are all reflected in the balance of payments. FDI is regarded as an essential instrument for economies, as it has the potential to create a spill-over effect that leads to technology transfers, job opportunities, and increased government revenue (De Gregorio, 2005; Makki & Somwaru, 2004). FDIs have the potential to enhance the technical skills and efficiency of the workforce in the host country by providing capital, technology, and assets, as suggested by modernization theory (Iršová & Havránek, 2013; Kaulihowa &

Adjasi, 2018; Rostow, 1960). As a result, this could lead to a favourable impact on the economic growth of the host country.

The Phoenicians were among the earliest pure foreign investors, trading with the Greeks and establishing outposts throughout the Eastern Mediterranean.[2] The Silk Road emerged next, connecting the Roman Empire to the Pacific Ocean until sea transport became dominant in the Middle Ages.[2] In the 15th century, Europe, China, and India established substantial economic ties, leading to Western European nations establishing permanent colonies in previously visited trade locations (Collins, 2023; Kronfol, 1965). The primary objective of colonialism was to exploit resources and utilize inexpensive labour, which facilitated the funding of territorial expansion. In the early 20th century, infrastructure was developed through foreign investment by German chemical companies and British consumer goods manufacturers (Collins, 2023). The United Kingdom, United States, and Germany were the largest investors, and Latin America and Asia were the main recipients in the 20th century (Twomey, 2000). Initially, FDI was motivated by exploiting natural resources, but it shifted towards efficiency-seeking FDI and strategic asset-seeking FDI. In the 1970s, commodity prices encouraged increased FDI in the extractive sector, while in the 1980s, structural adjustment programs opened up more areas to private sector and FDI. FDI flows to developing countries began to increase in the second half of 1980s, and direction and composition of the FDIs also changed over time from natural resources towards knowledge-intensive activities.[2]

In the 21st century, FDI has been a global agenda as it contributes to the development of economies. For instance, in 2015, FDI surged by 38% to $1.7 trillion, marking the highest figure since the 2008/2009 global financial crisis.[2] However, there has been a downward trend in FDI with a third consecutive year of decline. Global FDI flows dropped by 13% to $1.3 trillion in 2018 from $1.5 trillion in 2017. The first half of 2019 witnessed a 20% decrease in global FDI flows compared to the second half of 2018, amounting to $572 billion.[2] Despite the decline, FDI continue to be among the most significant factors in the global economy, benefiting both developed and developing countries. While global FDI inflows have been declining for some time, FDI inflows to developing countries have been increasing. In 2014, FDI inflows to developing

[2] https://www.mondaq.com/turkey/inward-foreign-investment/1000696/historical-development-of-foreign-direct-investments-will-direct-investments-continue-to-influence-countries39-economies

countries reached a record high of $681 billion, which was a 2% increase from the previous year (Opoku et al., 2019; UNCTAD, 2015). While other regions like East Asia and the Pacific, South Asia, Europe and Central Asia experienced a longer recovery after the 2008/9 global financial crisis, Africa has been a significant recipient of FDI. Although there was a 10% reduction in FDI inflows to SSA in 2019 and a 23% drop in 2020 due to the COVID-19 pandemic and international vulnerabilities in MENA, SSA will receive more FDI inflows in 2022 (Azémar & Giroud, 2023). The study aims to examine whether the development of Africa's financial sector will lead to increased FDI inflows, given that the continent is currently making efforts towards its development. Additionally, the study seeks to explore the relationship between globalisation and FDI inflows into Africa.

Globalisation encompasses extensive changes in technology, economics, politics, and science. Its most significant impact, particularly on developing countries like those in Africa, lies in expediting the liberalization of foreign trade and investment. Given the crucial role of foreign trade and investment in the economic growth of these developing nations, globalisation's effects become particularly prominent. This is especially relevant for most African countries, which often face capital constraints that require external support for their growth endeavours. Globalisation is often characterized by the integration of economies and the sharing of social norms and political platforms across countries. This integration helps to reduce trade restrictions, promote acceptance of other countries' cultures and systems, and create a favourable environment for cross-border investment (Dreher, 2006; Kaminsky, 2005). Globalisation also act as a catalyst for financial development, which can further enhance FDI.

By facilitating the flow of capital across borders, globalisation provides opportunities for financial institutions to access funds from various sources, enabling them to offer financing to businesses, including FDI (Kaminsky, 2005). Furthermore, globalisation promotes technology transfer, which can assist financial institutions in improving their operations and services, resulting in increased financial inclusion and access to international markets, enabling them to diversify their portfolios and reduce risk at a lower cost for businesses (Demirguc-Kunt & Levine, 2008; World Bank, 2020). By implication, globalisation can help financial development to further allow more inflow of FDI. Therefore, the study examines if this is possible in the case of Africa.

1.2 Problem Statement

The study extracted the individual problems in four thematic areas. These problems are discussed below;

1.2.1 Fintech, Foreign Bank Presence and Inclusive Finance

As stated earlier, despite policymakers' emphasis on the role of inclusive finance, most people in developing countries especially in Africa are financially excluded. For instance, despite the financial sector undergoing various changes, Africa continues to have one of the lowest levels of inclusive finance (Chikalipah, 2017; Kebede et al., 2021a). Specifically, compared to other developing regions like Central Asia, Latin America, and the Caribbean, SSA had the lowest financial participation indicators during the period of 2011-2014 (Fouejieu et al., 2020). Additionally, while 63% of adults held accounts in developing economies as of 2017, only 4% was attributed to SSA (Demirguc-Kunt et al., 2018). A considerable number of Africans (105 million adults with 16 percent of adults) as of 2021 are still unbanked[3]. In SSA however, mobile money account ownership rose from 12% to 21% as at 2018 (World Bank, 2022), offering women and the poor in rural areas more convenient and low-cost access to financial services (Demirgüç-Kunt et al., 2022). In 2021, SSA represents 53% of active accounts, while South Asia contributes approximately 20% of global accounts, and East Asia and the Pacific account for approximately 19% (Awanis et al., 2022). Since the use of mobile phones has increased, it can be assumed that there are greater opportunities for the unbanked to become banked (Maurer, 2012). Therefore, countries with high mobile money account ownership are more accessible to financial services, thus highlighting the need for Fintech (World Bank, 2022). As shown in Figure 1.4, most countries of the African sample use mobile phones to transfer money and settle bills.

Also, there are some Fintech companies and application platforms in Africa (see Table 1.1). These platforms have increased over time and have presented financial resources in their simplest form to the populace in Africa. For instance, countries such as Kenya, Nigeria, Ghana, Tanzania, and Uganda have headquarters of these Fintech companies that provide financial services to the poor, those in rural areas, and other stakeholders (see Table 1.1). Kenya, for example, has major Fintech institutions that make financial

[3] https://openknowledge.worldbank.org/server/api/core/bitstreams/a8b51161-6a04-5780-8be2-61584b95098b/content

services available to everyone. Africa also has an international company (i.e., BIMA mobile) that partners with network providers to provide insurance services to the continent (check Table 1.1). These companies and platforms could enhance inclusive finance in Africa. Additionally, the COVID-19 pandemic has caused an increase in the adoption and usage of Fintech. This lead to some level of growth in the adoption of pure-play lending apps in emerging markets and developing economies, including Africa, during the COVID-19 pandemic (Fu & Mishra, 2022).

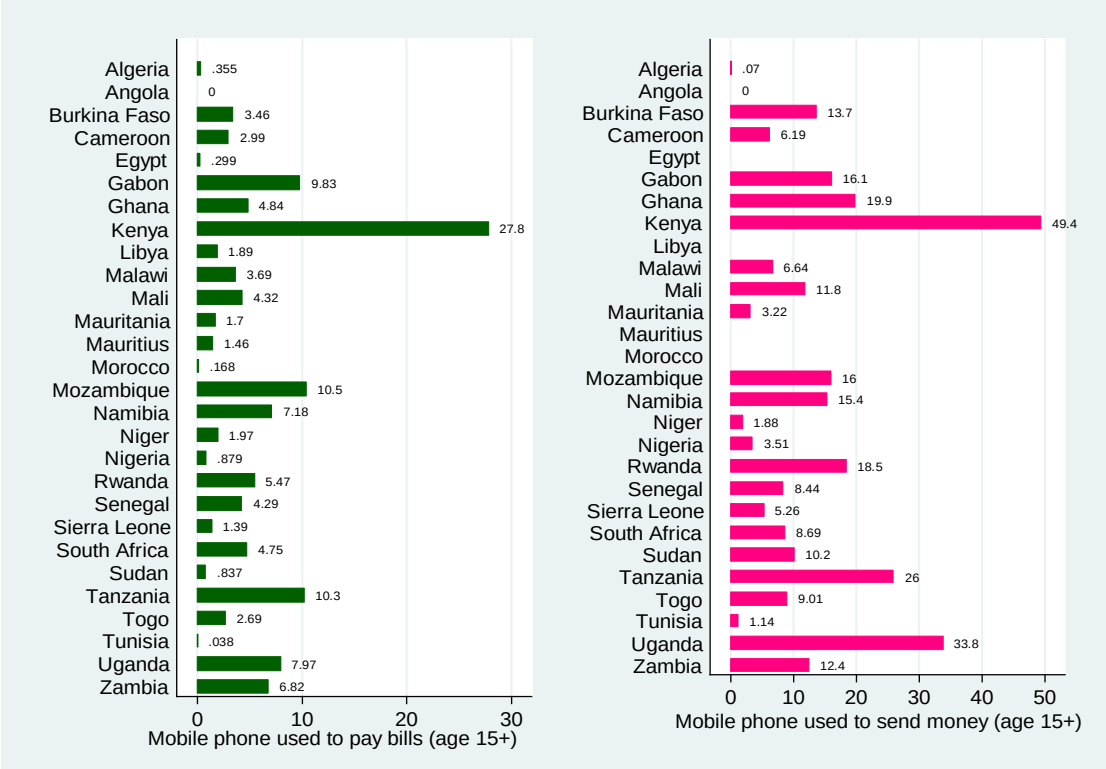

Figure 1.4: Average Within-Country Fintech, 2000-2018

Note: The graph shows the trend for the different measure of Fintech.

Source: STATA 17 Output from Research Data, 2023

Therefore, the current study tested empirically if Fintech (i.e., increase in Fintech companies and mobile phone for financial services) could promote inclusive finance in Africa. Furthermore, it has been suggested that foreign banks are more engaged in Fintech than domestic banks. For example, in Ghana, AFB bank (Azerbaijan bank) has partnered with MTN mobile money to provide loans (Qwick Loan) to the users of MTN mobile money (Bucker, 2021). Since foreign banks are seen to be involved in Fintech; can FBP act as a catalyst to induce Fintech to further improve inclusive finance in Africa? Are these banks helpful in improving inclusive finance?

Table 1.1: Some Fintech Companies and Platforms in Africa

Company/ Application Platform	Geographical Location	Business Model
Safaricom/ M-Pesa	Kenya	Mobile money services (mobile money transfer).
MoneyGram	Nigeria	Mobile payment services/ Trusted money transfer provider.
Angola-phone Africa		
Musoni (farmDrive)	Kenya	Leading/ Microfinance (loans to farmers with no formal credit history via mobile phones).
L-Pesa	Tanzania	Leading/ Microfinance (Microloan for mobile banking customers).
Tala (f.ka.) Mkopo Rashisi	Kenya	Lending/ Microfinance (Instant Mobile loans Finance App).
First access	Tanzania	Lending/ Microfinance (Automated credit scoring.
Bima Mobile	Africa, Asia, Latin America and India	Insurance (mobile microinsurance) for customers through mobile phones and partners with mobile service providers.
WorldCover	Ghana	Insurance/ protecting farmers from natural disaster while granting investors diversified returns and direct social impact.
Airtel	Uganda	Savings "Make Transactions between your bank and Airtel money.
Tigo Pesa	Tanzania	Savings, transfer, payment of bills.
M-Shwari	Kenya	Savings/ Revolution new banking product for M-PESA customers that allows to save and borrow.

Source: Salampasis and Mention (2018)

Conspicuously, the study identified some empirical studies on the direct nexus between Fintech and inclusive finance (Ghosh, 2016; Gosavi, 2018; Jack & Suri, 2011; Mbiti & Weil, 2011; Tchamyou et al., 2019). However, most of these studies focused on usage of mobile phones rather than what such phones are used for. While there is evidence of greater cell phone use, it does not specify whether the phones were used for financial

services. The fact that people are using mobile phones doesn't guarantee that they use such phones for financial services. Although, Demir et al. (2022) made an attempt to know what such phones were used for, the authors only focused on mobile phones used for paying bills. Notwithstanding that, the current study went a step further to look at both payment and transfer of money using mobile phone. Hence, the current study uses mobile phones used for paying bills and sending money as a measure of Fintech.

In terms of the measurement of inclusive finance, most studies apart from Kebede et al. (2021b) and Anarfo et al. (2020) use a single indicator as a proxy. However, inclusive finance has at least two principal estimations: demand-side variables (utilization) and supply-side components (access) (Chakrabarty, 2012; Shah & Dubhashi, 2015). To capture both the demand and supply sides, the current study agrees with the study of Anarfo et al. (2020) and generates an inclusive finance index as a measure of inclusive finance. The study complements the literature by empirically testing the role of FBP on the nexus between Fintech and inclusive finance in Africa. The study also depart from using a single indicator as a measure of inclusive finance and focus on both the demand and supply side of inclusive finance in Africa. In addition, the study employ quantile regression as the estimation technique to see at which quantile of inclusive finance is induced by Fintech and FBP.

1.2.2 FBP and Financial Development: The Role of Institutional Quality

In recent years, a growing debate in the literature has focused on the causes and consequences of foreign bank participation. Among the debates in the literature relate to the contribution of FBP to the overall development of the financial system. For instance, on one hand, some studies (i.e., Azmeh, 2018; Boamah et al., 2022; Bonin & Louie, 2017; Wu et al., 2010; Yin, 2021) argue that foreign banks can promote financial development. On the other hand, other studies (see, Azmeh et al., 2017; Beck et al., 2018; Kleymenova et al., 2016; Saleh, 2015) suggest that foreign banks hamper financial development by expanding credit to large corporations while neglecting small and medium-sized firms. These studies mostly focuses on financial depth and financial inclusion as measures of financial development. For instance, Gopalan (2018) and Azmeh (2018) use a single indicator like private sector credit, while Kebede et al. (2021b) uses financial inclusion indicators as independent measures of financial

development. Although the existing literature has used different indicators as alternative measures of financial development, an index that captures financial sector deepening, equity market, and a well-capitalized bond market has been scanty or ignored in the literature (Gopalan, 2018; Sahay et al., 2015; Svirydzenka, 2016). In addition, these studies focused solely on a single indicator for measuring financial development, leading to inconclusive outcomes.

Given the complex role that the financial sector plays in the financial and economic system, policymakers may find it interesting to understand an alternative measure that captures the multidimensional nature of financial development. This is because using just a single indicator for measuring financial development is inadequate since the financial sector has been multidimensional in the twenty-first century. For instance, banks were the main actors in the financial sector, but currently, other non-bank financial entities such as mutual funds, insurance companies, venture capitalists, pension funds, private equity firms, and others also play a relevant role in the financial sector (Gopalan, 2018; Sahay et al., 2015; Svirydzenka, 2016). Hence, it is laudable to use a variable that captures all these actors in the financial sector and their roles.

Also, as shown in Figure 1.5, using only private credit as a measure of financial development may be biased, as some countries perform well in other aspects of financial development rather than private credit. For example, Algeria, Angola, and Niger perform well in Multidimensional Financial Development (MFD), while they are relatively weak in private credit. Similarly, Burkina Faso, Egypt, and Togo excel in private credit but are weak in MFD. Therefore, the study adopts MFD by Svirydzenka (2016), which captures the entirety of financial development.

In addition, the presence of foreign banks has been found to enhance the financial systems of countries with strong institutions and better governance (Boamah et al., 2022; Clarke et al., 2003, 2006). For instance, Chan et al. (2021) showed that the quality of institutions in the host countries helps foreign banks contribute to the development of the financial system in five Asian countries. Also, Murinde (2012) found that banks (both domestic and foreign) efficiently affect financial development when strong institutions regulate them to ensure efficient allocation of financial resources.

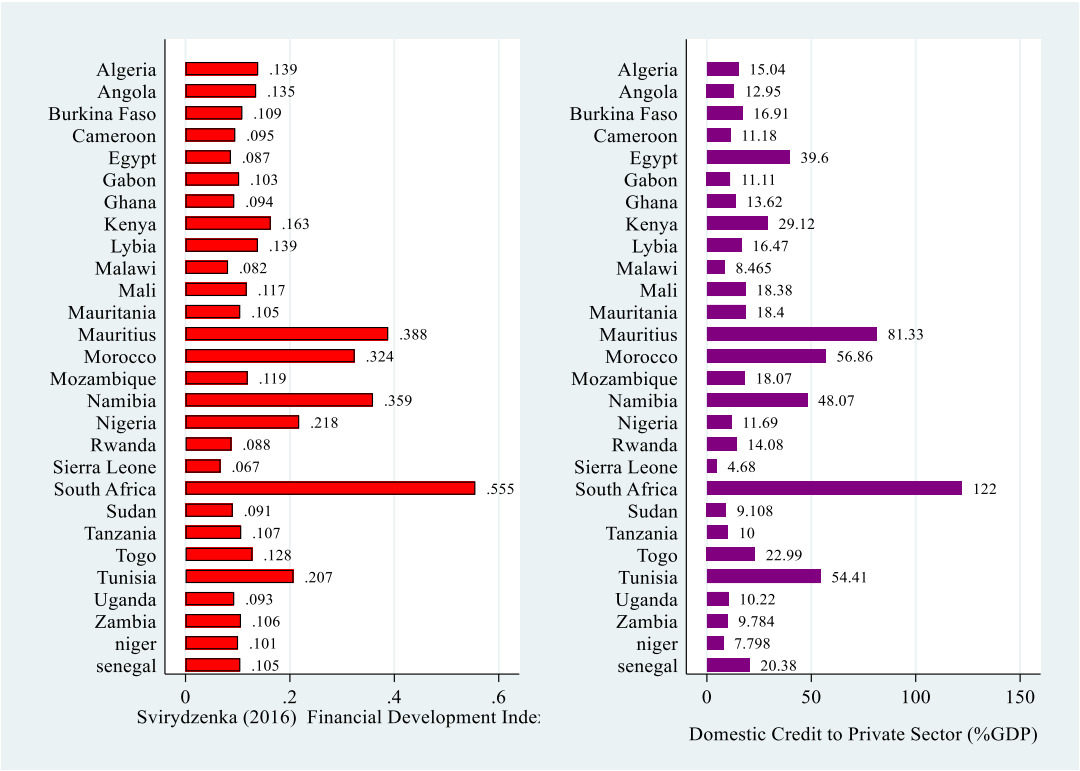

Figure 1.5: Average Within-Country Financial Development, 2000-2018

Note: This figure compares domestic credit to private sector (% GDP) against the Svirydzenka (2016) financial development index for each country.

Source: STATA 17 Output from Research Data, 2023

However, in the presence of weak institutions and governance, foreign banks hinder the accessibility of credit for small firms (Kebede et al., 2021b; Nanivazo et al., 2021), leading to lower financial development, especially in Africa (Ayyagari et al., 2014). Given this background, it is important to critically examine the role of quality institutions in the relationship between FBP and financial development, which has been ignored in the literature. Therefore, it is crucial to fill this gap by testing empirically whether, in the presence of strong institutions, FBP induces the MFD in Africa.

1.2.3 FBP, Financial Development and Inclusive Growth Nexus

As mentioned earlier, Africa's growth is characterized as non-inclusive, indicating that the region primarily prioritizes conventional economic growth while overlooking the critical aspects of poverty reduction, inequality mitigation, and employment generation. To overcome such situations, it has been argued that countries should attract sufficient foreign capital, such as foreign banks, to supplement their domestic capital to finance

such growth agenda. Foreign banks can contribute to the development of the host country's financial system and overall economic growth. For instance, foreign banks are more competitive than local banks in some markets, such as in Indonesia (Moguillansky et al., 2004), and their presence can generate a more contestable market. Additionally, FBP can promote the health of the host country's banking sector (Boamah et al., 2022) and induce profits for domestic banks (Nguyen, 2022). Attracting foreign banks to Africa is seen as an opportunity to stimulate economic growth as they bring in capital, expertise, liquidity, and innovative technologies, which can increase competition and lead to improved allocation of resources (Beck et al., 2014a; Ofori-Sasu et al., 2019).

However, despite the fact that foreign banks can enhance growth and development (Schnabel & Seckinger, 2019; Wu et al., 2010), extant literature argues that the efficiency of foreign banks in host countries is dependent on the level of financial development (see, El Menyari, 2019; Kebede et al., 2021b; Nanivazo et al., 2021; Yin, 2021). These studies suggested that a country with weak financial development may encounter poor financial allocation from these foreign banks, which may hinder economic growth and development. For example, Lensink et al. (2008) revealed that the potential benefits from foreign banks are conditioned on factors such as financial regulation and do not have a direct effect on growth. Similarly, Ofori-Sasu et al. (2019) revealed that foreign banks do not affect growth directly, but they start with competition with existing banks in emerging markets, which, in turn, leads to improved efficiency. On the other hand, the eclectic theory also reveals that a developed financial system can attract sufficient foreign banks (Cantwell & Narula, 2001).

Without a doubt, some empirical studies have examined the relationship between FBP, financial development, and growth (see El Menyari, 2019; Schnabel & Seckinger, 2019; Wu et al., 2010). These studies mainly focused on the traditional measure of growth, whereas the current study focused on inclusive growth. Africa has been a significant recipient of foreign banks, but it remains unclear whether FBP promotes inclusive growth in Africa. Additionally, it is challenging to find empirical evidence on how financial development and FBP work together to promote inclusive growth. The present study aims to fill this gap by examining whether the joint effect of FBP and financial development promote inclusive growth.

1.2.4 Financial Development, Globalisation and FDI Nexus

FDI is seen as a crucial component in modernization theory, as it is believed to bring capital, technology, and managerial expertise to developing countries. This has caused most African countries and Africa as a region to implement various policies such as the New Partnership for Africa's Development (NEPAD), the African Continental Free Trade Area (AfCFTA) and other trade policies to attract most FDI into the region (Aitken & Harrison, 1999; Alagidede et al., 2013; Opoku & Boachie, 2020; World Bank, 1997). Although there has been some level of FDI inflows, but it is inadequate looking at the growth and need of Africa (Adegboye & Okorie, 2023). For instance, within the African sample, the period spanning 1997 to 2020 reveals that FDI inflows for the majority of countries tend to hover between 4% and 24% of GDP, as indicated in Figure 1.6.

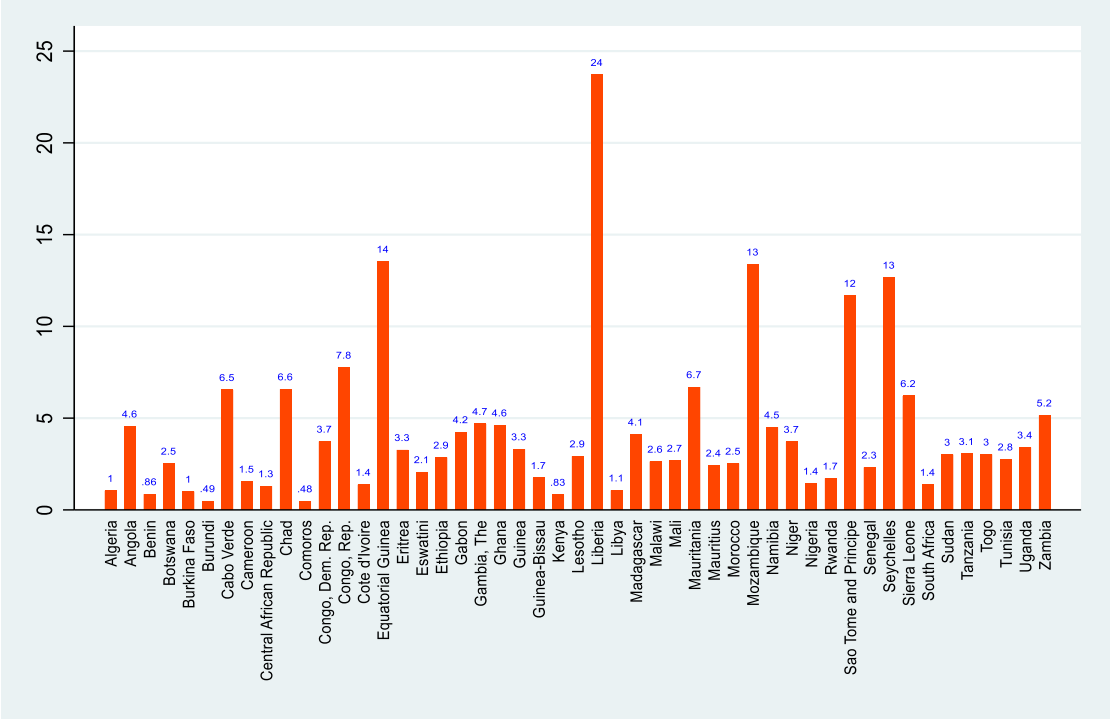

Figure 1.6: In-Country Foreign Direct Investment (% GDP), 1997-2020

Note: This figure depicts the average inflow of FDI from 1997 to 2020 within the sample.

Source: World Development Indicators, 2023

Consequently, there is a pressing need to establish concrete measures for promoting FDI inflows in Africa. The research has identified two approaches that align with the region's strategy to attract more FDI inflows: financial development and globalisation, but lacks sufficient empirical backing.

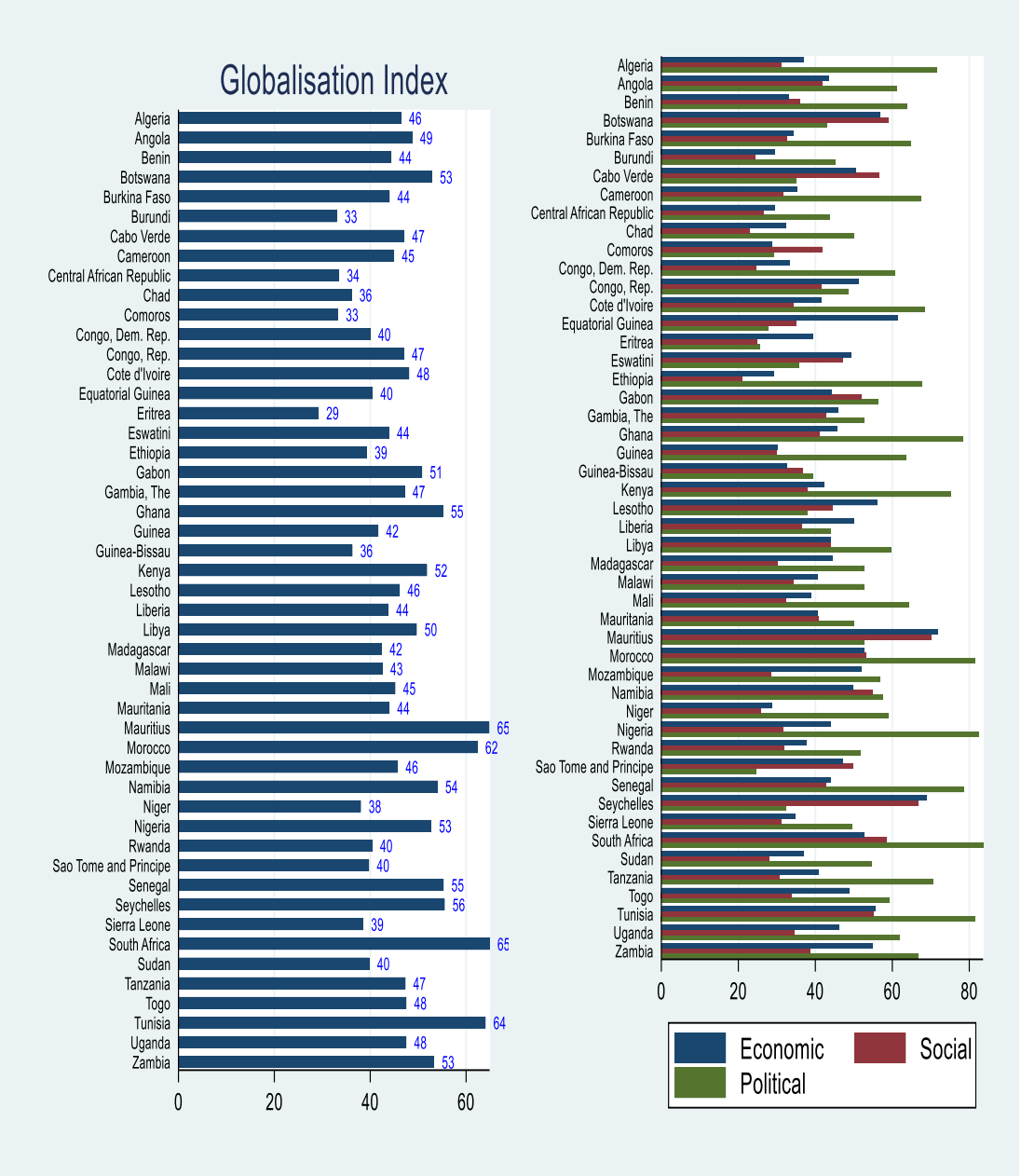

Figure 1.7: In-Country Globalisation, 1997-2020

Note: This figure depicts the average inflow of globalisation index from 1997 to 2020 within the sample. The Figure also compare the disaggregated globalisation index and it was identified that the African sample has more of political globalisation.

Source: Konjunkturforschungsstelle, 2022

Despite previous research (Bitzenis, 2012; Bojnec & Fertő, 2018; Chirila-Donciu, 2013; Desbordes & Wei, 2014, 2017; Drahokoupil, 2009; Gholizadeh Keykanloo et al., 2020; Islam et al., 2020; Leitao, 2012; Majeed et al., 2021; Sarbu, 2015) on the direct or indirect links between financial development, globalisation, and FDI, there is a lack of research on the combined impact of financial development and globalisation on FDI in Africa. However, globalisation has enabled developing nations to reap advantages such as enhanced economic activity and poverty reduction, owing to the influx of

remittances and technology (Shahbaz et al., 2019). Since, the African sample has some level of globalisation, it is imperative to test if globalisation can promote high inflow of FDI and how it can form synergy with financial development to attract FDI inflows. For instance, as shown in Figure 1.7, most countries in the African sample have an average globalisation index of 40%. Therefore, the present study aims to investigate the synergistic effect of financial development and globalisation on FDI in Africa. The study contributes to the literature by examining the separate impacts of financial development and globalisation on FDI and their joint effect. The findings can assist policymakers in implementing policies that promote globalisation and attract FDI to Africa.

1.3 Research Objectives

The key objective of the research report is to investigate the interlinks between financial development, FBP, inclusive growth and FDI in Africa. The specific objectives of the study are:

i. To establish the links between Fintech, FBP, and inclusive finance.
ii. To examine the moderating role of institutional quality on the FBP-financial development nexus in Africa.
iii. To determine the relationships between FBP, financial development, and inclusive growth.
iv. To investigate the moderating role of globalisation on the financial development-FDI nexus.

1.4 Research Questions

The study addresses the following research questions:

i. What is the effect of Fintech on inclusive finance, and to what extent does FBP influence the relationship between Fintech and inclusive finance?
ii. How does institutional quality bring to bear the relationship between FBP and financial development?
iii. What are the links between FBP, financial development and inclusive growth?
iv. What is the relationship between financial development, globalisation and FDI in Africa?

1.5 Research Hypothesis

The objectives of the study were used to formulate hypothesis, specifically the null hypothesis. These include the following:

H_1: The use of Fintech does not contribute to the advancement of inclusive finance in Africa.

H_2: FBP does not contribute to inclusive finance in Africa.

H_3: FBP does not moderate the relationship between Fintech and inclusive finance.

H_4: FBP does not contribute to the development of the financial sector in Africa.

H_5: Institutional quality does not lead to financial development in Africa.

H_6: The relationship between FBP and financial development is not influenced by institutional quality.

H_7: Inclusive growth in Africa is not promoted by FBP.

H_8: Inclusive growth in Africa is not necessarily driven by financial development.

H_9: Financial development does not moderate the relationship between FBP and inclusive growth in Africa.

H_{10}: Financial development does not attract FDI in Africa.

H_{11}: The relationship between globalisation and FDI inflows in Africa is not significant.

H_{12}: Financial development and globalisation do not complement each other to attract more FDI inflows in Africa.

1.6 Significance of the Study

The study will be relevant in so many ways. First, as the usage of mobile phones to transact financial services increases, it is expedient to know how it will enhance inclusive finance in Africa, given that Africa is characterized by low inclusive finance. Additionally, while there is fast entrance of foreign banks in Africa, a study to examine their effect on inclusive finance is crucial. On the other hand, since foreign banks are associated with modern banking techniques and Fintech integration, it is relevant to know how foreign banks will help Fintech to enhance inclusive finance. This study will, therefore, provide a basis for policymakers to pay attention to mobile phone usage and implement policies to enhance the usage of mobile phones for financial services.

Secondly, the study provides insights into the role of institutional quality in shaping the impact of foreign bank presence on financial development in Africa. This is important because Africa has been plagued by weak institutional quality, which can undermine

the effectiveness of foreign banks in promoting financial development. The study can inform policymakers on the optimal policies and regulations for promoting FBP in Africa, including policies aimed at improving institutional quality, such as enhancing the rule of law, reducing corruption, and improving regulatory quality. The study can provide insights into the mechanisms through which institutional quality moderates the relationship between FBP and financial development in Africa, including their ability to enhance the effectiveness of foreign banks in promoting financial development, reducing information asymmetries, and improving access to credit.

Third, the thesis throws light on the impact of FBP and financial sector development on inclusive growth of host countries. The findings can help policymakers make informed decisions about FBP regulations and policies that can promote financial development and inclusive growth. The study can inform the design of financial sector reforms that encourage FBP, leading to increased competition, improved efficiency, and lower costs of financial services. The study can help identify the factors that influence the ability of foreign banks to contribute to inclusive growth. The study can help promote collaboration between domestic and foreign banks, leading to the development of innovative financial products and services that cater to the needs of underserved communities.

Lastly, the financial development, globalisation, and FDI nexus is significant in Africa for several reasons. For instance, financial development plays a crucial role in attracting FDI by providing a supportive environment for investment. This can include measures such as financial market stability, efficient capital allocation, and access to credit. Additionally, globalisation has opened up new opportunities for investment and trade, making it easier for firms to expand globally and access new markets. This can increase the flow of FDI to countries that have embraced globalisation. By implementing policies that promote financial development and embrace globalisation, policymakers can attract more FDI and accelerate economic growth and development in their countries.

1.7 Organization of the Thesis

This research report is presented in five main chapters, of which chapter one contains the introduction of the study. The introduction incorporates the background of the study, problem statement, objectives of the study and its associated questions and hypothesis, significance of the study and the organization of the study. In chapter two, the study presented the underpinning literature. The study proceeds to explain the method used in achieving the said objectives which is captured in the chapter three. Chapter four presents and discusses the results in relation to the specific objectives of the study. The last chapter covers the summary, conclusion and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section provides a comprehensive review of literature that underpins the study and examine existing research to identify aspects that have received limited attention in the academic discourse. In simple term, it reviews the extant theoretical and empirical literature in the area.

2.2 Theoretical Literature Review

2.2.1 Financial Liberalisation Hypothesis

The study employed the financial liberalization theory, originally proposed by Mckinnon (1973) and Shaw (1973). This theory advocates for the removal of interest rate controls, allowing the real interest rate to reach an equilibrium point where investment matches savings. When interest rates decrease, investment increases, which in turn induces the average productivity of capital. Also, when the required reserve is reduced, it reinforces the effects of higher savings on the supply of bank lending. McKinnon (1973) pointed out the relevance of the policy of financial liberalization in decreasing financial constraints, improving the proficiency of financial intermediaries, and boosting macroeconomic execution. Furthermore, the theory indicates that as interest controls diminish, it facilitates broader access to resources for bank borrowers at lower credit costs, offering them the freedom to select from various capital-intensive activities (Fry, 1978).

However, Arestis and Demetriades (1997) argue that the events following the financial reforms do not provide much support for the theory of financial liberalization. The intuition behind this assertion can be attributed to the precondition for financial reform. Villanueva and Mirakhor (1990) showed that an important precondition for financial inclusion includes macroeconomic stability. Another precondition include institutional quality (good governance and quality institution), as argued by Honohan (2008). Voghouei et al. (2011) also pointed out that proper sequencing of financial liberalization is another precondition for financial reform. This study is inspired by the McKinnon-Shaw hypothesis, which aims to identify factors that can foster inclusive

finance. Building on this theory, the research investigates the potential of Fintech and FBP to promote inclusive finance in Africa.

2.2.2 Cream-skimming Model

Cream-skimming is a metaphor used to describe the business practices of a company that ignores customers who are less profitable for the company and provides the product or service only to high-priced or low-cost customers.[4] The term is derived from the practice of extracting sour cream from fresh milk on a dairy product, where the separator produces sour cream (which is lighter and floats) from fresh or raw milk, while the butter is "soaked" or caught separately from the fresh milk. Cream skimming is a lending strategy frequently adopted by foreign banks in developing countries, whereby credit is selectively extended solely to affluent and transparent segments of the credit market, while neglecting and excluding poorer and marginalized borrowers. Some studies (see Berger et al., 2001; Berger & Udell, 1995; Dell'Ariccia et al., 1999; Detragiache et al., 2008; Stein, 2002) provide clarification on what drives (i.e., asymmetry of information) foreign banks to engage in cream skimming. However, cream skimming can have negative consequences for the credit market, causing genuine damage and reducing the total inventory of bank credit (Sarma & Prashad, 2016).

Cream skimming has been extensively studied due to its impact on the host country's financial system. When foreign banks engage in cream skimming, they only target segments of the lending market where information asymmetry is low, leaving domestic lending sources to serve the segments where information inconvenience is high (Gormley, 2010). This leads to market segmentation based on customer information, which causes uneven flows of bank credit across different borrower categories. As a result, one segment may receive a stable flow of bank credit even during normal and tight financial conditions, while others may experience liquidity shortages (Sarma & Prashad, 2014). Additionally, when domestic banks are left with a pool of high-risk borrowers due to such segmentation, they may respond by restricting credit supply, causing a decline in credit supply (Detragiache et al., 2008; Gormley, 2010).

[4] https://www.thehindu.com/opinion/op-ed/what-is-cream-skimming-in-business/article25324525.ece

Sarma and Prashad (2014) conducted a study that utilized this model and revealed the existence of cream skimming practices by foreign banks operating in India. Correspondingly, Viverita et al. (2015) identified that greenfield banks face difficulties in extending loans to less transparent borrowers and tend to engage in cream-skimming behaviour by focusing on "credit-worthy" customers such as large corporations. This model shows that it is possible for foreign banks to only focus on large corporations rather than considering smaller firms, thus foreign banks' contribution to financial development may be minimal. For instance, Bolton et al. (2021) identified that institutions associated with cream skimming have less developed financial markets. The present study utilizes this model to investigate whether the cream-skimming behaviour of foreign banks can impact financial development in Africa.

2.2.3 The Eclectic Theory

Dunning (1977, 1980, 2000, 2009) proposed and developed the eclectic theory, which integrates internalization theory, industrial organization theory, and location theory into a comprehensive framework. The eclectic paradigm aims to provide a universal framework for assessing the scope and structure of both foreign-owned production by domestic companies and domestic production owned and managed by foreign investors (Dunning, 2009). Eclectic theory also known as the Ownership Location and Internalization (OLI) paradigm focused on explaining the motives behind international flows and FDI, rather than prescribing the level and structure of such investment. It combines macroeconomic location advantages and microeconomic ownership advantages into a single framework, recognizing that both are necessary to fully explain FDI (Spagat, 2006). Furthermore, the paradigm acknowledges that government policies, market size, and the motivation of MNCs can also play a role in determining the location of FDI in a host country (Vasyechko, 2012).

Ownership (O) advantage, which refers to the sustainable advantages a company possesses over its competitors in the market. These advantages can be innovative capacity, access to financial resources, and organizational and marketing systems. The location (L) advantage explains the specific country's location, such as labour force, natural resources, and societal structure, that make it profitable for a company to exploit its assets overseas. Lastly, the internalization (I) advantage explains the degree of

ownership and control of the transactions made by a company. If a company has more ownership-specific advantages than its competitors, it is more incentivized to internalize their use. The eclectic theory provides a general framework for understanding the motivation behind international flows and FDI and highlights the importance of both macroeconomic and microeconomic factors, including government policies and human nature.

The theory wasn't only relevant for FDI but also looked at how FBP could influence financial development. The theory has an impact on the growth of the financial sector in the local economy as the presence of foreign banks leads to heightened competition, ultimately leading to improved quality of services or products. Multinational banks (MNBs), which are a form of MNCs, ensure that they have advantages in all three "legs" of the theory before they attempt to invest abroad (Cantwell & Narula, 2001). While ownership and locational advantages empower the foreign firm to exploit the local market, the internalization part of the theory actually adds to the financial development of the local market by introducing quality services and products, leading to the development of the financial sector of the local economy. Gaffney et al. (2013) studying the resource-dependent perspective of emerging multinational enterprise (EMNE) strategy, found that MNBs may have a resource akin to their operations that even in a foreign economy, it gains market power for holding such an advantage.

2.2.4 Neo-Institutional Theory

According to the neo-institutional theory proposed by North (1990), institutional quality improves the effectiveness of economic activities and enhances higher economic returns. In the context of FDI such as FBP, institutions can act as a catalyst or a barrier to growth depending on their quality (Acemoglu & Robinson, 2012). Institutional quality refers to the extent to which institutions provide a stable, transparent, and predictable environment for businesses to operate in (Acemoglu and Robinson, 2012; World Bank, 2013). One possible channel through which institutions can influence the link between FBP and financial development is by affecting the level of investor confidence in a host country (Clarke et al., 2003, 2006; Boamah et al., 2022; Chan et al., 2021). High-quality institutions can create an enabling environment that encourages foreign investors to enter a country and undertake long-term investments

(Henisz, 2000b; Nunnenkamp, 2004). On the other hand, low-quality institutions may create uncertainty and unpredictability, leading to a decline in investor confidence and a reduction of FBP (Nanivazo et al., 2021; Kebede et al., 2021b), which can lead to lower financial development, especially in Africa (Ayyagari et al., 2014).

Another channel is through the impact of institutions on the spillover effects of FDI. Institutions can affect the extent to which FDI such as FBP can contribute to knowledge and technology transfer, innovation, and human capital development (Acemoglu & Robinson, 2012; Staats & Biglaiser, 2012; World Bank, 2013). Institutions that support innovation and knowledge-sharing can enhance the spillover effects of FDI, leading to increased productivity and economic growth (Acemoglu & Robinson, 2012; World Bank, 2013). Since foreign investors consider various factors before investing in a country, such as political stability, the rule of law, contract enforcement, and a predictable business environment, it will be needful for host countries to improve upon the quality level of institutions (Akobeng, 2017; De Soto, 2000; Henisz, 2000a; Staats & Biglaiser, 2012). Therefore, it is imperative to examine empirically if changes in the quality of institutions will aid FBP to promote financial development in Africa.

2.2.5 Internationalization Theory

Coase (1937) initially proposed the internalization theory in a national context, where some studies (Buckley, 1983; Buckley & Casson, 1976; Hennart, 1986) later developed it. Hymer (1960) expanded the theory to an international context, making it a general theory of FDI that encompasses other FDI theories. The theory suggests that firms seek to internalize their processes rather than relying on market transactions, which leads to FDI. Denisia (2010) identifies two determinants of this theory in the context of FDI: removal of competition and advantages in specific activities. Companies undertake FDI if the benefits of exploiting firm-specific advantages outweigh the relative costs of operations abroad. Eden and Miller (2004) argue that information costs should also be considered. The theory recognizes FDI as a firm-level strategy decision rather than a capital market financial decision. The significance of internationalization theory in relation to human capital lies in its emphasis on the necessity for companies to engage in research and development to thrive in new markets, leading to the development and spillover effects on human capital. This theory also shows how globalisation plays a

role in enhancing FDI through removal of trade barriers and any other impediment to the inflows of FDI. Given the potential impact of financial development and globalisation on FDI inflows, this study aims to explore their interrelationship in the context of Africa.

Just like general FDI, a MNB may choose to open a branch or a subsidiary in a foreign economy if it considers that the marginal cost of conducting business in the said foreign location will equal marginal revenue (Sabi, 1988). Put differently, the presence of MNBs in an economy reduces the profit available in the sector, thereby pushing the MNBs towards more innovation and technological progress (Magri et al., 2005). With the introduction of more innovation and more technological progress, the financial sector becomes more likely to develop. The presence of these MNBs signals that local banks are unable to exploit some part of the sector's profits, for which reason foreign banks are entering the economy. As the number of banks rises, competition for customers and profits intensifies, resulting in the development of the financial sector within the economy. Detragiache et al. (2008) argued that when foreign banks enter an economy who are better at monitoring soft information customers, the customers are hurt and left worse off. The reverse also holds true in the sense that when foreign banks are better at monitoring this soft information, customers become better off. Boustanifar (2014) agrees that a foreign bank entering an economy with a comparative advantage has the potential of lending at lower rates than the local banks. However, due to the loyalty generated from previous lending relations with customers, local banks may still control the market even in the face of their more powerful foreign counterparts. Therefore, relying on this theory, the study examines how foreign banks can promote financial development in Africa.

2.2.6 Endogenous Growth Theory

Endogenous growth theory posits that economic growth is primarily driven by internal factors rather than external ones (Romer, 1994). According to this theory, investments in human capital, innovation, and knowledge lead to significant economic growth. The theory also emphasizes the positive external effects of a large knowledge-based economy that can further fuel economic growth. Endogenous growth theory asserts that an economy's long-term growth rate is primarily determined by political decisions. In

the mid-1980s, a group of growth theorists started to express growing dissatisfaction with conventional explanations that attributed long-run growth solely to exogenous factors. This dissatisfaction led to the emergence of a new theory, which was significantly influenced by some studies (see, Arrow, 1962; Sidrauski, 1967; Uzawa, 1965). These pioneering works played a crucial role in shaping and advancing the understanding of long-run growth dynamics by challenging the prevailing narrative and introducing fresh perspectives. They preferred a model in which the key determinants of growth were explicit, rather than exogenous growth variables (unexplained technical progress).

Later, other studies also integrated technological change and incorporated factors such as financial development, foreign capital and research and development to cater to the limitations of some growth models (e.g., Lucas, 1988; Ortigueira & Santos, 1997; Romer, 1986). Development in these models results from substantial human resource investment, which has a spill-over effect on the economy and decreases the diminishing returns to capital accumulation (Grossman & Helpman, 1991; Romer, 1986). The endogenous growth theory suggests policies that embrace openness, competition, change, and advancement which can advance growth and development. Greenwood and Jovanovic (1990) presented new prototype AK models that incorporate data from the study of Mankiw et al. (1992) model. The resulting model suggests that outsourcing influences technology and population growth, and that the capital market can boost economic growth by increasing the amount of savings available for investment. Meanwhile, endogenous growth model by King and Levine (1993) assesses various business systems, saves money on funding the most promising productivity activities, and demonstrates the expected benefits of innovation. This model also recognizes that better financial systems increase the chances of a successful initiative and accelerate economic growth, whereas financial sector distortions can stifle economic growth by slowing innovation.

The study employs this model because it also considers financial development, stating that there is a positive correlation between stock market development and economic growth. According to these models, the stock market can effectively mobilize long-term finance and optimize resource allocation. Furthermore, these models suggest that the financial sector emerges endogenously at a certain level of economic development due to the fixed cost of financial transactions (Blackburn & Hung, 1998; Greenwood &

Jovanovic, 1990; Saint-Paul, 1992). The current study leverages this theory to investigate how FBP and financial development can contribute to growth and development, specifically inclusive growth, in Africa.

2.3 Empirical Literature Review

The study conducted a comprehensive review of existing literature to identify various gaps in the research and determine how these gaps could be addressed. This review was organized based on the specific objectives of the study and presented in sub-sections for clarity and coherence.

2.3.1 Fintech, FBP and Inclusive Finance

Fintech and Inclusive Finance

Fintech, measured with mobile payment, refers to all payment transactions using a mobile device to initiate, endorse and validate trade for purchased products and services (Karnouskos, 2004). Mobile devices in this context comprise all mobile phones and handheld gadgets like tablets which can be connected to a telecommunication network to perform financial transactions (Herzberg, 2003). The nature of the transaction will depend on the payment system to be used, and the major network operators provide the service through different channels. A consumer may be limited to using a mobile phone only or any of the other mobile devices mentioned. Mobile payment uses what is called e-money or m-money for transactions. According to a 2012 survey of 2,980 people in Tanzania, the majority of users transact businesses through mobile money, especially for transfers and payments, with an overwhelming 55% of the services for remittance (InterMedia, 2015). The mobile money system is also one of the most popular ways of saving money in Tanzanian and Kenyan households. Besides using mobile money for remittance purposes in Tanzania, 14% of users use the services for various forms of payments such as fees and salaries, while another 12% use the services for purchases in shops (InterMedia, 2015). In countries such as Sri Lanka, Thailand, Brazil, and the USA, mobile money is also used as payments for transportation services (International Finance Corporation, 2011). Merritt (2011) revealed that for any mobile money deposit (cash, in this instance), or transfer of funds through an agent, an ID must be provided as a form of "know-your-customer" (KYC).

The educational background of mobile money users can play a significant role in influencing their adoption and use of Fintech services. From a study conducted in Kenya (Jack & Suri, 2011), it was concluded that mobile money users are more likely to be educated than non-users. Another study conducted in Tanzania further validated this finding, indicating that individuals with higher levels of education were more inclined to use mobile money services. Among the 2,980 households surveyed, 65% had primary education, 22% had secondary education, while 14% had no formal education (InterMedia, 2015). The general use of mobile money services has gradually become the order of the day in most parts of Africa as it eases the stress that many people would have gone through in the past in the effort to perform financial transactions, avoiding long queues when sending or receiving money or making payments for goods and services. The convenience of conducting business through mobile money (i.e., Fintech) has made life easier, thereby spreading the services to more parts of the continent and country and expanding the growth of the service (Au & Kauffman, 2008).

A study by Solin and Zerzan (2010) in Ghana shows that mobile money continues to be a great innovation and a breakthrough in payment systems in Ghana in building a cashless society. Some uses of the mobile money platform include: Savings - some mobile money operators allow clients and customers to save money just like the banks, with interest (Solin & Zerzan, 2010). Mobile money services allow subscribers to perform certain transactions such as transferring money from their bank account to their mobile wallet and vice versa. In such instances, the mobile wallet becomes useful and can replace the bank account to save money. Domestic and international money transfer: in domestic money transfer, the money is sent from one party to another within the same geographical area. An example is the transfer of money within Ghana (Solin & Zerzan, 2010). This service is available to all mobile money operators in Ghana. The transfer of money can be initiated by both registered and unregistered persons of the service. A registered person receives a debit from the account, while a non-registered person receives a token, which is a secret pin to cash out the money sent. The transactions can be done through agents and banks throughout the country. An international money transfer also refers to financial transactions through the mobile money platform across borders, which means from one country to another (Solin & Zerzan, 2010). The success of these services can be attributed to the integration of

different financial players, including mobile money operators and international remittance agencies such as Western Union, during the process of mobile money service. The most significant benefit of mobile money is its low cost in charges. McKay and Pickens (2010) found that financial services provided outside traditional bank branches, such as mobile money, are 19 percent more affordable in an international comparison of 26 banks. Kenya for instance recorded remittance increase through the usage of M-PESA as compared with other known forms of remittances. Contrarily, in a country with high cost of transaction like Botswana with a minimum of 8 pula ($1.07) as fees charged on mobile money has made it unattractive (McKay & Pickens, 2010).

Other empirical studies (Andrianaivo & Kpodar, 2012; Ghosh, 2016; Gosavi, 2018; Jack & Suri, 2011; Mbiti & Weil, 2011; Tchamyou et al., 2019) have revealed that inclusive finance is associated with high levels of Fintech and ICT. For instance, Andrianaivo and Kpodar (2012), and Ghosh (2016) have shown that cell phone penetration enhances inclusive finance. Andrianaivo and Kpodar (2012) evaluates how the implementation of mobile phone networks affected the economic development of several African nations during the period spanning from 1988 to 2007. Applying the system Generalised Method of Moments (GMM), the study's findings indicated a significant positive impact of the growth and development of mobile phone technology on the economic progress of African countries. On the other hand, Ghosh (2016) conducted a study focusing on India from 2001 to 2012, and the results revealed a significant and positive correlation between mobile telephony and economic growth. The current study by Demir et al. (2022) showed that Fintech induces inclusive finance using Ordinary Least Squares (OLS) estimation and a sample size of 140 countries. This study proxy Fintech with the use of mobile phones to pay bills, while using three different indicators as proxies for inclusive finance (i.e., accounts, savings, and borrowing) from the demand side of inclusive finance. The study concluded that regardless of how inclusive finance is measured, Fintech still enhances inclusive finance.

Other evidences also showed that mobile money has also been seen to induce SMEs' access to financial services through the provision of bank advances. For instance, after considering various firm-level characteristics and employing a newly introduced measure to assess firms' access-to-finance status, Gosavi (2018) discovered that companies adopting mobile money are more likely to obtain loans or lines of credit.

Similarly, Mbiti and Weil (2011) analysed data from two waves of individual data on financial access in Kenya and the results showed that increased use of M-Pesa lowers the propensity of people to use informal savings mechanisms such as Rotating Savings and Credit Association (ROSCAS), but raises the probability of them being banked.

There is additional evidence that there is a positive connection between the utilization of mobile money on one hand and the financial investment of families and organizations on the other (Jack & Suri, 2011; Morawczynski & Pickens, 2009; Ouma et al., 2017). For example, Jack and Suri (2011) after examining M-PESA in Kenya realised that mobile money is used to remit funds to families. In the same way, Morawczynski and Pickens (2009) also investigated how M-PESA has impacted customers and found that families with mobile money accounts are more likely to bank, make/send payments, and save more. Ouma et al. (2017) explore the connection between the widespread adoption of mobile telephony for delivering financial services and its impact on savings mobilization in specific countries within SSA. Their research demonstrates that the accessibility and utilization of mobile phones for financial services significantly enhance the likelihood of households saving money.

FBP and Inclusive Finance

Expanding access to microcredit advances entrepreneurship and investment, particularly for SMEs to grow (Banerjee et al., 2015). The primary source of inclusive finance is the banking sector, and a lot of progress has been achieved to achieve banking inclusion. However, there are concerns regarding basic bank accounts, consumer advice, and expenditure on financial services. Despite the expansion of formal banking channels, access to the credit market is still limited for ordinary people, leading many of them to the subprime credit market (Credit Companies) with higher annual interest rates (Collard & Kempson, 2005).

Foreign banks may offer opportunities for new entrepreneurs by removing entry barriers and improving market competition (Rajan & Zingales, 2003). Business regulations in the host country and the country of origin are of great importance to policymakers, academics, and entrepreneurs. Kouretas and Tsoumas (2016) examined the impact of FBP on the business regulatory environment of host countries using data from 87 economies between 1995-2013 for the efficiency of business regulation and

found a positive impact of FBP on the efficiency of business regulation. Researchers have also studied foreign banks' lending practices (Berger et al., 2001; Clarke et al., 2006).

Studies on FBP and inclusive finance can take two forms based on the measurement of inclusive finance. For instance, in the first form, inclusive finance is proxied with banking sector outreach (Beck & Martinez Peria, 2010; Detragiache et al., 2008; Kebede et al., 2021b; Memon et al., 2021). Detragiache et al. (2008) used panel data for 2003-04 for 18 low-income countries, while the ratio of bank credit to the private sector (% GDP) was used as a measure of inclusive finance. Their results showed that any level of FBP decreases inclusive finance in low-income countries. Although Beck et al. (2007a) used a different sample of 99 countries in 2003/2004, where inclusive finance was measured with branch penetration, ATM penetration, loan accounts, and deposit accounts, they found similar results as those of Detragiache et al. (2008). Beck and Martinez Peria (2010) used the share of municipal branches, branches per 100,000 people, deposit accounts per 1000 people, and loan accounts per 1000 people as a proxy for inclusive finance and still had similar results that the presence of foreign banks in Mexico impedes inclusive finance. Kebede et al. (2021b) also focused on the role of institutional quality in the foreign bank-presence-inclusive finance nexus in Africa. Their findings suggest that high FBP leads to low inclusive finance, whereas in the presence of institutional quality, FBP induces inclusive finance. Kebede et al. (2021b) used inclusive finance index variables such as both usage and access variables. However, contradictory results were obtained by Memon et al. (2021) who identified that FBP induces inclusive finance (when inclusive finance was measured with the usage of ATMs per 1000 adults).

The second set of studies used a micro dimension which focuses on the real impact of foreign banks on firms' and households' access to credit. For example, Léon and Zins (2020) examined the presence of a regional foreign bank (Pan-African bank) and inclusive finance, where their findings suggest that regional FBP increases financial inclusiveness. They used variables such as firms' access to credit (firm decision to apply for a loan, bank decision to approve a loan, credit conditions, procedures) and household access to credit as a measure of inclusive finance. However, some empirical studies (Beck & Brown, 2015; Clarke et al., 2006; Gormley, 2010) have identified that foreign banks mostly select a segment of borrowers who are risk-free and extend credit

facilities to such borrowers. They termed this act as "cherry-picking," and this behaviour of foreign banks reduces inclusive finance and denies small firms the opportunity to access financial resources.

There are different ways through which foreign banks can enter a country; however, not all of them are beneficial for the economy. For example, mergers and acquisitions of domestic banks may affect local firms' access to credit (Berger & Udell, 1995). The most feasible way is when they open new branches, as it has no effect on the number of banks with local knowledge, nor does it cause small firms to suffer the shocks as a result of their presence, as happened in Eastern European countries in the 1990s (de Haas & van Lelyveld, 2006). These problems of financial exclusion usually arise due to a lack of legal infrastructure for contract enforcement, high transaction costs, as well as information asymmetry. The credit requirements that emerge make it difficult for lower-income individuals, small and medium businesses to finance high-return business ventures, reducing the resource allocation efficiency in an economy and delaying poverty alleviation and economic growth (Beck et al., 2007b).

Summary

It is clear that there have been various transitions in Africa aimed at improving Fintech in order to extend financial services to the masses. However, most empirical studies, such as Jack and Suri (2011) and Ghosh (2016), focus only on how many people use mobile phones to receive or pay money without estimating the extent to which it influences inclusive finance. Others face measurement issues; for instance, Demir et al. (2022) only consider Fintech that focuses on payments while neglecting the transfer of money. Some studies only focus on the demand side of inclusive finance while others focus on the supply side. Finally, to the best of the researcher’s knowledge, no study has examined the moderating role of FBP on Fintech and inclusive finance. Other studies focused on mobile phones but paid less attention to whether these phones are used for financial transactions or not. Although some studies show how FBP has integrated Fintech into traditional banking, they could not show to what extent FBP has assisted Fintech in inducing inclusive finance in Africa. The study seek to fill these gaps by: first, using a measurement of Fintech that focuses on payment and transferring of money. The study used the percentage of people who use mobile phones to pay bills

(15% or more) and the percentage of people who use mobile phones to send money (15% or more). Second, the study employs a multidimensional measure of inclusive finance that captures both the supply and demand side of inclusive finance. Lastly, the study determine the moderating role of FBP on Fintech-inclusive finance in Africa.

2.3.2: FBP, Institutional Quality and Financial Development

Traditional theory suggests that the entry of foreign banks strengthens competition in the banking industry, enhancing the allocative and productive proficiency of the host's banking industry (Vives, 2011). Empirical studies have also shown that FBP enhances competition through the use of modern banking techniques, higher capital, and a high level of expertise, which in turn leads to efficiency, cost reduction, and enhanced profitability levels of banks in the host country. Earlier works by Claessens et al. (2001) and Lee (2003) critically analysed the impact of FBP on financial development and found that FBP is accompanied by greater efficiency in the domestic banking system. Moguillansky et al. (2004) showed that in the Indonesian banking market, foreign banks behave more competitively than local banks, and their presence is important in generating a contestable market. Likewise, the study by Boamah et al. (2022) demonstrated that the presence of foreign banks positively influences the soundness and well-being of the host country's banking sector. Nguyen (2022) revealed that a higher increase in the presence of foreign banks induces the profits of domestic banks. Similarly, the research conducted by Ofori-Sasu et al. (2019) unveiled that foreign banks initially enter into competition with existing banks in emerging markets, resulting in enhanced overall efficiency in the banking sector.

Azmeh (2018) found a positive and significant long-term effect of FBP on the size and activity of the financial sector. This result, however, corroborates with the work of Léon and Zins (2020), who identified that the presence of Pan-African banks increases firms' access to credit. Memon et al. (2021) also revealed that foreign banks play a significant role in promoting financial inclusion. There are various factors that may counterbalance the positive impact of FBP. Local banks may be adversely affected by the shift of customers after the entry of foreign banks. For example, the entry of foreign banks may concentrate their credit and other services on well-educated clients, depriving domestic banks of this market position and leaving only murky organization (Oino & Ukaegbu,

2014). Lensink et al. (2008) identified that the entry of foreign bank adversely affects financial development because it has consequences for local banks. The authors also showed that institutional quality and other factors in the host country reduce the inefficiency of foreign banks. This finding is further explained by Yin (2021), who showed that stringent capital requirements, higher market entry barriers, and effective credit information sharing can impede the impact of foreign banks. Kebede et al. (2021b) also shared similar views where they found that in the presence of strong institutions, FBP positively influences access to financial services. They further showed that when there is a high degree of foreign banks in a host country, financial inclusion reduces.

Beck et al. (2018) assert that FBP affects the availability of credit for small or opaque organizations. This is because foreign banks are interested in selecting financially transparent firms and households, discriminating against SMEs and poorer households (Beck et al., 2018). Similar assertions were made by the following studies (Beck & Martinez Peria, 2008; Detragiache et al., 2008; Gormley, 2010). They also suggested that larger firms may benefit from the existence of foreign banks, but small firms are not affected. In countries or regions such as Africa, this situation can affect small firms in terms of access to loans and the cost of loans. This can weaken overall access to the financial sector. Also, information asymmetry drives foreign banks to focus only on lending to hard data borrowers (Mian, 2006). Consequently, sensitive data borrowers need to pay higher financing costs, which deters them from acquiring credit from these banks. The adverse consequence of careful selection becomes clear in less developed nations.

Summary

The existing literature shows a noticeable scarcity of research investigating the relationship between FBP and the multidimensional aspects of financial development in Africa. To measure financial development, the study used the MFD developed by Svirydzenka (2016). The study selected this index as it encompasses various dimensions of financial development, including depth (the size and liquidity of financial institutions and markets), access (the ability of individuals and businesses to access financial services), and efficiency (the ability of institutions to offer financial

services at low cost with sustainable revenues and the level of activity in capital markets). Some studies use domestic credit to the private sector as a measure of financial development (Azmeh, 2018; Gopalan, 2018; Ibrahim & Alagidede, 2020). These studies argue that private credit only captures certain aspects of finance and serves as a quality-based indicator, ensuring the efficient and effective allocation and utilization of financial resources towards more productive activities (Ibrahim & Alagidede, 2020). Moreover, there are limited studies that explore the moderating role of institutional quality in the link between FBP and financial development. Therefore, the study's contribution to the literature is to examine the direct relationship between FBP and institutional quality on the multidimensional nature of financial development. The study further investigate the moderating role of institutional quality in the link between FBP and the multidimensional nature of financial development in Africa.

2.3.3. Foreign Bank Presence, Financial Development and Inclusive Growth

Empirically, Wu et al. (2010) found that foreign banks play a significant role in the more productive and efficient allocation of capital, if not labour, contributing to the economic growth of host countries. They used ordinary least square (OLS) and fixed effects to estimate data for 1,200 banks in 35 emerging countries in Asia, Latin America, Eastern and Central Europe spanning 1996 to 2003. However, Lensink and Hermes (2004) and Lensink et al. (2008) showed that foreign banks' efficiency is much dependent on the level of financial development and economic growth of a country. This argument is supported by the study of El Menyari (2019), who found that the level of the impact of foreign banks on economic growth is solely dependent on the country's level of financial development. For instance, the results showed that in North and Southern Africa, FBP induces economic growth, whereas in West, Central, and East Africa, the presence of foreign banks dampens economic growth, which is even rarely statistically significant. This is because North and Southern Africa are characterized by a higher developed financial system.

In contrast to Lensink and Hermes (2004), it is argued that foreign banks impact financial development, which then affects the growth of the economy (Bruno & Hauswald, 2014). This possibility arises because foreign banks can serve as a driving force for financial development by leveraging their superior expertise, introducing new

financing sources, and fostering integration into segmented banking systems. These factors, in turn, can enhance domestic intermediation efficiency and increase credit availability (Beck et al., 2004; Claessens et al., 2001; Gelos & Roldós, 2004; Levine, 1999; Petersen & Rajan, 2002). Similar assertions were made by scholars such as (Mester, 1997; Petersen & Rajan, 2002; Berger et al., 2005). Other current studies also conclude that foreign banks enhance financial development, inducing growth of the host country (e.g., Yin, 2021; Boamah, 2022; Azmeh, 2018; Ofori-Sasu et al., 2019).

While the study find foreign banks to induce financial development, other studies showed that foreign banks even dampen financial development. For example, Beck et al. (2018) made the assertion that foreign bank entry affects the availability of credit for small or opaque organizations. This is due to the fact that foreign banks tend to prioritize firms and households with strong financial transparency, which may result in some degree of discrimination against SMEs and economically disadvantaged households (Beck et al., 2018). Similar results were made by the following studies (Beck & Martinez Peria, 2008; Detragiache et al., 2008; Gormley, 2010, Azmeh, 2018). The negative impact of selective lending becomes evident in less developed countries.

Regarding financial development, economic growth and development, the extant literature, with the exception of Gyamfi et al. (2022) and (Ofori et al., 2022b) has focused on traditional form of economic growth rather than shared growth and prosperity i.e., inclusive growth (see, Acquah & Ibrahim, 2020; Chen et al., 2020; Čižo et al., 2020; El Menyari, 2019; Erdoğan et al., 2020; Lenka & Sharma, 2020; Matei, 2020; Opoku et al., 2019; Sarwar et al., 2021; Silva et al., 2017; Ustarz & Fanta, 2021; Wu et al., 2010). In addition, the relationship between financial development and economic growth is mixed. For instance, an early study by Revell and Goldsmith (1970) showed that a developed financial system helps in the efficient and effective allocation of financial resources (i.e., directing surplus units to deficit units), which contributes to economic growth. Hence, a developed financial system induces economic growth. Current studies also confirm that financial development leads to economic growth (see, Čižo et al., 2020; Lenka & Sharma, 2020; Sarwar et al., 2021; Türsoy & Faisal, 2018; Ustarz & Fanta, 2021; Zeqiraj et al., 2020). For example, Čižo et al. (2020) examine the causal link between quantitative and dynamic variations in financial development and economic growth among EU countries from 1995 to 2017. Using Pearson correlation, the study showed a strong correlation between financial development and

economic growth (i.e., GDP growth). Using Autoregressive distributed Lags (ARDL) and Error Correction Term (ECM), Lenka and Sharma (2020) reveals a positive impact of financial development on both short-term and long-term economic growth in India, during the period 1980 to 2017.

Some studies also reveal that a developed financial system hampers economic growth (see Ayadi et al., 2015; Narayan & Narayan, 2013; Wen et al., 2022). For instance, using GMM, Ahmed (2016) discovered a negative correlation between financial integration and economic performance in 30 SSA countries during the period 1976 to 2010. Ayadi et al. (2015) investigate the correlation between financial development and economic growth in Southern and Eastern Mediterranean countries as well as the European Union-Mediterranean region throughout the period 1985-2009. The results from the fixed effect panel regression showed a negative association between financial development (credit to the private sector and bank deposits) and economic growth. This suggests potential issues with credit allocation and highlights weaknesses in financial regulation and supervision. Narayan and Narayan (2013) suggest that bank credit has a detrimental impact on economic growth in 65 developing countries during the period 1995-2011. This study employs estimation techniques, such as the one-step system and differenced GMM, to analyse the relationship between bank credit and economic growth. Wen et al. (2022) demonstrated that financial development negatively affects economic growth when estimating the model using system GMM. The study examines the influence of financial development on key economic indicators, namely economic growth, inflation, and employment, across a panel of 120 countries from 1997 to 2017.

In addition, although there is evidence of a financial development-growth nexus, this evidence is subject to factors such as the level of institutions and macroeconomic factors. For instance, Beck et al. (2014b) show that financial intermediation enhances growth and reduces uncertainty in the long run, but these effects are weaker when considering more uncertain and later time horizons. Law et al. (2013) propose that the financial development-growth nexus is dependent upon the degree of institutional quality, supporting that better finance is influential in conveying long-term economic development. El Menyari (2019) revealed that in Africa, the developed financial system in southern Africa contributes to a higher level of economic growth compared to other sub-regions within the continent.

Summary

From the foregoing, it is clear that few studies used inclusive growth (e.g., Gyamfi et al., 2022; Ofori et al. 2022b). Prior studies as mentioned earlier have examined foreign bank impact on economic growth. Inclusivity is crucial for economic welfare, necessitating the testing of this hypothesis. Global focus is on reducing inequality in economic growth. Evaluating Africa's progress in promoting shared growth is important. This study contributes to the literature by assessing the contribution of FBP to inclusive growth and the impact of financial development on the foreign bank-inclusive growth nexus.

2.3.4. Financial Development, Globalisation and FDI

Financial development has been empirically proven to have a significant impact on FDI, despite some studies showing contradictory results. Islam et al. (2020) investigated the link between financial development and FDI in Belt and Road Initiative (BRI) partner countries, with a specific emphasis on the moderating role of institutional quality. The empirical results reveal that financial development has a significant impact on attracting FDI, and institutional quality plays a crucial role in this relationship. The findings are reliable across different proxies of key variables and methodologies [such as Pooled Ordinary Least Square (POLS), Fixed Effect (FE), and Random Effect (RE)]. Using a global sample of 116 countries from 1996 to 2017, Nguyen and Lee (2021) examined the relationship between uncertainty, financial development, and FDI inflows. The results indicate that countries with higher levels of economic policy uncertainty attract lower FDI inflows. While more developed financial markets attract higher FDI inflows, domestic uncertainty remains a drag and discourages FDI inflows. Additionally, as uncertainty increases, FDI inflows tend to move from lower-income economies to higher income countries, reflecting the so-called safe haven effect.

Desbordes and Wei (2017) examined how the financial development of source and destination countries affect FDI. The authors use data from real manufacturing FDI projects worldwide and exploit variations in country-specific financial development and sector-specific financial vulnerability to establish causality. The study finds that both the financial development of source and destination countries have a significant positive impact on FDI inflow. While the overall economic impacts of source and

destination financial development are similar, their direct and indirect effects differ depending on the type and margins of FDI. Similarly, Sahin and Ege (2015) investigated the relationship between financial development and FDI in Greece and its neighbouring countries, including Bulgaria, Macedonia, and Turkey, between 1996 and 2012. The findings from the bootstrap causality analyses suggest that FDI can predict financial development in all countries except for Macedonia. Moreover, the study reveals bidirectional causality in Turkey.

Majeed et al. (2021) conducted a study on the correlation between FDI and financial development in 102 BRI countries across Asia, Europe, Africa, and Latin America. The research utilized feasible Generalised Least Squares (GLS) and augmented mean group methods for the period 1990 to 2017. The results of the Dumitrescu–Harlin panel causality test revealed a two-way causality link between FDI and FD in Asia and Europe, whereas a unidirectional relationship was observed between FDI and FD in Latin America. Gholizadeh Keykanloo et al. (2020) investigated the impact of financial development, as measured by Financial market Index (FMI) and the financial institution index (FII), on FDI absorption in 11 countries between 1990 and 2014. Their study discovered that an increase in the FII is associated with a rise in FDI inflows, while an increase in the FMI is linked to a decrease in FDI inflows. Agbloyor et al. (2013) found that financial development plays a significant role in attracting FDI in Africa. They conducted separate analyses for banking development (sample of 46) and the stock market (sample of 16), leading to different sample sizes. Agbloyor et al. (2013) employed Two stage Least Square (2SLS) as the estimation techniques which dealt with possible endogeneity.

Indeed, some few studies have revealed that financial development can actually decrease the inflow of FDI or no relationship between financial development and FDI. For instance, Meivitawanli (2021) found evidence supporting this in Indonesia, where financial development, proxied by FMI, did not promote the inflows of FDI. The author reported that although financial development did not have a significant impact on FDI inflows when employing fixed effect estimations, different results were obtained through Granger causality testing. In Botswana, Tsaurai (2014) also found that there is no causal relationship between financial development (proxied with banking sector development) and FDI. Bayar and Gavriletea (2018) found no significant long-run or short-run effects of financial development on FDI in Central and Eastern European

Union countries, but unidirectional causality from financial sector development to FDI. Hanif and Shariff (2016) argue that there is no causal relationship between financial development and FDI in the Association of Southeast Asian Nations (ASEAN) and emphasize the need for these economies to improve the efficiency of their domestic monetary systems to ensure stakeholder participation.

Globalisation on the side has been able to promote the inflow of FDI into most countries. Bojnec and Fertő (2018) for example, used the knowledge-capital (KK) model to examine the effects of globalisation on FDI for 22 Organization for Economic Cooperation and Development (OECD) countries. The results reveal that both the overall level of globalisation and its economic and social dimensions have a significant positive impact on outward FDI flows. The findings of Bojnec and Fertő (2018) supported the study of Chirilă-Donciu (2013) who determine the inflows of global FDI in Europe and Romania. Chirilă-Donciu (2013) indicate that the distribution of economic power is shifting in the global economy, favouring countries with a stable and robust industrial base. The economic crisis has led to new trends in FDI, including a rise in the proportion of developing and emerging nations in the global FDI flows (Chirilă-Donciu, 2013). During the period of 1995- 2010, Incekara and Savrul (2012) also indicated that, while there are trade and investment relations with the rest of the world, they remain confined primarily within Eurasian countries. Strengthening economic integrations is crucial to foster further development in these areas. Leitao (2012) investigate the correlation between FDI and globalisation in Portugal, covering the time span from 1990 to 2008. The results from the system GMM revealed market size and globalisation attracts more FDI inflow into Portugal.

Summary

Based on the literature review, it becomes apparent that limited studies have specifically investigated the link between financial development and FDI, as well as the nexus between globalisation and FDI. Furthermore, these existing studies differ in their approaches, as some utilize composite measures for financial development while others focus on specific aspects of it. Thus, the primary objective of the current study is to enhance the existing literature on financial development and FDI by employing a composite index. Additionally, limited previous studies have explored the combined impact of financial development and globalisation on FDI, making this study

particularly noteworthy in contributing to this unexplored area. As noted by Shittu et al. (2020), countries in Africa that are less globalisation receive little inflow of FDI. Hence the need to examine its impact on FDI and how it can form synergy with financial development to further promote FDI.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents the empirical strategy and the data that was used to achieve the objectives of the research. It outlines information regarding, the research approach and design, data collection method, data analysis and techniques.

3.2 Research Paradigm, Approach and Design

The study employed the positivist as the research paradigm since the study seek to examine the nexus between financial development, FBP, inclusive growth and FDI in Africa. The positivist paradigm seeks to understand observations by interpreting them in terms of objectives facts or entities that can be measured (Fadhel, 2002). Using this paradigm necessitates the use of deductive reasoning, which includes the formulation of hypotheses, rigorous testing of those hypotheses, the provision of operational definitions and mathematical equations, calculations, extrapolations, and expressions, in order to arrive at conclusive results (Khaldi, 2017; Kivunja & Kuyini, 2017). Although this paradigm may not appropriately address the social phenomenon owing to the existence of complex relationships between individuals, their institutions and society (Laudan, 1996), the study used it because it explores cause- and-effect relationships within the natural world (Kivunja & Kuyini, 2017).

The study utilised the quantitative research approach to examine the nexus between financial development, FBP, inclusive growth and FDI in Africa. This methodology entails the collection and analysis of numerical data, enabling the identification of patterns and averages, which makes predictions, testing causal relationships, and generalizing findings to a broader population (Hamida Bibi et al., 2022; Khaldi, 2017). This approach may have limitations in capturing additional important observations such as emotions and moods, and it may overlook the historical and cultural factors that can impact data collection and results (Saunders et al., 2009). Nonetheless, this approach holds significance as it facilitates study replication, allowing for the possibility of reproducing similar studies in different cultural settings, time periods, or with diverse groups or participants (Hamida Bibi et al., 2022). The study utilizes this approach as it

enables the researcher to gather data from a wide range of countries in Africa for inferential purposes.

The study adopts quantitative research design specifically non-experimental research design. The non-experimental research design has other forms of design but because of the purpose of the study, correlational research design is utilised. Correlational research design is concerned with establishing possible relationship between variables without the researcher controlling or manipulating any of them (Khaldi, 2017). Given that the study aims to investigate the correlation FBP, financial development, inclusive growth and FDI, a correlational design is deemed the most suitable methodology. The study directly utilize the variables without manipulating them. For instance, the collected data pertaining to the study's variables was used in its original form, without incorporating any personal experiences during the analysis of the results.

3.3 Data and Method

3.3.1 Data

The study used annual data for 28 African countries[5] spanning 19 years from 2000 to 2018 for objective 1-3 and 49 African countries[6] spanning 1997 to 2020 for objective 4 due to the availability of data. The decision to include 28 and 49 African countries in the study was based on data availability concerning the main variables of interest such as FBP, financial development, FDI, and inclusive growth, in these countries. This selection was also made to ensure the reliability and accuracy of the study's analysis by focusing on countries where sufficient data was accessible. The chosen time frame holds significant importance as it aligns with critical global financial crises. Additionally, this timeframe is particularly relevant due to the increased global attention towards addressing the issue of financial inclusion and financial development as a whole during this period (Siddik & Kabiraj, 2020). Moreover, it covers a period

[5] The 28 countries include Algeria, Angola, Burkina Faso, Cameroon, Egypt, Gabon, Ghana, Kenya, Libya, Mali, Malawi, Mauritius, Mauritania, Mozambique, Morocco, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Tunisia, Togo, Uganda and Zambia

[6] The 49 countries will include Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo D.R, Congo, Cote d'Ivoire, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Tunisia, Uganda and Zambia

when Africa made substantial efforts to enhance financial development, foster inclusive growth, and attract more FDI and FBP inflows (Amatus & Alireza, 2015; Gyamfi et al., 2022; Léon, 2016; Ofori & Asongu, 2021).

The data was sourced from the International Monetary Fund (IMF), the World Bank database [Global Financial Development Database (GFD), World Governance Indicators (WGI), World Development Indicators (WDI)], Human Development Index Report (HDRO), Konjunkturforschungsstelle (KOF) and Bank Scope (BS). The summary of data description is presented in Table 3.1 and discussed below.

1. Inclusive finance

In the objective one, inclusive finance was the explained variable as shown in Table 3.1. The current study employed the inclusive finance index instead of only a single measure of inclusive finance. This is because inclusive finance has at least two major components: demand-side variables (utilization) and supply-side components (access) (Chakrabarty, 2012; Shah & Dubhashi, 2015). Thus, it is recommended that the measurement of inclusive finance encompasses the multi-faceted nature of inclusive finance. The present study aligns with the research by Anarfo et al. (2020), which found that employing an inclusive finance index produced more robust results than using a single indicator, especially in the context of Africa. As shown in Table 3.1, the study used six variables: depositors with commercial banks per 1000 adults, commercial bank branches per 100,000 adults, borrowers from commercial banks per 1000 adults, ATMs per 100,000 adults, bank branches per 100,000 adults, and bank accounts per 1000 adults. The study used these variables because they measure both the demand and supply components of inclusive finance. Thereafter, the study used six different indicators of inclusive finance as proxies for inclusive finance. With the help of PCA, the inclusive finance index was successfully generated and specified as follows:

$$FII_J = K_{J1}L_1 + K_{J2}L_2 + K_{J3}L_3 + \cdots + K_{Jp}L_p \qquad (1.1)$$

Where FII_J = financial inclusion index; P incorporates the variables used to generate the index; K = parameter weight; L is the initial value of each component.

Table 3.1: Summary of Variables

Variable	Measure	Source
Dependent variables		
Inclusive finance	1. Inclusive finance index (i.e., PCA output from six inclusive finance variables)	Author
	2. Individual variables; depositors with commercial banks per 1000 adults, commercial bank branches per 100,000 adults, borrowers from commercial banks per 1000 adults, ATMs per 100,000 adults, bank branches per 100,000 adults and bank account per 1000 adults.	IMF
Financial development	1. Svirydzenka (2016)'s MFD 6. Financial institution index	IMF
	2. Financial market access index	
	3. Financial market efficiency index	
	4. Financial market index	
	5. Domestic private credit (%GDP)	WDI
Inclusive growth	Inclusive growth index (PCA output from 9 variables). These variables include; access to drinking water source, access to sanitation facility, access to electricity, employment to population ratio, HDI (which captures education, health and income equality), government effectiveness, mobile phone subscribers, control of corruption, and voice and accountability.	Author HDRO WDI WGI
Foreign direct investment	FDI, net inflow (% GDP)	WDI
Variables of interest		
Fintech	1. Mobile phone used to pay bills (% age 15+)	GFD
	2. Mobile phone used to send money (% age 15+)	
Foreign bank presence (FBP)	Foreign bank asset as a percentage of total bank asset	BS
Financial development	1.Svirydzenka (2016)'s MFD	IMF
	2. Financial institutions index	
	3. Financial market index	
Moderation variables		
Institutional quality	Institutional quality index (i.e., Average of all the six institutional quality variables)	Author
FBP	Foreign bank asset as percentage of total bank asset	BS
Financial development	Svirydzenka (2016)'s MFD	IMF
Globalisation	1. Globalisation index (i.e., the weighted average of economic, social and political globalisation).	KOF
	2. Individual variables; economic, social and political globalisation	

Table 3.1: Summary of Variables (Continuation)

Variable	Measure	Source
Interaction terms		
Interaction variable$_1$ ($Fintech_{it} \times FBP_{it}$)	The interaction between Fintech and foreign bank presence	Author
Interaction variable$_2$ ($fbp_{it} \times insq_{it}$)	The interaction between foreign bank presence and institutional quality	Author
Interaction variable$_3$ ($FBP_{it} \times MFD_{it}$)	The interaction between foreign bank presence and financial development index	Author
Interaction variable$_4$ ($MFD_{it} \times Glo_{it}$)	The interaction between financial development index and globalisation	Author
Control variables		
Bank concentration	Bank concentration (%)	GFD
Education	Secondary school enrolment	GFD
Institutional quality	An average of the six institutional quality variables	WGI
Lending-deposit spread	Bank lending and deposit spread	GFD
Bank stability	Bank Z-score	GFD
Population growth	Population growth (% annual)	WDI
Bank competition	Bonne indicator	GFD
Inflation	Inflation, consumer price (% annual)	WDI
Income equality	real GDP per capital (% annual).	WDI
Trade openness	Net Trade (% GDP)	WDI
Exchange rate	Real effective exchange rate index	WDI
Government expenditure	General government final consumption expenditure (% GDP)	WDI
Labor Force	Labor force participation rates total (15+)	WDI
Domestic capital	Gross capital formation (percent of GDP)	WDI
Economic growth	GDP growth (% annual)	WDI
Infrastructure	Mobile phone and telephone subscribers per 100 people	WDI

Notes*: IMF=International Monetary Fund; BS = Bank scope; WGI = World Governance Indicator; WDI= World Development Indicator; GFD = Global Financial Database; HDRO is Human Development Report Office; KOF denotes Konjunkturforschungsstelle.*

Source: Author's Creation based on Research Data, 2023

To ensure the success of this index, the study showed the diagnostic text of PCA, such as the Kaiser-Meyer-Oikin (KMO) measure of sampling adequacy and Bartlett's Test, which are reported in the next section (i.e., chapter 4).

2. Financial Development

The study used financial development as the dependent variable for objective two (2). To measure financial development, the study used two proxies: MFD and private credit as shown in Table 3.1. The study utilized the MFD by Svirydzenka (2016) to measure financial development due to the limitations of using a single indicator as a measure for financial development, given the evolving nature of financial markets. The dataset contains nine indices that summarize how developed financial institutions and financial markets are in terms of their depth, access, and efficiency. The study then used 3 component of MFD including financial market access index, financial market efficiency index and financial market index to see which component is largely affected by FBP. The measurement of MFD ranges from 0-1, where 0 means less development financial sector and 1 implies developed financial sector. In the case of private credit, it ranges from 1-100. While MFD was sourced from IMF, private credit was sourced from WDI. The financial development wasn't only used as the dependent variable for objective 2 but was also a moderating variable for objective 3 and the variable of interest for objective 4 as shown in Table 3.1.

The study employed financial development (proxied with MFD) as the moderating for objective 3 because some literature (see, El Menyari, 2019; Kebede et al., 2021b; Nanivazo et al., 2021; Yin, 2021) argues that the efficiency of foreign banks in host countries is dependent on the level of financial development. According to the literature, a country with inadequate financial development may face challenges in efficiently allocating financial resources from foreign banks, potentially impeding economic growth and development (Lensink et al., 2008; Ofori-Sasu et al., 2019). Conversely, the eclectic theory also posits that a high level of growth and a well-developed financial system can act as magnets, drawing in an adequate number of foreign banks (Cantwell & Narula, 2001). Therefore, the current study tested empirically if financial development can form synergy with FBP to further attain inclusiveness in Africa.

Moreover, in Objective 4, the study used financial development as the primary variable of interest. This choice was motivated by the understanding that countries with well-

developed financial systems tend to attract foreign investors (Islam et al., 2020). In Africa, various efforts are being made to foster financial development. For example, during the lockdown periods, financial institutions played a crucial role in supporting governments' social protection efforts in Africa. Their ability to allocate resources efficiently and stimulate economic growth became even more apparent as they assisted vulnerable households, facilitated online transactions, and provided aid to the extensive informal sector (Sam Quarm et al., 2020; Ofori et al., 2022b). In objective 4, financial development was measured with the MFD and later used the two main components of MFD – financial market index (FMI) and financial institutions index (FII) to see which components can promote the inflow of FDI. While FII measures depth, access and efficiency of the financial institutions, FMI captures financial market's depth, access and efficiency (Svirydzenka, 2016).

3. Inclusive Growth

Policy makers are deeply concerned about achieving growth that goes beyond mere income levels, with a focus on addressing poverty alleviation, equality, gender equality, and access to basic social needs. This comprehensive form of growth is commonly referred to as inclusive growth, as defined in chapter one. To measure this concept, the study employed various variables and constructed an index that encompasses income level, poverty alleviation, equality, gender equality, quality institutions, infrastructure and access to basic needs, as detailed in Table 3.1. These variables include proportion of population using improved drinking water source, proportion of population using improved sanitation facility, percentage of population using electricity, employment to population ratio, HDI (which captures education, health and income equality), mobile phone subscribers, government effectiveness estimate, control of corruption estimate, and voice and accountability estimate. The normalises the inclusive growth index on a scale of 0-1.

The selection of these variables were strongly influenced by the UN HDRO, the ADB inclusive growth framework, and Africa's inclusive growth strategy outlined in Agenda 2063, known as "The Africa We Want." In recent times, Africa has recognized the importance of achieving inclusive growth in order to fulfil the SDGs and Agenda 2063 (Gyamfi et al., 2022; Ofori et al., 2022b). However, there are limited empirical evidence on the specific means to achieve this. Consequently, the present study aims to

investigate which factors, with a particular focus on the FBP, contribute significantly to the promotion of inclusive growth in Africa. In Objective 3, inclusive growth was employed as the dependent variable. The study employed PCA to construct the inclusive growth index, following a similar approach used for the inclusive finance index. Among the eight individual variables considered, the HDI was obtained from the HDRO. The three institution-related variables (control of corruption, voice and accountability and government effectiveness) were sourced from the WGI. The remaining four variables were acquired from the WDI.

4. Foreign Direct Investment

FDI inflows (% GDP) are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor (World Bank, 2023). It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments (World Bank, 2023). FDI is quantified on a scale ranging from 0% to 100%. In Objective 4, the study considered FDI as the dependent variable due to Africa's ongoing pursuit of diverse strategies to attract greater FDI inflows. Despite the existence of various policies aimed at attracting FDI, the effectiveness of such efforts has been hindered by the current pandemic. Consequently, the study explores the potential of financial development and globalisation, an aspect that has received limited attention in the existing literature, to attract more FDI in Africa. As shown in Table 3.1, the study collected the data on FDI from WDI.

5. Fintech

Fintech, as gauged by mobile phone financial transactions, encompasses the use of mobile devices to initiate, validate, and authorize commercial activities for purchasing products and services (Karnouskos, 2004). Unlike previous studies that relied solely on mobile phones as a proxy for Fintech (Ghosh, 2016; Gosavi, 2018; Jack & Suri, 2011; Mbiti & Weil, 2011; Tchamyou et al., 2019) or focused solely on the payment aspect of Fintech (Demir et al., 2022), this study adopts two distinct measures to comprehensively capture the multifaceted aspects of Fintech. These include; mobile phones used to pay bills (% age 15+) and mobile phones used to send money (% age 15+), both sourced from GFD. Fintech is quantified on a scale ranging from 0% to 100%. Mobile phones used to pay bills (% age 15+) denotes the percentage of respondents who report personally using their phone to pay bills, while mobile phones

used to send money (% age 15+) represents persons who claimed they used their phone to send money. The study used these variables because they describe how digital applications are used to provide financial services. These variables represent mobile accounts that can be used through the Global System for Mobile communication (GSM) association for the unbanked.

6. Foreign Bank Presence

The study proxy FBP with the share of foreign bank assets relative to universal banks' total assets (see Table 3.1). Through the aggregation of bank-level data sourced from Bureau van Dijk's BankScope data by year and country, the study generates comprehensive country-level bank data. This FBP was produced by computing the percentage of assets held by foreign banks relative to total assets of universal banks. A bank is defined as "foreign" if foreigners, firms (including banks), and international organizations own more than 50% of its total assets (Wu et al., 2010; El Menyari, 2019). It is important to note that the study limits the dataset to commercial banks to reduce the bias caused by different business characteristics of various banks with different objectives and lines of business. The study used this variable as proposed in the literature (see Kebede et al., 2021b; Wu et al., 2010; El Menyari, 2019; Nanivazo et al., 2021). While it would have been ideal to categorize foreign banks into Western major conventional banks, Islamic banks, and Chinese banks, there was limited data availability and the specific significance of various banks in each country. It's crucial to understand that a lower value of FBP signifies a higher presence of domestic banks, whereas as FBP approaches 1, the prevalence of foreign banks becomes more pronounced.

While conducting this study, the researcher utilized FBP in different capacities across the study's objectives. In objective one, FBP was employed as a moderating variable. This choice stemmed from the observation that foreign banks tend to incorporate Fintech into their banking services more extensively compared to domestic banks. Moving to objective two, FBP took on the role of the primary variable of interest. This decision was motivated by the fact that foreign banks bring modern banking technology, which can contribute to the development of the financial sector. Thus, the study's objective was to assess the impact of FBP on financial development within the context of this study. Finally, just like objective one, FBP was used as the main variable in objective three. This choice was driven by the distinct characteristics exhibited by

foreign banks, which have the potential to foster inclusive growth. Through providing financial assistance, foreign banks can play a role in promoting economic growth and reducing poverty.

7. Globalisation

Globalisation was used in objective 4 as first; the variable of interest because it provides increased access to cheap labour markets in developing countries, making it more appealing for firms to invest in these markets, thereby contributing to the growth of export-oriented industries and increased FDI. It was also used as the moderating variable because by facilitating the flow of capital across borders, globalisation provides opportunities for financial institutions to access funds from various sources, enabling them to offer financing to businesses, including FDI (Kaminsky, 2005). Furthermore, globalisation promotes technology transfer, which can assist financial institutions in improving their operations and services, resulting in increased financial inclusion and access to international markets, enabling them to diversify their portfolios and reduce risk at a lower cost for businesses (World Bank, 2020; Demirguc-Kunt, 2008). Globalisation is quantified on a scale ranging from 0% to 100%.

It is worth noting that, in contrast some research, the study utilize a more contemporary and enhanced measure of globalisation known as globalisation index which was sourced from KOF. Globalisation index is calculated as a weighted average of economic globalisation (36%), social globalisation (38%), and political globalisation (26%), making it a far more informative metric than alternative indicators such as the proportion of imports or exports to GDP or trade openness (Dreher et al., 2008). This variable was sourced from KOF. The KOF globalisation index includes de facto and de jure classifications. De facto indicators measure actual international flows, while de jure indicators evaluate policies supporting such flows. The focus of the study is on the main globalisation indices without separating them into de facto and de jure components, as each variable encompasses both aspects. It is imperative to point out that the study disaggregate globalisation index into social, economic and political globalisation to contribute to the policy discourse on the extent to which these individual variables impact the inflow of FDI. Economic globalisation refers to the level of economic interconnection and integration between nations, encompassing factors like cross-border trade, FDI, and capital movement. It gauges the extent to which economic activities such as production, consumption, and investment have achieved

global integration (Dreher, 2006; Dreher et al., 2008). Social globalisation measures the extent to which social elements, such as information exchange, cultural integration, and the flow of human capital, have become globally interconnected and integrated. Political globalisation assesses the level of political interdependence and integration among countries, including aspects like membership in international organizations, participation in UN peacekeeping missions, and the presence of embassies and high commissions (Dreher, 2006).

8. Interaction terms

In this study, four key interaction terms were included to examine the relationships between different variables. These interaction terms were as follows: the interaction between Fintech and FBP ($Fintech_{it} \times FBP_{it}$); the interaction between FBP and institutional quality ($fbp_{it} \times insq_{it}$); the interaction between FBP and financial development index ($FBP_{it} \times MFD_{it}$); the interaction between financial development index and globalisation ($MFD_{it} \times Glo_{it}$). These interaction terms were utilized to explore the moderating roles of variables such as FBP, institutional quality, financial development, and globalisation, and to determine the net effects of the variables of interest, namely Fintech, FBP, and financial development. Importantly, each interaction term corresponded to a specific objective within the study. For instance, the interaction term ($Fintech_{it} \times FBP_{it}$) was associated with objective one, ($fbp_{it} \times insq_{it}$) was linked to objective two, ($FBP_{it} \times MFD_{it}$) pertained to objective three, and ($MFD_{it} \times Glo_{it}$) was aligned with objective four. These interaction terms were computed by author.

9. Bank Concentration

The study employed bank concentration (%) as a measure of bank concentration (Didier & Schmukler, 2013). Bank concentration is viewed as the share of assets held by a country's three largest commercial banks as a ratio of total commercial banking assets. Total assets include total earnings assets, cash and due from banks, foreclosed real estate, fixed assets, goodwill, other intangible assets, current tax assets, deferred tax assets, discontinued operations, and other assets. The study use bank concentration as a control variable for objective 1 because concentrated banking markets often possess economies of scale and scope, enabling larger banks to provide a broader range of financial products and services at lower costs. This efficiency can lead to enhanced

accessibility and affordability of financial services, thereby promoting financial inclusion for individuals and businesses that may have been previously underserved. This variable is collected from GFD as shown in Table 3.1.

10. Education

Education was measured with secondary school enrolment rate (% gross) and was sourced from WDI as presented in Table 3.1. The secondary school enrolment rate (% gross) measures the proportion of the total population of the corresponding age group that is enrolled in secondary school. Secondary education aims to provide more subject-specific and skill-oriented instruction using specialized teachers, building on the foundation provided by primary education, and laying the groundwork for lifelong learning and human development. In objective 1, education was controlled since education serves as a fundamental catalyst that empowers individuals, enhances their financial capabilities, and promotes their active engagement in the financial system, thereby contributing to financial inclusion efforts (Allen et al., 2016; Fungáčová & Weill, 2015; Zins & Weill, 2016).

11. Institutional Quality

Institutional quality refers to the strength, effectiveness, and integrity of a country's institutions, encompassing legal, regulatory, governance, and political frameworks (Rojas-Suarez, 2016). In this study, the researchers utilized an index to represent institutional quality. To construct this index, the study took an average of the six distinct indices of institutional quality, thereby creating a composite institutional quality index (Nawaz et al., 2014). These six indices which were sourced from WGI encompass the following: control of corruption, rule of law, government effectiveness, regulatory quality, political stability and absence of violence, and voice and accountability. The study employed estimates for institutional quality variables, which are measured on a scale ranging from -2.5 to 2.5.

This study integrated institutional quality in various aspects of its analysis. Objective 1, 3, and 4 considered institutional quality as a control variable, drawing from existing literature (Dabla-Noris et al., 2015; Rojas-Suarez, 2016). These objectives sought to explore different aspects related to the study's main focus, and institutional quality was considered as a control variable to account for its potential influence on the outcomes. However, in objective 2, institutional quality took on a different role. It was utilized as

the moderating variable since FBP can enhance the financial systems of countries with strong institutions and better governance (Boamah et al., 2022; Clarke et al., 2003, 2006). The aim of this particular objective was to examine the interaction between FBP and institutional quality, specifically exploring how institutional quality influences the relationship between FBP and financial development.

12. Banking spread

The study used lending-deposit spread as a measure of bank spread, which is sourced from GFD and displayed in Table 3.1. Lending-deposit spread is used to capture the variation between the interest rate on lending and the interest rate on deposits (Anarfo et al., 2020; Kebede et al., 2021b). The variable in question was exclusively employed as a control variable in objective 1, driven by the belief that a high spread could potentially hinder efficient access to financial resources (Anarfo et al., 2020; Kebede et al., 2021b).

13. Banking Stability

The study utilized the z-score as a measure of bank stability in this study and was sourced from GFD. The z-score serves as an indicator of the probability of a country's commercial banking system experiencing a default. Specifically, it assesses the buffer, consisting of capitalization and return, of the commercial banking system in relation to the volatility of returns. It is estimated as;

$$Z - score = \frac{\left[Return\ \ of\ Asset_{it} + \left(\frac{equity}{asset}\right)_{it}\right]}{Standard\ deviation\ of\ Return\ \ of\ Asset_{it}} \qquad (3.2)$$

This computation is for country's bank with more than 5 bank-level observations. The variable was controlled in objective 1 on the notion that a higher z-score and a more stable banking system can contribute to inclusive finance by fostering confidence, improving access to banking services, reducing systemic risks, enabling a favourable regulatory environment, and attracting investments in Fintech and innovative solutions (Anarfo et al., 2020). These factors collectively enhance the opportunities for individuals and businesses to participate in the formal financial system, promoting greater financial inclusion (Anarfo et al., 2020; Kebede et al., 2021b).

14. Population Growth

The study used population growth rate (% annual) as a proxy for population changes, as presented in Table 3.1. Population growth (% annual) at time t is the exponential rate of growth of mid-year population from year t_1 **to t**, expressed as a percentage. The population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship (World Bank, 2023). Population was used in 2 objectives (i.e., objective 1 and 3). Objective 1 of the study involved considering population growth, drawing from existing literature that suggests a negative relationship between inclusive finance and population growth. This literature indicates that as population growth increases, the level of inclusive finance tends to decrease. Moving on to objective 3, the study recognized population growth as a factor that can influence a country's economic development (Furuoka & Munir, 2011; Tournemaine, 2007; Zgheib et al., 2006). Given the rapid population growth in Africa, the study aimed to investigate the influence of this demographic trend on economic development and its broader implications for the continent's overall economic progress. Through analysing the impact of population growth on economic development, the study seeks to gain insights into the specific role it plays in shaping Africa's economic trajectory.

15. Bank Competition

To proxy competition, the Boone indicator was used, which is calculated based on profitability and marginal cost flexibility (Schaeck & Čihák, 2010). The Boone indicator is a measure of the degree of competition in the banking market based on profitability. This variable was applied across objective 1-3 to analyse its impact. In objective 1 and 2, an upward movement in the Boone index indicated a decrease in the competitiveness of financial intermediaries. The inclusion of this indicator aimed to assess the declining competitiveness of these intermediaries. In objective 3, the focus shifted to the relationship between higher profits generated by more efficient banks and their potential to promote inclusive growth. The purpose of including this indicator was to investigate how the increased profitability of efficient banks could contribute to inclusive growth (Wu et al., 2010; El Menyari, 2019).

16. Inflation

The inflation, consumer price (% annual) served as a proxy for inflation in this study, capturing the macroeconomic stability of the respective countries and was collected form the WDI. This variable was utilized in objective 2-4 as control variable to examine

its effects and implications. In objective 2, the study anticipated a negative impact of inflation on financial development (Huybens & Smith, 1999). This is because, as inflation increases, the real return on money and capital diminishes, which creates conflicts in the credit market and leads to reduced lending. This decline in lending hampers the efficiency of the financial sector in allocating resources and diminishes intermediary activity, ultimately negatively affecting investment.

In objective 3, considering the current rise in inflation in Africa, the study incorporated this variable to evaluate the potential impact of macroeconomic instability on inclusive growth. Lastly, in objective 4, the inclusion of inflation aimed to evaluate the macroeconomic stability of host countries in Africa and its potential impact on attracting more FDI (Sghaier & Abida, 2013; Nkoa, 2018). The study examined how macroeconomic (in)stability, as reflected by inflation levels, could influence FDI inflows.

17. Income Equality

Table 3.1 illustrates the application of GDP per capita as a determinant of financial development, seeking to gauge a country's income level based on the annual percentage growth of real GDP per capita. GDP per capita is a measure that calculates a country's economic output per individual by dividing its GDP by its population. The study include income equality as a control variable because it could potentially influence a bank's evaluation of firms' investment prospects and perception of the country's economic environment (Clarke et al., 2006). The data was sourced from WDI. The study expects a positive effect of income equality on financial development because an increase in the income level of a country leads to an increase in investment.

18. Trade Openness

Trade openness, represented by the ratio of export and import vectors to GDP (commonly known as net trade), was a crucial factor considered in this study across three objectives (i.e., objective 2-4). To enhance the level of industrialization, Africa has implemented several policies, including the NEPAD and AfCFTA, which aim at attracting foreign investors (Opoku & Boachie, 2020). So it is laudable to know if trade openness can enhance financial development and FDI. As shown in Table 3.1, the data on net trade is sourced from WDI. In objective 2, the study utilized trade openness as a measure of a country's degree of openness and its impact on financial development. By

embracing international trade, a nation opens itself up to increased competition, exposure to new innovations and technology, and access to new expertise. These factors collectively contribute to the enhancement of the domestic financial market and institutions. Furthermore, it is important to recognize that the financial development of a country is endogenous, meaning it is influenced by trade activities (Do & Levchenko, 2004). In other words, trade plays a significant role in shaping a country's financial growth and development. Additionally, it is worth mentioning that in objective 3, the utilization of net trade as a metric was driven by existing literature suggesting that, as a country embraces openness, the threshold for achieving inclusive growth becomes notably higher (see, Gyamfi et al., 2022; Ofori & Asongu, 2022). The study integrated trade openness into its FDI model (i.e., objective 4) due to its significant role in facilitating FDI inflows into a country. This indicates that countries that are more open to international trade are more likely to attract FDI.

19. Exchange Rate

In objective 2, the study employed the real exchange rate as a control variable, considering its well-documented impact on investment and subsequent effects on the growth and development of financial systems (Gopalan, 2018). Given the volatility of exchange rates in Africa (Alagidede & Ibrahim, 2017), it is anticipated that fluctuations in the exchange rate will have a negative effect on financial development. Data on exchange rate was collected from WDI.

20. Government Expenditure

The percentage of general government final consumption expenditure is adopted as a proxy for government expenditure in the study. This choice is motivated by the understanding that government investments in crucial areas such as education, health, and infrastructure can lead to an enhanced quality of life and increased life expectancy, both of which play vital roles in the overall development process (Razmi & Bazazan, 2012; Haque & Khan, 2019). In objective 3, the variable served as a control variable exclusively. The data on government expenditure is collected from WDI (see Table 3.1).

21. Labour Force

The labour force, encompassing both employed and unemployed individuals actively seeking work, exerts various influences on achieving inclusive growth. Notably, by creating employment opportunities and offering higher wages, the labour force plays a pivotal role in uplifting individuals and families from poverty, thereby contributing significantly to poverty alleviation. Moreover, when a substantial portion of the population is involved in productive economic endeavours and gains from economic growth, it fosters social cohesion, leading to a reduction in social tensions. In objective 3, the labour force was utilized as a controlled variable, recognizing its importance in shaping inclusive growth outcomes. Labour force participation rate (15+) is the proxy for labour force and was sourced from WDI as presented in Table 3.1.

22. Domestic Capital

The domestic capital or investment is measured by gross fixed capital formation as a percentage of GDP and the data was collected from WDI as shown in Table 3.1. Private investment covers gross outlays by the private sector (including private nonprofit agencies) in additions to its fixed domestic assets. This control variable was used in objective 3 and 4 only. The choice of this variable in objective 3 is as a result of its direct effect on standard of living of citizens which is a component of the inclusive growth (Zaghdoudi, 2018; Mustafa, Rizov, & Kernohan, 2017). In objective 4, the study incorporated domestic capital into the model to examine its role in attracting FDI into Africa. This decision was driven by the recognition of a complementary relationship between domestic investment (gross capital formation) and FDI (Nkoa, 2018; Sghaier & Abida, 2013).

23. Economic growth

As shown in Table 3.1, the study proxy economic growth with GDP growth (% annual). This control variable is only applicable to objective 4 and was source from WDI. According to the eclectic theory, MNCs may relocate to other countries in pursuit of various advantages, such as the level of economic growth. Africa is a continent that has witnessed substantial growth, with the World Bank (2020) reporting an average growth rate of at least 5% in SSA over the past two decades, exceeding the global average of 3%. As such, the study tests empirically if this growth can attract more FDI.

24. Infrastructure

The study controlled infrastructure which is proxied in objective 3 with fixed telephone subscribers (per 100 people) and objective 4 with mobile subscribers (per 100 people). In objective 3, the study employed infrastructure since it reflects the level of ICT infrastructure in a country. This variable was chosen because a better ICT infrastructure can reduce exchange costs and increase yields for firms across various sectors of the economy (Röller & Waverman, 2001). Additionally, Sridhar and Sridhar (2007) stated that the development of ICT infrastructure and related services can yield significant benefits for the economy. In the last objective, infrastructure was controlled because it serves as the backbone of a business, providing the necessary physical and social framework for efficient and effective operations. The availability and quality of infrastructure can significantly impact the location choices of MNCs, as it affects various aspects such as the cost of doing business, productivity, and competitiveness (Ang, 2008; Walsh & Yu, 2010).

3.3.2 Empirical Model

As the study pursued distinct objectives, each with its own model, the empirical model was disaggregated into four distinct sub-sections. This approach allowed for a focused analysis tailored to the specific aims of each objective, ensuring a comprehensive examination of the research questions while maintaining clarity and coherence in the investigation.

Fintech, FBP and Inclusive Finance

The objective is underpinned by financial liberalisation hypothesis which seek to identify some factors that promotes the access of financial resources. Also, cream skimming model provides a background that foreign banks neglect SMEs when providing credit. To determine the effect of Fintech on inclusive finance, the study specified the following model based on literature (Anarfo et al., 2020; Beck & Martinez Peria, 2008, 2010; Kebede et al., 2021b).

$$IF_{it} = \beta_0 + \beta_1 FT_{it} + \beta_2 BS_{it} + \beta_3 COM_{it} + \beta_4 BC_{it} + \beta_5 IQ_{it} + \beta_6 Edu_{it} + \beta_7 PG_{it} + \beta_8 STAB_{it} + e_{it} \quad (3.3)$$

Where IF is inclusive finance, FT is Fintech, BS is lending-deposit spread, COM is competition, BC is concentration, IQ is institutional quality, PG is population growth, STAB is bank stability and Edu is education.

Since most foreign banks use digital applications to provide services, the study empirically test whether foreign banks are important in the relationship between Fintech and inclusive finance. Therefore, the study specify the model by including FBP and the interactive term of Fintech and FBP in equation (3.4), as shown below.

$$IF_{it} = \emptyset_0 + \emptyset_1 FT_{it} + \emptyset_2 BS_{it} + \emptyset_3 COM_{it} + \emptyset_4 BC_{it} + \emptyset_5 IQ_{it} + \emptyset_6 Edu_{it} + \emptyset_7 PG_{it} + \emptyset_8 STAB_{it} + \emptyset_9 FBP_{it} + \emptyset_{10}(FI_{it} \times FBP_{it}) + e_{it} \quad (3.4)$$

Where FBP is foreign bank presence and the rest of the variables are defined above. The study took partial differential of equation (3.4) with respect to Fintech to obtain the net effect of Fintech on inclusive finance as shown in equation (3.5)

$$\frac{\partial IF_{it}}{\partial FT_{it}} = \emptyset_1 + \emptyset_{10}\,\widetilde{FBP_{it}} \quad (3.5)$$

Where $\widetilde{FBP_{it}}$ = the mean value of foreign bank presence; ∂ is difference operator, the rest of the variables have been explained.

FBP, Institutional Quality and Financial Development

The study investigated how financial development is impacted by FBP and institutional quality. The study also determined the moderating role of institutional quality on the nexus between FBP and financial development. This was motivated by internalization theory and eclectic theory, which showed that multinational banks may cross borders if they identify that domestic banks are unable to exploit some part of the sector's profits. For this reason, foreign banks enter the economy. The increase in the number of banks enhances competition for customers and profits, leading to the financial sector's development in the economy. The study was also motivated by the neo-institutional theory which state that quality institutions could help FBP to further enhance financial development. To achieve this objective, the study specified the empirical model, taking cues from the following empirical studies (Arestis & Demetriades, 1997; Boyd et al., 2001; Demetriades & Andrianova, 2004; Rousseau & Wachtel, 2002).

$$FD_{it} = \alpha_0 + \alpha_1 FD_{it-1} + \alpha_2 FBP_{it} + \alpha_3 InsQ_{it} + \alpha_4 COM_{it} + \alpha_5 TO_{it} + \alpha_6 RE_{it} + \alpha_7 GDPPC_{it} + \alpha_8 CPI_{it} + e_{it} \quad (3.6)$$

$$FD_{it} = \emptyset_0 + \emptyset_1 FD_{it-1} + \emptyset_2 FBP_{it} + \emptyset_3 InsQ_{it} + \emptyset_4 (FBP_{it} \times InsQ_{it}) + \emptyset_5 COM_{it} + \emptyset_6 TO_{it} + \emptyset_7 RE_{it} + \emptyset_8 GDPPC_{it} + \emptyset_9 CPI_{it} + \varepsilon_{it} \quad (3.7)$$

Equations (3.6) and (3.7) capture the effects of both FBP and institutional quality on financial development and the moderating role of institutional quality on the FBP-financial development nexus, respectively. In both equation (3.6) and (3.7), the dependent variable is *FD*, which represents financial development. FBP is foreign bank presence, COM is competition among banks, CPI is Inflation, TO is trade openness, RE is real exchange rate, InsQ denotes institutional quality and GDPPC is the income equality. The parameters estimated are α_{0-8} and $\emptyset_{0-9}$ whereas "i" is the individual countries and "t' is each year used for the study. ($FBP_{it} \times InsQ_{it}$) is the interaction term of foreign bank presence and institutional quality. Following Wooldridge (2015), the study tests the significance of the interaction term by partially differentiating equation (3.7) with respect to *FBP*, as shown in equation (3.8), to obtain the net effect of foreign bank presence on financial development in Africa.

$$\frac{\partial FD_{it}}{\partial FBE_{it}} = \emptyset_2 + \emptyset_4 (\overline{InsQ_{it}}) \quad (3.8)$$

Where ($\overline{InsQ_{it}}$) represent the mean of institutional quality

FBP, Financial Development and Inclusive Growth

This study is influenced by the endogenous growth and internationalisation theory. Also, following Wu *et al*. (2010) and El Menyari (2019) that assessed the link between FBP and growth, Gyamfi *et al*. (2022) and Ofori and Asongu (2021), Ofori *et al*. (2022b) that focused on inclusive growth in the same context, the study's empirical model is specified as:

$$IGI_{it} = \vartheta_1 IGI_{it-1} + \vartheta_2 FBP_{it} + \vartheta_3 INSQ_{it} + \vartheta_4 COMP_{it} + \vartheta_5 POP_{it} + \vartheta_6 CPI_{it} + \vartheta_7 TO_{it} + \vartheta_8 TS_{it} + \vartheta_9 GCF_{it} + \vartheta_{10} LF_{it} + \vartheta_{11} GE_{it} + \varepsilon_{it} \quad (3.9)$$

$$IGI_{it} = \beta_0 IGI_{it-1} + \beta_1 FBP_{it} + \beta_2 FD_{it} + \beta_3 (FBP_{it} \times FD_{it}) + \beta_4 INSQ_{it} + \beta_5 COMP_{it} + \beta_6 POP_{it} + \beta_7 CPI_{it} + \beta_8 TO_{it} + \beta_9 TS_{it} + \beta_{10} GCF_{it} + \beta_{11} LF_{it} + \beta_{12} GE_{it} + \varepsilon_{it} \quad (3.10)$$

.

While Equation (3.9) focuses on the relationship between FBP and inclusive growth, Equation (3.10) also captures the joint effect of FBP and financial sector development on inclusive growth. In both equations, IGI represents inclusive growth, and IGI_{it} is the lag of inclusive growth. FBP represents foreign bank presence, INSQ depicts institutional quality, bank concentration is represented by COMP, population growth (annual percentage) is captured by POP, CPI captures inflation, trade openness is depicted by TO, TS defines infrastructure, domestic capital is defined by GCF, LF represents labour force, and GE stands for government expenditure. The coefficients to be estimated are represented by ϑ_{1-11} and β_{0-12}, and the subscript "it" indicates the number of countries over time. FD represents financial development, and $(FBP_{it} \times FD_{it})$ is the interaction term of foreign bank presence and financial development. The net effect of FBP can be achieved with a partial differentiation of equation (3.10) which is specified as:

$$\frac{\partial IGI_{it}}{\partial FBP_{it}} = \beta_1 + \beta_3 \overline{\overline{FD}}_{it} \quad (3.11)$$

Where $\overline{\overline{FD}}_{it}$ is the mean of financial development.

Financial Development, Globalisation and FDI

The study is mostly based on Dunning theory and internalisation theory since they accommodate the study's important variables in its assumptions. This is because these theories showed how a country's potentials attract FDI inflows. Therefore, the study followed these theories and some empirical studies in the context of Africa or SSA (Dunning, 2009; Chirilă-Donciu, 2013; Agbloyor et al., 2013; Bojnec & Fertő, 2018; Nguyen & Lee, 2021; Islam et al., 2021) and specify our model as follows;

$$FDI_{it} = \alpha_0 + \alpha_1 FD_{it} + \alpha_2 TO_{it} + \alpha_3 GDP_{it} + \alpha_4 GCF_{it} + \alpha_5 TS_{it} + \alpha_6 CPI_{it} + \alpha_7 INSQ_{it} + e_{it} \quad (3.12)$$

$$FDI_{it} = \tau_0 + \tau_1 FD_{it} + \tau_2 TO_{it} + \tau_3 GDP_{it} + \tau_4 GCF_{it} + \tau_5 TS_{it} + \tau_6 CPI_{it} + \tau_7 INSQ_{it} + \tau_8 GLO_{it} + \tau_9 (FD \times GLO)_{it} + \varepsilon_{it} \quad (3.13)$$

Equation (3.12) shows how financial development influence the level of FDI in Africa. Equation (3.13) on the other hand focuses on the joint effect of financial development and globalisation on FDI in Africa. In both equation (3.12) and (3.13), FDI_{it} denotes FDI inflow to 49 African countries over time whereas *FD* denotes financial sector development. The control variables such as trade openness, economic growth, domestic capital, infrastructure, inflation and institutional quality are represented by *TO, GDP, GCF, TS, CPI* and *INSQ* respectively. α_{0-7} and τ_{0-9} are the parameters to be estimated. *GLO* and $(FD \times GLO)_{it}$ in equation (3.13) represent globalisation and the interaction term between financial development and globalisation respectively.

The study tests the significance of the interaction term by partially differentiating equation (3.13) with respect to financial development to obtain the net effect of financial development on FDI. The study specifies the partial differential as;

$$\frac{\partial FDI_{it}}{\partial FD_{it}} = \tau_1 + \tau_9 \overline{GLO}_{it} \quad (3.14)$$

Where $\overline{GLO}_{it}$ is the mean of globalisation for the Africa sample.

3.3.3 Estimation Techniques

To achieve the objectives, a variety of estimation techniques were utilized. These techniques include quantile regression, pooled OLS, GMM, and 2SLS. It is crucial to highlight that quantile regression, GMM, and 2SLS served as the primary estimation techniques, while the others were employed for robustness checks related to some specific objectives. The main estimation techniques were thoroughly explained and justified in the study. The following are the estimation techniques.

Quantile Regression

In objective 1, the study first estimated the model using quantile regression and later conducted robustness checks by re-estimated the initial models using panel OLS. The study utilized quantile regression methodology to estimate the impact of Fintech on the

selected quantiles of inclusive finance. Quantile regression methodology considers the relationship between variables outside of the mean of a dataset, making it valuable in understanding results that are non-normally distributed among variables under study (Lê Cook & Manning, 2013). Quantile regression was introduced by Koenker and Bassett Jr (1978) and later updated by Koenker and Hallock (2001). This method requires dividing a dependent variable into subsets according to the conditional distribution and estimating the joint regression that can be obtained from the subset of the dependent variable. Although separate regressions can be estimated, there is a tendency to produce discrepancies and biased results depending on the sample choice (Heckman, 1979). Another limitation of running separate quantiles is the assumption that it is least squares-based, hence it can be affected by Gaussian assumption or the presence of outliers (Gallant & Fuller, 1973; Ramsay, 1988).

The following are the situation in which quantile regression is appropriate to use (Montenegro, 2001):

i. When the error terms are not necessarily constant across a distribution which violate the assumption of homoscedasticity, then quantile regression is the best estimator to use.
ii. If an estimation focuses on the mean as a measure of location, then the information about the tails of distribution is lost. Hence, it will laudable to use quantile regression estimation technique when interested in other information of variable.
iii. Outliers in a data could provide inconsistent results if using estimation techniques other than quantile regression.

The study estimated the quantile regression as follows;

$$FI_{it} = \emptyset_{0\theta} + w_{k\theta}X_{it,k} + e_{it\theta} \quad (3.15)$$

$$Quant_{\theta}(FI_{it} \mid X_{it}) \equiv \inf[Y: F_{it}(FI/X)] = \emptyset_{0\theta} + w_{k\theta}X_{it,k} \quad (3.16)$$

Where:

$Quant_{\theta}(Y_{it} \mid X_{it}) = \theta th$ conditional quantile of FI_{it} on the various independent variables X_{it}

$w_{k\theta}$ = the coefficients to be estimated for the different quantile of inclusive finance (i.e., 25th 50th 75th and 90th).

$FI_{it}\ \left(\frac{FI}{X}\right)$ = conditional distribution function of inclusive finance

$e_{it\theta}$ = error term where $Quant_{\theta}(\ Y_{it} \mid X_{it}\ ) = 0$

The study used bootstrap method of quantile regression to estimate the parameters as proposed by the following studies (Buchinsky, 1995, 1998; Efron, 1981) 100 bootstrap replications are adopted because it computes robust parameters (Buchinsky 1995).

The study used pooled OLS as the robustness checks which yields the best linear unbiased estimated (BLUE). To overcome the issue of heteroskedasticity the study use the "*robust option*". This is because heteroskedasticity in OLS results is a serious problem that make results inconsistent, thus the need to correct it.

Generalized Method of Moment

The study used Generalised Method of Moments (GMM) for objective 2 and 3. GMM encompasses a group of estimators derived from the sample moment counterparts of population moment conditions, also known as orthogonality conditions, present in the data generating model (Hansen, 2010). The GMM estimator has found extensive applications in a wide range of economic models, enabling inference about their parameters. These inference procedures are based on the asymptotic theory presented by Hansen (1982) in his seminal paper on GMM. The original estimator was later improved by the following studies (Arellano & Bond, 1991; Arellano & Bover, 1995; Blundell & Bond, 1998; Hansen, 2010; Holtz-Eakin et al., 1988) who introduced several methods to mitigate potential errors when using STATA for GMM estimation. For instance, Arellano and Bond (1991) estimator faces a challenge where lagged levels are often inadequate instruments for first differences, especially for variables close to a random walk. To address this, Arellano and Bover (1995) proposed a solution where the original equations in levels were incorporated into the system, introducing additional moment conditions to enhance estimation efficiency.

A notable advancement in GMM estimation is the work of Roodman (2009), who simplified the process of estimating a model using GMM with the assistance of statistical software like STATA. GMM estimators are tailored for scenarios with "small

T, large N" panels, characterized by a limited number of time periods and numerous individuals (Arellano & Bond, 1991; Arellano & Bover, 1995). These estimators are well-suited for situations where independent variables are not strictly exogenous, meaning they may be correlated with past and potentially current error realizations. Additionally, GMM can accommodate fixed effects, and it can handle heteroskedasticity and autocorrelation within individuals effectively (Roodman, 2009). Due to the variation in the cross-sections (N=28 countries) and number of time periods (T=19 years), GMM was chosen for the present study. The present study also opted for GMM due to endogeneity issues, as past values of the dependent variable (i.e., financial development and inclusive growth) have a strong relationship with current dependent variable. The issue of endogeneity can be traced from the past values of the dependent variable that could have a strong relationship with the present values of the dependent variable. Although GMM has two main estimators (i.e., difference and system), the study employed the system GMM because of the limitation of difference GMM. This is because the difference GMM is confronted with weak instruments (Che et al., 2013). The system GMM can limit instrument proliferation and has an additional ability to control for cross-country dependence, which is mostly associated with panel data (Ofori et al., 2022a; Tchamyou et al., 2019). The study adopted the dynamic system GMM[7] of (Roodman, 2009) on the grounds that it uses a forward orthogonal dispersion as against the first difference. The study further opted for the two-stage system GMM as against the first-stage system GMM due to the former's ability to cater for autocorrelation and heteroskedasticity (Oduola et al., 2022; Ofori et al., 2022a; Tchamyou et al., 2019; Van et al., 2021).

For objective 2, the study specify GMM empirical model following dynamic model in levels and first difference to summaries the standard system GMM procedure as shown in equation (3.17) and (3.18).

[7] The summary statistics suggests that the whole model is statistically significant ($p < 001$). The second-order Arellano and Bond autocorrelation test (AR (2)) in difference takes precedence over the first-order (AR (1)) because studies in the literature exclusively rely on AR (2) for inferential (Narayan *et al*., 2011). Hence, AR (2) shows that the models are free from second order autocorrelation since we failed to reject the null hypothesis, which states that there is autocorrelation. The Hansen test suggest that the instrument used to correct for endogeneity problem is valid and also the robustness of the output is not weakened by many instruments.

$$FD_{it} = \aleph + \vartheta_1 FD_{it-1} + \vartheta_2 FBP_{it} + \vartheta_3 InsQ_{it} + \vartheta_4 (FBP \times InsQ)_{it} + \sum_{h=1}^{4} \delta_h FT_{h,it-\tau} + n_i + g_t + \mu_{it} \quad (3.17)$$

$$FD_{it} = \aleph + \vartheta_1 (FD_{it-1} - FD_{it-r}) + \vartheta_2 (FBP_{it} - FBP_{it-r}) + \vartheta_3 (InsQ_{it} - InsQ_{it-r}) + \vartheta_4 [(FBP \times InsQ)_{it} - (FBP \times InsQ)_{it-r}] + \sum_{h=1}^{9} \delta_h (FT_{h,it-\tau} - CN_{h,it-2\tau}) + (g_t - g_{t-\tau} + (\mu_{it} - \mu_{it-\tau}) \quad (3.18)$$

Equation (3.17) captures the levels, while (3.18) represents the first difference form of the standard GMM specification. The parameter estimates are represented by $\aleph$, ϑ_{1-4}, δ_h, whereas the time and country effect are *t* and *i*, the auto-regression coefficient is denoted as r, country-specific effect is captured by n_i, time-specific constant is g_t, and disturbance term μ_{it}. In addition, FT represents various control variables, including competition, inflation, trade openness, income equality and exchange rate.

Objective 3 on the other hand has empirical GMM model specified as;

$$IGI_{it} = a + \vartheta_1 IGI_{it-1} + \vartheta_2 FBP_{it} + \vartheta_3 FD_{it} + \vartheta_4 (FBP \times FD)_{it} + \sum_{h=1}^{4} \delta_h PL_{h,it-\tau} + \omega_i + \epsilon_t + \mu_{it} \quad (3.19)$$

$$IGI_{it} = a + \vartheta_1 (IGI_{it-1} - IGI_{it-r}) + \vartheta_2 (FBP_{it} - FBP_{it-r}) + \vartheta_3 (FD_{it} - FD_{it-r}) + \vartheta_4 [(FBP \times FD)_{it} - (FBP \times FD)_{it-r}] + \sum_{h=1}^{9} \delta_h (PL_{h,it-\tau} - CN_{h,it-2\tau}) + (\epsilon_t - \epsilon_{t-\tau} + (\mu_{it} - \mu_{it-\tau}) \quad (3.20)$$

While equation (3.19) captures the levels, equation (3.20) represents the first difference form of standard GMM specification. From both equation (3.19) and (3.20), a, ϑ_{1-4}, δ_h denotes the parameter estimates; t and i are the time and country measurement; r represents the coefficient of auto-regression; ω_i is country-specific effects; ϵ_t is time-specific constant; μ_{it} is the disturbance term. Also, PL denotes the various control variables including institutional quality, bank concentration, the population growth, inflation, trade openness, infrastructure, domestic capital, labour force and government expenditure.

Two Stage Least Squares

Two-stage least squares (2SLS) is a technique used to estimate the parameters of a single structural equation in a system of linear simultaneous equations. The 2SLS estimator was introduced independently by Theil (1953, 1961) and Basmann (1957). Early work on simultaneous equation estimation was conducted by a group of econometricians at the Cowles Commission, who utilized the method of maximum likelihood. For the parameters of a single structural equation, Anderson and Rubin (1949) proposed the limited information maximum likelihood (LIML) estimator. 2SLS is a statistical technique used to estimate the parameters of a linear regression model when the independent variables are endogenous, meaning they are correlated with the error term in the model. The 2SLS approach is commonly applied in econometric studies to address endogeneity issues and obtain consistent and unbiased estimates of the model's parameters.

The current study adopted the 2SLS on basis of a potential issue of endogeneity in the relationship between financial development and FDI (Agbloyor et al., 2013). The issue of endogeneity arises due to the strong association between past and present values of the dependent variable, FDI (Van et al., 2021; Ofori et al. 2021; Oduola et al. 2022). This issue arises due to the traditional econometric assumption that endogeneity occurs when the independent variables are correlated with the error term. As a consequence, this correlation can result in biased or inconsistent estimates of the coefficients (Oduola et al. 2022). Endogeneity may arise from various common causes, including but not limited to omitted variables, measurement error, simultaneity, and reverse causality (Van et al., 2021). To address the potential issue of endogeneity in the relationship between financial development and FDI, the study employs a panel instrumental variable estimator, specifically 2SLS. The instruments used include the following; lag of FDI, lag of financial development, lag of GDP, lag of mobile and telephone subscribers, lag of institutional quality, arable land, lag of GDP per capita (both annual growth and constant 2017). This estimator is robust to the presence of heteroskedasticity (Agbloyor et al., 2013). To ensure the effectiveness of the instrument used in the study, it must satisfy two key conditions - relevance and exogeneity. Relevance indicates that the instrument is correlated with the independent regressors, while exogeneity ensures that the instrument is exogenously determined and not correlated with the error term in the regression. It is also essential for the instrument to

be unrelated to any unobserved factors that could impact the dependent variable. Therefore, the study test for the validity of the instruments using Hansen test and also Kleibergen-Paap rk LM test used to test for under identification. The results are shown in the next section.

3.3.4. Data Analysis Techniques

The accumulated data collected on the various variables was edited and arranged with Microsoft excel to avoid contradictions. After that, the edited data was inputted into a statistical package such as STATA 17 for analysis. The study employed both descriptive and inferential quantitative analysis. Descriptive analysis provide a summary of the main features of a dataset, such as measures of central tendency (mean, median, mode), measures of dispersion (range, variance, standard deviation), and graphical representations (histograms, bar charts, pie charts) (Kaur et al., 2018). Descriptive analysis was applied in this study to examine and elucidate the characteristics of the raw data. In other words, this technique was used to provide a thorough description of the variables before conducting the regression analysis.

Inferential statistics on the other hand are used to make inferences and predictions about a population based on a sample of data (Kaur et al., 2018; Saunders et al., 2009). Techniques like hypothesis testing, t-tests, analysis of variance (ANOVA), and regression analysis fall under inferential statistics (Saunders et al., 2009). The study utilized inferential analysis, as the sample was chosen based on data availability for both countries and the specific time period. To conduct this analysis, the researchers employed various regression techniques, such as system GMM, quantile regression, and 2SLS, which were discussed earlier. The results from the analysis were showed in tables and figures for easy reading and understanding for readers and policy makers.

3.4 Research Ethics

Social science research ethics encompasses a set of ethical principles and guidelines that regulate the entire research process within the social science (Saunders et al., 2009). It entails researchers' moral obligations and responsibilities towards study participants, communities, and society at large, starting from the planning phase, throughout the data collection and analysis, and extending to the reporting of research findings (Saunders et al., 2009). The study adheres to essential ethical principles, including the avoidance of plagiarism and upholding integrity when presenting the research findings.

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF RESULTS

4.1 Introduction

In this chapter, the study presents and discusses the estimation results of the study for each objective. The chapter is divided into four sections, with each section containing a descriptive summary and the main findings related to the respective objective. This structured approach enables a comprehensive and systematic analysis of the research outcomes, facilitating a clear understanding of the results obtained for each specific research objective.

4.2 Fintech, FBP and Inclusive Finance

This section provides the empirical results on the relationship between Fintech, FBP and inclusive finance nexus. The section has four main sub-sections including descriptive summary, quantile regression results, robustness checks using OLS and robustness checks of inclusive finance index.

4.2.1 Descriptive Summary

The study presents the behaviour of the data, which is displayed in Table 4.1. The study focused more on the description of the variables of interest. Referring to Table 4.1, the study observed that the inclusive finance index has an average value of 7.91e-07, with a minimum value of -0.90 and a maximum value of 4.66. This suggests that, on average, the 28 countries have low inclusive finance because the mean value falls within the low range of the index. Table 4.1 also shows that out of 100,000 adults, only 11.98, on average, use an ATM to access financial services. In the same vein, the data indicate an average bank account and bank branches value of 288.9339 and 6.2819. Table 4.1 shows that in the African sample, there are more domestic banks than foreign banks averagely. This is because the average share of foreign banks (measured by the ratio of total foreign bank assets to total bank assets) is 0.4529, which means that foreign banks own about 45% of the total universal banks' asset. At the country level, Mozambique (92.8%) and Rwanda (92.5%) have more inflow of FBP whereas Libya (8.6%), Nigeria (7.2%) and Sudan (8%) have low inflow of FBP as presented in Figure 1.2.

Table 4.1: Descriptive Summary

Variable	N	Mean	Std. Dev.	Min	Max
Inclusive finance index	531	7.91e-07	1.00	-0.90	4.66
ATM per 1000	350	11.9795	15.1865	0.0403	72.4460
Bank account	248	288.933	324.7913	1.1695	1956.04
Bank branches	401	6.2819	5.4919	0.4025	24.8867
Commercial bank branches	392	6.4859	5.5915	0.6790	24.8867
Borrowers from commercial bank	390	54.7730	69.9498	0.7600	336.551
Depositors of commercial bank	392	568.619	552.4126	1.6653	2274.50
FT1	370	4.87	6.78	0	37.10
FT2	366	13.18	12.90	0	50.60
Stability	532	16.2030	9.6331	-40.734	59.3736
LDS	327	8.8847	8.0556	-2.2608	69.9425
Competition	532	-0.0777	0.1788	-2.5409	0.4718
Education	532	120.447	118.9436	1	357
Institutional quality	532	-0.5048	0.4999	-1.66392	0.8539
Population growth	532	2.4197	0.8385	0.05455	5.6050
Foreign bank presence	448	0.4529	0.3186	0	1

Notes: N = observation; Std. Dev. = standard deviation; FT1 is mobile phone used to pay bill. FT2 is mobile phone used to send money. LDS is lending-deposit spread

Source: STATA 17 Output from Research Data, 2023

The average percentage for using mobile phones to pay bills stands at 4.87%, while 13.19% of the population utilizes mobile phones for money transfers on average as indicated in Table 4.1. The data clearly indicates the inception of mobile money in Kenya, as reflected by the percentages (i.e., FT1 = 28% and FT2 = 49%). On the other hand, Angola's data points (0.0001 and 0.0002) underscore the minimal adoption of mobile money in that context (see Figure 1.4). The composite index of quality institution has a mean of -0.5048, which suggests that Africa has weak institutions and governance since the mean value is in the range of low institutions and governance. Also, as shown in Table 4.1, the lending-deposit spread has an average value of 8.8847

suggesting that the banks in the African sample have more spread (i.e., they charge high rates on lending while low rates are imposed on deposits). This can discourage savings since savers are not motivated to save their surplus funds. On average, most citizens in the African sample do not have access to secondary school education. This is because education, which is proxied by secondary school enrolment, has a maximum of 357 and a minimum value of 1. However, the mean value is 120.4474 with a standard deviation of approximately 119. This also suggests that the enrolment level of Africa is inconsistent. The data shows that the population in Africa is growing, with a maximum value of 5.605 and a mean value of 2.4197. The data for population growth could mean that there is a need for more financial infrastructure to meet the banking and financial needs of this growing population.

4.2.2 Quantile Regression Results of Fintech, FBP and Inclusive Finance

This sub-section presents and discusses the quantile regression results of the relationship between Fintech, FBP and inclusive finance. The study first start with the effect of Fintech on inclusive finance index (IFI), then proceed to determine the effect of Fintech on the individual inclusive finance variables. Afterwards, the study examines the direct effect of FBP on both IFI and individual inclusive finance variables. Lastly, the moderation role of FBP on the Fintech-IFI nexus and moderation role of FBP on the relationship between Fintech and individual inclusive finance variables were examined. The results are presented in Tables 4.2, 4.3, and 4.4, as well as in the appendix (Tables A.1 to A.15). Additionally, the study used four main quantiles[8] of inclusive finance to determine at which level Fintech and FBP impacts inclusive finance.

Table 4.2 contains the results of Fintech and the inclusive finance index, where columns (1) to (4) present the results of mobile phones used to pay bills (FT1) on the inclusive finance index, and columns (5) to (8) present the results of mobile phones used to transfer money (FT2) on the inclusive finance index. Table 4.2 shows that when FT1 was used as a proxy for Fintech, it induced the inclusive finance index at all levels with coefficients of 0.0217, 0.0206, 0.0181, and 0.0238, respectively (see columns 1-4). By implication, a unit increase in the usage of mobile phones to pay bills results in a 0.0217,

[8] We used 25^{th}, 50^{th}, 75^{th} and 90^{th} quantile of financial inclusion

0.0206, 0.0181, and 0.0238 units increase in the inclusive finance index, ceteris paribus. However, when Fintech was measured with FT2, the study saw that it spiked inclusive finance index at two levels (i.e., q.25 and q.50). This means that at the 75th and 90th quantiles, mobile phones used to transfer money do not significantly impact inclusive finance. The positive effect corroborates with both cross-country studies and single studies that show Fintech induces inclusive finance in Africa (see Demir et al., 2022; Mbiti & Weil, 2011; Gosavi, 2018). For instance, Demir et al. (2022) found that mobile phone use to pay bills influenced inclusive finance, which was proxied with three different variables such as accounts, savings, and borrowing.

The study examined the impact of Fintech on various indicators of inclusive finance. The results are presented in the appendix (Table A.1 to A.6). Table A.1 presents the results of Fintech on the number of ATMs per 100,000 adults. The study found that an increase in the number of ATMs per 100,000 adults is associated with high levels of Fintech. The results show that FT1 induces inclusive finance at all levels (see columns 1-4 of Table A.1). The coefficients of 0.2319, 0.2423, 0.3187, and 0.4145 indicate that an increase in mobile phones used to pay bills will enhance the usage of ATMs by 0.2319, 0.2423, 0.3187, and 0.4145 unit, *ceteris paribus.* By implication, when a mobile phone is used to pay bills, the usage of ATMs will increase. These coefficients are statistically significant at 1 and 5 percent respectively (refer to columns 1-4 of Table A.1). However, in the case of FT2, the results reveal that Fintech only induces the 50th and 75th quantiles of ATM usage per 100,000 adults. This suggests that using a cell phone to pay bills induces higher ATM usage compared to using it to send money, as all the coefficients are high and highly significant at 1 and 5 percent. Again, the study found that both FT1 and FT2 positively influence bank account ownership (see Table A.2). Although FT1 has higher coefficients (9.6749, 7.7400, and 19.0947) than FT2 (2.8084, 2.4290, and 2.7767), FT2 also has a highly significant coefficient (significant at 1 percent). By implication, when people are able to use their mobile phones to perform financial transactions (pay bills and send money), they are more likely to own a bank account.

Table 4.2: Fintech and Inclusive Finance Index

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
Fintech	0.0217***	0.0206***	0.0181***	0.0238***	0.0059***	0.0061***	0.0032	0.0091
	(0.0029)	(0.0037)	(0.0028)	(0.0046)	(0.0016)	(0.0016)	(0.0042)	(0.0057)
Stability	0.0015	0.0055	0.0237*	-0.0009	-0.0052	0.0060	0.0255**	0.0222
	(0.0063)	(0.0067)	(0.0128)	0.0165	(0.0120)	(0.0082)	(0.0118)	(0.0168)
	-0.0034	-0.0220**	-0.0299	-0.0679	-0.0175	-0.0355***	-0.0490	-0.0974***
Lending-deposit Spread	(0.0115)	(0.0097)	(0.0191)	(0.0427)	(0.0114)	(0.0090)	(0.0317)	(0.0228)
Competition	0.2870	-0.1165	-0.2382	-0.0726	0.0224	-0.0030	-0.1612	-0.1532
	(0.2707)	(0.2436)	(0.1709)	(0.4381)	(0.2708)	(2391)	(0.3121)	(0.4106)
Education	-0.0003	-0.00007	0.0003	0.0007	-0.0002**	-0.0010	-0.0007	-0.0018*
	(0.0008)	(0.00053)	(0.0006)	(0.0011)	(0.0010)	(0.0008)	(0.0014)	(0.0011)
Institutional quality	0.3838**	0.6752***	1.1644***	1.1310**	0.3664**	0.3211**	0.7690	0.4961
	(0.1514)	(0.2211)	(0.2639)	(0.3845)	(0.1809)	(0.1603)	(0.4690)	(0.3279)
Population Growth	-0.0962	-0.2831***	-0.1991	-0.4463**	-0.0325	-0.3831**	-0.3926	-0.5621***
	(0.0893)	(0.0973)	(0.1671)	(0.1955)	(0.0717)	(0.1749)	(0.2493)	(0.1316)
Constant	0.1570	1.1222***	1.3661**	3.2391***	-0.0531	1.2988**	1.8767	3.2461***
	(0.3124)	(0.3650)	(0.5535)	(0.5668)	(0.2429)	(0.5316)	(0.8402)	(0.5363)
Observation	269	269	269	269	215	215	215	215
R-squared	0.1814	0.2430	0.4008	0.5253	0.1019	0.1548	0.2566	0.4691

Notes: *q.25, q.50, q.75 and q.90 are quantile levels (i.e., 25th, 50th, 75th and 90th quantile) of inclusive finance index. Column (1 to 4) is when mobile phone used to pay bill as a proxy for Fintech whereas mobile phone used to send money as a measure of Fintech incorporate column (6 to 8). Significant levels at 1%, 5% and 10% are represented by ***, ** and * respectively*.

Source: STATA 17 Output from Research Data, 2023

The study found that mobile phones used to pay bills exhibit a positive effect on the 75th and 90th quantiles of bank branches at 10 and 5 percent significance levels respectively (see Table A.3). The significant coefficients of 0.0737 and 0.1657 imply that, holding other factors constant, an increase in mobile phones used to pay bills will enhance the number of bank branches in Africa by 0.0737 and 0.1657 unit respectively. On the other hand, mobile phones used to send money affect the 50th quantile of bank branches at a 5 percent significance level. Thus, the results suggest that Fintech is able to increase the number of bank branches.

Using borrowers of commercial banks as a measure of inclusive finance, the study realized that FT1 affected the 75th and 90th quantiles of borrowers of commercial banks, whereas FT2 deepens inclusive finance in all the quantiles used for the study (see Table A.4). Table A.5 showed that FT2 hampers inclusive finance at the 50th and 75th quantiles of commercial bank branches while it enhances the 90th quantile of commercial bank branches. Also, FT1 only increased the 75th and 90th quantiles of commercial bank branches. This suggests that Fintech will induce the level of commercial bank branches for some levels and will impede it on other levels. The last indicator of inclusive finance (i.e., depositors of commercial banks) increased as a result of an increase in Fintech, as shown in Table A.6. Nevertheless, the study found that FT2 had no significant effect on any of the levels of depositors of commercial banks. This means that an increase in the amount of cell phone use to send cash does not encourage people to deposit money in commercial banks.

In a nutshell, the study identified that FT1 influences all the indicators of inclusive finance, while FT2 influences some of the indicators of inclusive finance (excluding depositors of commercial banks). Regardless of the measure of inclusive finance, Fintech still has a statistical significant effect on it. However, the inclusive finance index had a higher significance level as compared to the individual indicators.

The study proceeded to examine the direct effect of FBP on inclusive finance , where the study excluded Fintech and included FBP in model 1 to see how FBP influences inclusive finance. The study regressed FBP on the inclusive finance index (IFI) and other individual inclusive finance variables. The study presented the results in Table 4.3. The results from Table 4.3 suggest that FBP do not spike any levels of inclusive

finance index. The results conforms to the cream skimming model which suggest that FBP discourages inclusive finance in developing economies.

Table 4.3: FBP and Inclusive Finance Index

	(9)	**(10)**	**(11)**	**(12)**
	q.25	**q.50**	**q.75**	**q.90**
Foreign bank presence	0.3535	-0.1321	0.0812	-0.3233
	(0.2151)	(0.2604)	(0.3643)	(0.2920)
Stability	0.0242**	0.0155***	0.0233***	-0.0054
	(0.0113)	(0.0055)	(0.0081)	(0.0091)
Lending-deposit spread	-0.0062	-0.0016	-0.0009	0.0007
	(0.0112)	(0.0086)	(0.0092)	(0.0128)
Competition	-0.0379	0.0684	-0.2183	0.0201
	(0.3264)	(0.3611)	(0.4230)	(0.3365)
Education	-0.0011	-0.0003	0.0003	-0.0001
	(0.0007)	(0.0005)	(0.0006)	(0.0011)
Institutional quality	0.0801	0.5017*	0.9759***	1.4923***
	(0.3351)	(0.2852)	(0.2317)	(0.3642)
Population growth	-0.1606	-0.2377***	-0.3382***	-0.2965
	(0.1055)	(0.0645)	(0.1123)	(0.2235)
Constant	-0.4444	0.6159**	1.3779	3.0037***
	(0.3860)	(0.2580)	(0.3575)	(0.4542)
Observation	327	327	327	327
R-square	0.0603	0.1375	0.2499	0.4278

Notes: *q.25, q.50, q.75 and q.90 are quantile levels (i.e., 25th, 50th, 75th and 90th quantile) of inclusive finance index. ***, ** and * are significant levels at 1%, 5% and 10% respectively.*

Source: STATA 17 Output from Research Data, 2023

Nevertheless, FBP is able to influence some levels of the individual inclusive finance variables (see Table A.7 to Table A.9). For instance, the results from Table A.7 suggest that FBP dampens 25th and 50th quantile of ATM per 100, 000 adults and 75th and 90th quantile of access to bank account. This signifies that FBP discourages people from using ATM for transaction. This may be attributed to the high charges imposed on foreign banks' ATMs, which deter people from using them. It could also mean that foreign banks restrict the number of ATMs and branches, making it inconvenient for customers to access their accounts. This could lead to reduced account usage. While FBP do not have any significant effect on borrowers from commercial banks, it has a

negative effect on depositors of commercial banks (see Table A.8). This can be attributed to the fact that foreign banks offer higher interest rates on savings and fixed deposit accounts compared to local commercial banks. This may attract depositors seeking better returns. Table A.9 shows that FBP has a negative effect on the 25th and 50th quantile of bank branches whereas it has a negative effect on 50th and positive effect on the 90th quantile of commercial bank branches. FBP in Africa can negatively affect the 25th and 50th quantile of bank branches by intensifying competition, potentially leading to reduced profitability, margin pressure, and the loss of market share for local banks in these segments. The negative effect of FBP on commercial bank branches could be that, the entry of foreign banks can lead to increased competition in the banking sector. Local banks at the mid-range (50th quantile) may find it challenging to compete with foreign banks that often have more resources, advanced technology, and expertise. This could lead to a loss of market share and profitability for mid-tier local banks. On the other side, FBP can provide local commercial banks in the 90th quantile with access to additional capital through investments, acquisitions, or partnerships. This can enhance their financial stability and capacity for expansion. It can be seen that FBP has almost negative effect on some individual inclusive finance variables. The negative result of FBP on inclusive finance is similar to the study of Kebede et al. (2021b), who found that FBP hinders the progress of inclusive finance in Africa.

Subsequently, foreign banks in Africa are involved in Fintech (Memon et al., 2021), hence the study introduced FBP and an interaction term of Fintech and FBP to model 1 to see if foreign banks matter in the relationship between Fintech and inclusive finance. The study presents the results of the moderation role of FBP on Fintech-IFI nexus in Table 4.4. Results from Table 4.4 revealed that, the inclusion of FBP and the interaction term is very vital. For instance, when the study included these two variables, both FT1 and FT2 induce inclusive finance at all the levels of inclusive finance index. FBP does not spike any levels of the inclusive finance index (see Table 4.4). On the other hand, the study realized that the interaction term dampens inclusive finance at the 90th quantile as shown in column (16) when FT1 was used as a proxy for Fintech and also in column (18) to (20) of Table 4.4 when Fintech was proxied with FT2. However, the coefficient of the interaction term alone is not enough to determine the net effect. Hence, to determine the net effect for Fintech, the study partially differentiate inclusive

finance index with respect to Fintech as computed below based on equation (3.5). Starting from column (16), the net effect is 0.0258 unit as computed below;

$$\frac{\partial IFI_{it}}{\partial FT1_{it}} = 0.0482 + (-0.0495 \times 0.4529) = 0.0258$$

Where 0.0482 represents the unconditional effect of Fintech on inclusive finance, -0.0495 connotes the coefficient of the interaction of Fintech and FBP, and 0.4529 is the mean of FBP.

A similar approach was used to compute the net effect for columns (18) to (20), as shown below.;

$$\frac{\partial FII_{it}}{\partial FT2_{it}} = 0.0186 + (-0.0273 \times 0.4529) = 0.0062$$

$$\frac{\partial FII_{it}}{\partial FT2_{it}} = 0.0335 + (-0.0568 \times 0.4529) = 0.0078$$

$$\frac{\partial FII_{it}}{\partial FT2_{it}} = 0.0482 + (-0.0515 \times 0.4529) = 0.0093$$

The values of 0.0258, 0.0062, 0.0078, and 0.0093 are the coefficients of the net effects of columns (16), (18), (19), and (20) respectively. These results suggest that, in the presence of foreign banks, Fintech can boost inclusive finance through the integration of Fintech into traditional banking. For example, when foreign banks link account numbers to mobile phones, create banking applications, and partner with mobile service providers to extend credit facilities to the less privileged, it will help increase the levels of inclusive finance. The net effect could also mean that when Fintech firms partner with foreign banks, Fintech firms can benefit from their expertise in regulatory compliance and institutional support. This can help Fintech firms to navigate complex regulatory environments and ensure that their products and services comply with relevant laws and regulations. Furthermore, the institutional support provided by foreign banks can help Fintech firms to establish themselves as credible players in the financial services industry, thereby enhancing their reputation and building trust among potential customers.

Table 4.4: Moderation Role of FBP on Fintech-Inclusive Finance Index Nexus

	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
Fintech	0.0234***	0.0239***	0.0262**	0.0482***	0.0100**	0.0186***	0.0335***	0.0326***
	(0.0062)	(0.0083)	(0.0118)	(0.0168)	(0.0040)	(0.0035)	(0.0084)	(0.0058)
Stability	0.0022	0.0058	0.0178	0.0175	0.0006	0.0061	0.0070	0.01922
	(0.0075)	(0.0104)	(0.0127)	(0.0168)	(0.0121)	(0.0061)	(0.0167)	(0.01910)
	-0.0060	-0.0212	-0.0193	-0.0171	-0.0225*	-0.0437***	-0.0897***	-0.0694**
Lending-deposit spread	(0.0080)	(0.0150)	(0.0167)	(0.0357)	(0.0124)	(0.0110)	(0.0340)	0.0302
Competition	0.2822	-0.0650	-0.2222	-0.0297	0.3489	0.0870	-0.0349	-0.1052
	(0.1899)	(0.2699)	(0.3827)	(0.5161)	(0.3550)	(0.3077)	(0.3277)	(0.2888)
Education	-0.0002	0.0000	0.0006	-0.0005	-0.0006	-0.0004	-0.0014	-0.0019**
	(0.0008)	(0.007)	(0.0005)	(0.0011)	(0.0008)	(0.0007)	(0.00095)	(0.0008)
Institutional quality	0.3613*	0.8833***	1.1755***	1.0278***	0.1900	0.5525*	0.7920***	0.6045***
	(0.1942)	(0.2646)	(0.2128)	(0.3199)	(0.2910)	(0.3196)	(0.2899)	(0.2158)
Population growth	-0.1043	-0.2063**	-0.1867	-0.5400	-0.1233	-0.1864	-0.3127**	-0.4898***
	(0.0734)	(0.0884)	(0.1300)	(0.2188)	(0.1175)	(0.1167)	(0.1381)	(0.1211)
FBP	0.0403	-0.2955	-0.2929	-0.3118	-0.1426	-0.3290	-0.4596	-0.0027
	(0.1299)	(0.2138)	(0.3347)	(0.3403)	0.2801	(0.3093)	(0.4836)	(0.2833)
Interaction term	-0.0057	-0.0055	-0.0129	-0.0495*	-0.0107	-0.0273***	-0.0568***	-0.0515***
	(0.0112)	(0.0159)	(0.0191)	(0.0264)	(0.0077)	(0.0098)	(0.0218)	(0.0179)
Constant	0.1613	1.1846**	1.4196***	2.9904***	0.2882	1.2123***	2.8016***	3.0505***
	(0.2590)	(0.5243)	(0.4999)	(0.6847)	(0.5103)	(0.6548)	(0.7781)	(0.5158)
Observation	269	269	269	269	215	215	215	215
R-squared	0.1830	0.2468	0.4097	0.5513	0.1162	0.2001	0.3102	0.5151
Net Effect	-	-	-	0.0258	-	0.0062	0.0078	0.0093

Notes: *Column (13 to 16) is when cell phone used to pay bills proxy Fintech whereas cell phone use to send money proxy Fintech incorporate column (17 to 20). q.25, q.50, q.75 and q.90 are quantile levels (i.e., 25th, 50th, 75th and 90th quantile) of inclusive finance index. ***p<0.01, **p<0.05 and *p<0.1 respectively*.
Source: STATA 17 Output from Research Data, 2023

The study also estimated the moderating role of FBP on the relationship between Fintech and all six indicators of inclusive finance. The study also presents the results of the moderation role of FBP on the relationship between Fintech and individual inclusive finance variables in the appendix (i.e., Table A.10 to Table A.15). When ATM per 100,000 was used as an inclusive finance indicator, the interaction term was not significant, suggesting that FBP does not matter in the relationship between Fintech and ATM per 100,000 (see Table A.10). However, in the case of the other indicators, the study noticed that FBP amplifies the nexus between Fintech and inclusive finance, (see Table A.11 to A.15). For example, Table A.11 reveals that FBP form synergy with Fintech to promote the access to bank account most especially when Fintech was proxied with FT1. The rest of the moderation role has different results depending on the measurement of Fintech. For example, the results for bank branches reveals that when Fintech was proxied with FT1, the net effect is positive whereas negative result was obtained when Fintech was proxied with FT2 as shown in Table A.12. Similar results was obtained for commercial bank branches although for different quantiles (see Table A.14). Table A.13 which is the results on borrowers from commercial banks, however revealed that net effect was significant and positive only when Fintech was proxied with FT2. The results for commercial bank also reveals that net effect was significant only when Fintech was proxied with FT2, however there was positive and negative results.

Shifting attention to the control variables[9], the study realized that one of the control variables, such as financial stability (proxied with banks' Z-score), has a significant effect on the 75th quantile of the inclusive finance index (IFI) as shown in Table 4.2 This occurs when both measures of Fintech were used. However, in the presence of FT1, bank stability had a 10% significant effect on inclusive finance, whilst in the presence of FT2, bank stability had a 5% significant effect on inclusive finance. This suggests that when the banking system is stable, financial services and resources can easily be accessed. In other words, when the banking sector is stable, it increases savers' confidence. On the other hand, when there is instability, there is fear and panic, which may render inclusive finance less relevant.

[9] Control variables are financial stability, lending and deposit spread, banks competition, education, institutional quality and population growth.

The study found that a decrease in inclusive finance is associated with an increase in lending-deposit spread (see Table 4.2). This effect was realized at the 50th quantile of the inclusive finance index when FT1 was used as a proxy for Fintech, and at the 50th and 90th quantile of IFI when FT2 was used as a measure for Fintech (see Column 2, 6, and 8 of Table 4.2). Additionally, a decrease in inclusive finance was high at the 90th quantile of IFI when FT2 was used as a measure for Fintech. The significant negative coefficients (0.0220, 0.0355, and 0.0974) indicate that a unit increase in lending and deposit spread will dampen inclusive finance by 0.0220, 0.0355, and 0.0974 units, ceteris paribus. The negative significant effect of lending-deposit spread could be a result of broadening spreads[10], which then reduces efficient financial allocation with respect to access to financial resources. Due to information asymmetry in the financial sector in most African countries, financial institutions charge higher interest rates to cover such risks (Demir et al., 2020). Such activity then prevents borrowers from accessing more financial resources. Rates on deposits, on the other hand, seem to be low in Africa, hence preventing the surplus unit from depositing their excess funds with the financial intermediaries. Also, a high deposit-lending rate could arise from macro-fiscal conditions[11], banking sector characteristics[12], and business environment[13] (Feyen & Huertas, 2020). The negative effects of deposit-lending spread can affect the hauling of monetary policy, hamper private investment and job creation, and undermine financial stability.

Surprisingly, the study found that education (measured by secondary school enrolment) hampers inclusive finance, as shown in Table 4.2 This interesting result is evident when FT2 was used as a proxy for Fintech and affected the 25th and 90th quantiles of IFI. The study expected that, people with more education would be more likely to be financially included (Allen et al., 2016; Fungáčová & Weill, 2015; Zins & Weill, 2016), unfortunately, the study obtained the opposite result. It could be that, regardless of higher education, when factors such as distance to financial institutions and unemployment persist, highly educated individuals may not be financially included.

[10] broadening spreads such as decrease in deposit rates as against average banking lending rates
[11] Macro-fiscal conditions such as inflation, public debt and policy
[12] Banking sector characteristics includes overhead costs, non-performing loans and non-interest income
[13] Business environment incorporate credit bureau coverage and time to resolve insolvency

Hence, the results disagree with Demir et al. (2020), who conducted a similar study in the same region and found that higher education helps people access credit facilities.

Another important control variable is institutional quality because in the presence of better institutions and governance, financial intermediaries will not discriminate against certain borrowers. Africa is characterized by a situation where many entities (especially SMEs) are excluded from accessing credit facilities (Gormley, 2010). Therefore, sound policies or governance can ensure efficient financial allocation (Murinde, 2012). The result confirms to this assertion. Table 4.2 shows that the institutional quality index enhances inclusive finance at most levels of the inclusive finance index. For instance, columns (1) to (6) show that the institutional quality index promotes inclusive finance, and the impact is particularly strong when FT1 is used as a measure of Fintech (i.e., at the 50th quantile of IFI), as shown in Table 4.2. By implication, the institutional quality of the African sample promotes inclusive finance. These results are similar to those of Demir et al. (2020), Dabla-Norris et al. (2015), and Rojas-Suarez (2016), who argued that institutional quality enhances inclusive finance. Population growth has a negative effect on financial inclusiveness with a significance level of at least 5 percent ($p < 0.05$). The study have observed that column (8) has the highest coefficient, indicating a greater decrease in inclusive finance at the 90th quantile of IFI. This might indicate that as the population grows, it could exert strain on the financial infrastructure, potentially limiting access to financial resources for many individuals.

4.2.3 Robustness Checks using Pooled OLS

The study tested the robustness of the results by re-running the models using different estimation technique such as pooled OLS, which is reported in Tables 4.5 to 4.8. Table 4.5 presents the results on the effect of FT1 on the various indicators of inclusive finance. The study found that FT1 influences all the indicators of inclusive finance and is statistically significant at 1 and 5 percent. Also, stability only spikes bank branches, commercial bank branches, and borrowers from commercial banks, but stability reduces depositors with commercial banks. Likewise, columns (21) to (27) show that the lending-deposit spread reduces inclusive finance, except for columns (25) and (27) where the lending-deposit spread increases commercial bank branches and depositors with commercial banks.

Table 4.5: Pooled OLS Results of FT1 and Inclusive Finance

	(21)	(22)	(23)	(24)	(25)	(26)	(27)
Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
FT1	0.0236***	0.2602***	16.1195***	0.0526**	0.0849***	2.593322***	17.55183***
	(0.0035)	(0.0763)	(3.10459)	(0.0232)	(0.0217)	(0.4693)	(3.0595)
Stability	-0.0019	-0.1974	-5.66316	0.2224***	0.1624***	1.459881**	-10.0119**
	(0.0063)	(0.1360)	(4.892285)	(0.0399)	(0.0330)	(0.7161)	(4.6551)
	-0.0448***	-0.8668**	-10.2114	-0.0004**	0.1533**	-5.10662***	38.14245***
Lending-deposit spread	(0.0063)	(0.2851)	(6.358066)	(0.0806)	(0.0672)	(1.4539)	(9.4748)
Competition	-0.1739	-3.7701	-76.1884	-2.0283**	-1.4179	-0.88305	55.69451*
	(0.2075)	(3.1585)	(71.16441)	(0.9884)	(0.8997)	(19.4291)	(126.8757)
Education	-0.0010**	0.0090	0.535367	-0.0046**	0.0038*	-0.11122**	-0.60037**
	(0.0005)	(0.0072)	(0.306828)	(0.0023)	(0.0020)	(0.0444)	(0.2881)
Population	-0.3483***	-4.6286	-332.968***	-2.6580***	-2.4505***	-22.1606**	-564.633***
	(0.0944)	(1.6519)	(53.9002)	(0.5196)	(0.4549)	(9.8613)	(64.1482)
	0.8756***	14.1412	144.1083	5.8648***	4.7688***	30.99514**	291.9565***
Institutional quality index	(0.1258)	(2.0039)	(64.2444)	(0.6309)	(0.5712)	(12.3305)	(80.5471)
Constant	1.8969***	38.2239	1390.89***	12.2856***	9.9920***	157.0203***	2056.055***
	(0.2603)	(4.7180)	(157.0167)	(1.4550)	(1.2302)	(26.9998)	(173.4744)
Observation	269	181	99	200	199	198	199
R-square	0.5266	0.6204	0.3425	0.6964	0.6915	0.3899	0.5893

Notes: *FT1 is first proxy of Fintech (i.e., mobile money used to pay bills); (1) Inclusive finance index; (2) is ATM per 100, 000; (3) is Bank account; (4) is Bank Branches; (5) is commercial bank branches; (6) Borrowers from commercial banks; (7) Depositors with commercial banks.*

Source*:* STATA 17 Output from Research Data, 2023

Table 4.6: Pooled OLS Results of FT2 and Inclusive Finance

	(28)	(29)	(30)	(31)	(32)	(33)	(34)
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
FT2	0.0085***	0.1048**	3.9045***	-0.0074	-0.0139	1.3398***	1.3784
	(0.002)	(0.0499)	(0.9023)	(0.0117)	(0.0126)	(0.2172)	(1.8467)
Stability	0.0052	-0.3584**	-0.2469	0.2331***	0.3080***	1.4745**	-4.3599**
	(0.0065)	(0.1663)	(3.8391)	(0.0366)	(0.04700)	(0.6796)	(5.7611)
Lending-deposit spread	-0.0595***	-1.2169**	-9.4282**	0.0958	-0.0736	-5.6660***	20.6589*
	(0.0125)	(0.3765)	(4.6795)	(0.0736)	(0.0925)	(1.3641)	(11.5906)
Competition	-0.1317*	-0.1578	-59.3647	-0.8023	-1.6375	4.3774	130.7048
	(0.2049)	(3.6005)	(53.1895)	(0.9558)	(1.0852)	(17.6613)	(150.4282)
Education	-0.0020***	0.0061	0.4381*	-0.0003	-0.0104***	-0.1910***	-1.4919***
	(0.0005)	(0.0093)	(0.2243)	(0.0024)	(0.0028)	(0.0454)	(0.3836)
Population	-0.4633***	-13.0703***	-4.9533	-2.0779***	-2.6581***	-80.3736***	-554.7277***
	(0.1067)	(2.6575)	(50.3381)	(0.5917)	(0.6970)	(11.0824)	(93.1133)
Institutional quality	0.5044**	6.5643**	-232.2642**	2.5111**	3.9467***	4.2368	14.2798
	(0.1583)	(3.0215)	(58.6447)	(0.7878)	(0.8723)	(14.5574)	(123.9833)
Constant	1.9883***	61.8528***	115.3783	7.8288***	11.2196***	299.8112***	2049.785***
	(0.2965)	(6.7522)	(161.3672)	(1.5927)	(1.9526)	(30.257)	(250.6524)
Observation	215	136	99	160	158	159	160
R-square	0.4147	0.5638	0.3425	0.4536	0.5796	0.5527	0.2883

Notes: *FT2 is mobile money used to send money; (1) is inclusive finance index; (2) is ATM per 100, 000; (3) is Bank account; (4) is Bank Branches; (5) is commercial bank branches; (6) Borrowers from commercial banks; (7) Depositors with commercial banks*

Source: STATA 17 Output from Research Data, 2023

The results are consistent with those of Table 4.2, where an increase in population growth reduces inclusive finance, and institutional quality increases all indicators of inclusive finance. In addition, the study found that the second proxy for Fintech (i.e., mobile phones used to pay bills) similarly has an effect on inclusive finance (see Table 4.6). However, stability has mixed results on inclusive finance. For example, in columns (29) and (34), stability reduces inclusive finance, while in columns (31) to (33) of Table 2.8, stability increases inclusive finance (commercial bank branches, bank branches, and borrowers from commercial banks).

The results for the moderation role of FBP on Fintech-inclusive finance nexus are presented in Table 4.7 and 4.8. The study found that both measures of Fintech significantly promote inclusive finance. The results for Fintech in Tables 4.7 and 4.8 are similar to those in Table 4.4. Unlike in Table 4.4, where FBP did not have a direct effect on inclusive finance, the pooled OLS results showed that FBP has a direct effect on inclusive finance (see Table 4.7). The study also noticed that the interaction term showed different signs. For example, in Table 4.7, columns (2) and (4) show that the interaction term had a positive effect, whereas columns (3) and (6) reveal that the interaction term reduces inclusive finance. However, in Table 4.8, the study found that the interaction term reduces inclusive finance (see columns 1, 3, 6, and 7). The study computed the coefficients of net effect similar to quantile regression results and have shown in the Table as "***net effect***". The coefficient of 0.2606, 15.2210, 0.0844 and 2.5889 means that as Fintech induce inclusive finance, FBP magnifies the positive effect.

Table 4.7: Pooled OLS Results of FBP on FT1- Inclusive Finance Nexus

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
FT1	0.0312***	0.163**	23.5721***	-0.1084**	-0.0135	3.9553***	17.0519***
	(0.0056)	(0.1657)	(5.1593)	(0.0340)	(0.0448)	(0.8140)	(5.2135)
FBP	-0.1042**	-1.6295*	-269.1487***	0.0172	-2.4356**	-9.5311	-330.6023***
	(0.1472)	(2.6057)	(56.0853)	(0.6049)	(0.7670)	(14.4800)	(92.5661)
Interaction	-0.0194	0.2154*	-18.4391***	0.4257***	0.1424	-3.0170**	0.8144
	(0.0113)	(0.3345)	(7.5005)	(0.0615)	(0.0881)	(1.4715)	(9.4167)
Stability	-0.0008	-0.2123	-0.5485**	0.1517***	0.2131***	1.4930**	-11.8748***
	(0.0065)	(0.1375)	(4.6756)	(0.0298)	(0.0387)	(0.7162)	(4.5667)
Lending-deposit spread	-0.0444***	-0.8491**	-3.083	0.1289**	0.0596	-4.7885***	42.7076***
	(0.0126)	(0.2933)	(5.9244)	(0.0608)	(0.0796)	(1.4585)	(9.3116)
Competition	-0.1656	-3.518	-55.2719	-1.4573*	-1.8024*	0.3297	85.9074
	(0.2078)	(3.1854)	(63.7716)	(0.8083)	(0.9600)	(19.3224)	(123.6928)
Education	-0.0009*	0.0083	0.6347**	0.0009	-0.0052**	-0.0874*	-0.5002*
	(0.0005)	(0.0074)	(0.2904)	(0.0018)	(0.0023)	(0.0453)	(0.2878)
Population growth	-0.3097***	-4.2758***	-212.322***	-2.9199***	-2.108***	-15.4071	-449.5841***
	(0.1012)	(1.8943)	(53.2426)	(0.4606)	(0.5610)	(11.078)	(70.4828)
Institutional quality	0.9215***	14.371***	271.8272***	4.3090***	6.5676***	37.8386*	417.1007***
	(0.1320)	(2.2385)	(64.4328)	(0.5619)	(0.6671)	(13.4320)	(85.9877)
Constant	1.8359***	38.471***	1144.026***	11.5467***	12.118***	142.6654***	1965.8890***
	(0.2622)	(4.968)	(147.7528)	(1.1338)	(1.4405)	(27.6046)	(173.4914)
Observation	269	181	108	199	200	200	199
R-square	0.5266	0.6224	0.7531	0.7547	0.7286	0.7623	0.6155

Notes: *FT1 is mobile money used to pay bills; (1) is inclusive finance index; (2) is ATM per 100, 000; (3) is Bank account; (4) is Bank Branches; (5) is commercial bank branches; (6) Borrowers from commercial banks; (7) Depositors with commercial banks*

Source: STATA 17 Output from Research Data, 2023

Table 4.8: Pooled OLS FBP on FT2- Inclusive Finance Nexus

	(35)	(36)	(37)	(38)	(39)	(40)	(41)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
FT2	0.0169***	0.2486**	9.0060***	-0.0348	0.0182	2.1250***	11.1865***
	(0.0031)	(0.1009)	(1.4133)	(0.0213)	(0.0237)	(0.3886)	(3.1713)
FBP	-0.1101	-1.3384	-181.2279**	0.3635	-2.3593*	-5.7554	-188.4709
	(0.1487)	(3.0845)	(44.5913)	(0.7912)	(0.8805)	(14.4465)	(117.7772)
Interaction	-0.0217**	-0.3284	-8.1277**	0.0598	-0.0556	-1.7603**	-20.8710**
	(0.0071)	(0.2133)	(2.315)	(0.0436)	(0.0494)	(0.7955)	(6.4891)
Stability	0.0083	-0.3766**	3.6311	0.2389***	0.2879***	1.3584**	-6.9434
	(0.0066)	(0.1656)	(3.3574)	(0.0371)	(0.0461)	(0.6785)	(5.5157)
Spread-deposit	-0.0635***	-1.1395**	-8.5403**	0.0806	-0.0167	-5.2944***	27.1035**
spread	(0.0124)	(0.3921)	(4.1433)	(0.0745)	(0.0939)	(1.3638)	(11.0930)
Competition	-0.0717	-0.0296	-23.31	-0.8634	-1.2877	5.9558	155.291
	(0.2008)	(3.5882)	(45.4148)	(0.9528)	(1.0605)	(17.3857)	(141.8448)
Education	-0.0016**	0.0107	0.5047**	-0.0013	-0.0088**	-0.1629***	-1.1010**
	(0.0005)	(0.0096)	(0.1911)	(0.0025)	(0.0028)	(0.0459)	(0.3712)
Population	-0.3610***	-10.3999***	-9.9248	-2.5270***	-1.8623**	-68.5337***	-377.3927***
	(0.1088)	(2.9942)	(42.9291)	(0.648)	(0.725)	(12.0113)	(96.4656)
Institution	0.5258***	8.9231*	-113.2819*	2.0978**	4.8809***	14.2618	185.7064
	(0.1589)	(3.2717)	(57.8593)	(0.8463)	(0.9005)	(15.4528)	(125.9874)
Constant	1.8236***	56.9141***	276.1018*	8.5751***	10.5971***	278.0870***	1773.2240***
	(0.2961)	(7.2399)	(140.7835)	(1.6432)	(1.9234)	(30.8645)	(244.6225)
Observation	215	136	99	160	158	159	160
R-square	0.4487	0.576	0.5429	0.4651	0.6087	0.5731	0.3766

Notes: *FT2 is mobile money used to send money; (1) is inclusive finance index; (2) is ATM per 100, 000; (3) is Bank account; (4) is Bank Branches; (5) is commercial bank branches; (6) Borrowers from commercial banks; (7) Depositors with commercial banks*

Source: STATA 17 Output from Research Data, 2023

4.2.4 Robustness Checks for Inclusive Finance Index

The study proceeded to check the appropriateness of the index using PCA and have been presented in Table 4.9, Table 4.10 and Figure 4.1. These key tests includes the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, Bartlett's test of sphericity, scree plot, and principal component and eigenvalues used to create the index. As shown in Table 4.9, the KMO statistic of 0.840 implies that the 6 variables used to construct the index adequacy. The chi-square's p-value of 0.000 and the chi-square statistics of 1693.198 of the Bartlett test provide additional evidence for the correlation between the covariates (see Table 4.9).

Table 4.9: KMO and Bartlett's Test

Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy		0.840
Bartlett's test of sphericity	Chi-square	1693.198
	Degree of freedom	15
	significance	0.000

Note: When KMO value is greater than 0.5, then it suggests that the variables used to generate the index are adequate. Additionally, when Bartlett test is statistically significant, then it shows that the values used to generate the index are interrelated.

Source: STATA 17 Output from Research Data, 2023

The scree plot of the PCA, as shown in Figure 4.1, reveals 1 principal component, as presented in Table 4.10 with its associated eigenvalues. According to Kaiser's rule, an index created with PCA should have at least 1 component with its eigenvalue above 1. Therefore, the study computed the index since the eigenvalue of 3.91982 is greater than 1, and also the index generated is appropriate, as the component used as the index has a proportion of 65.33% of the entire 100% component.

Table 4.10: Eigenvalues for Inclusive Finance Index

Component	Eigenvalue	Difference	Proportion	Cumulative
1	***3.91982***	***2.96136***	***0.6533***	***0.6533***
2	0.958462	0.288528	0.1597	0.813
3	0.669935	0.441948	0.1117	0.9247
4	0.227987	0.017852	0.038	0.9627
5	0.210135	0.196473	0.035	0.9977
6	0.013662	.	0.0023	1.000

Note: when the eigenvalue is greater than 1, the index created is robust

Source*:* STATA 17 Output from Research Data, 2023

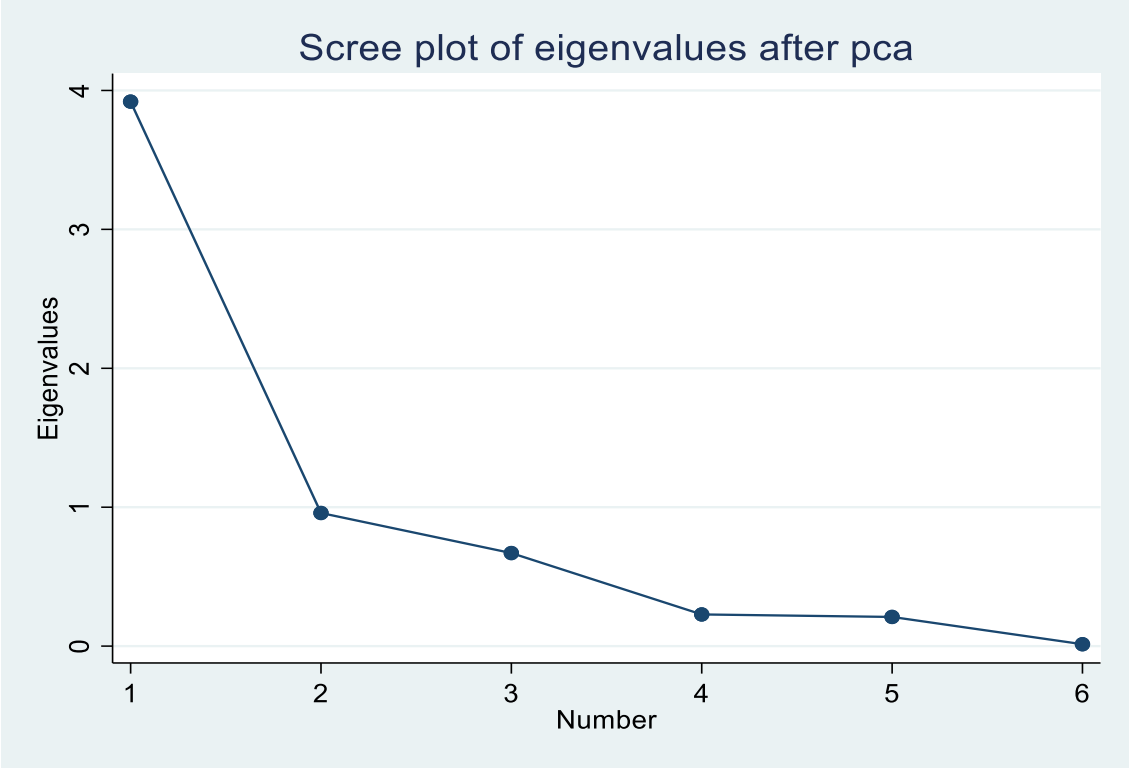

Figure 4.1: Scree Plot of PCA for Inclusive Finance Index
Source*:* STATA 17 Output from Research Data, 2023

4.3 FBP, Institutional Quality and Financial Development

The empirical results of FBP, institutional quality and financial development is discussed in this section. It has three main sub-sections such as the descriptive and correlation matrix, GMM results and the sensitive analysis.

4.3.1 Descriptive and Correlation Matrix

The descriptive statistics of the sample are presented in Table 4.11. The study provided more description for the variables of interest, while less description was provided for the control variables. According to the findings presented in Table 4.11, the average value of the Multidimensional Financial Development (MFD) is 0.158. The minimum value recorded is 0.0505, while the maximum value is 0.648. These results suggest that, on average, the financial system in the examined African countries is not highly developed. At the country level, the data indicates that South Africa boasts the highest level of financial development at 55.5%, while Sierra Leone lags behind with a meagre 6.7% (see, Figure 1.5). Additionally, Table 4.11 reveals that domestic banks outnumber foreign banks in the sample. This is indicated by the FBP, which measures the ratio of foreign bank total assets to total bank assets. The mean value of FBP is 0.4529, indicating that foreign banks hold approximately 45% of the total assets in the sample. At the country level, the data from Figure 1.2 reveals that Mozambique (92.8%) and Rwanda (92.5%) experience substantial inflows of FBP, in contrast to Libya (8.6%), Nigeria (7.2%), and Sudan (8%), which record relatively low levels of FBP inflow.

The composite index of institutions, with a mean of -0.5344, shows that Africa has weak institutions and governance, which can impede financial system development. Considering individual countries, it becomes evident that Mauritius (0.077) exhibits the most robust institutions and governance, while Sudan (-0.0015) grapples with less effective institutions and governance. These distinctions are visually illustrated in Appendix B (Figure B1). The average income equality is 2.423, with a range from -62.39 to 121.78, indicating inequality within the African sample. The Bonne indicator, which measures competition among banks, has a mean of -0.0375. Inflation, as measured by the consumer price index (% annual), has a mean of 8.074, suggesting an acceptable average inflation rate in the African sample, as it remains in the single digits. The results presented in Table 4.11 indicate that the real effective exchange rate exhibits high volatility, as evidenced by the large standard deviation of 14.436 compared to the mean value of 98.742.

Table 4.11: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Financial development	532	0.158	0.115	0.05	0.648
Foreign bank presence	448	0.4529	0.3186	0.00	1
Institutions quality	532	-0.505	0.5	-1.664	0.854
Trade openness	513	64.921	26.322	1.295	152.547
Competition	532	-0.076	0.182	-2.54	0.48
Inflation	532	8.006	17.799	-9.798	324.997
Exchange rate	247	98.742	14.436	59.763	158.325
Income equality	532	2.384	7.013	-62.378	121.779

Note: Obs. is the observation; Std. Dev. denotes standard deviation; Min and maximum are minimum and maximum value respectively.

Source*:* STATA 17 Output from Research Data, 2023

This finding supports the claim made study by Alagidede and Ibrahim (2017) that exchange rates in certain African countries, including Ghana, are characterized by significant volatility. The data reveals that, on average, trade openness, measured as net trade (% GDP), stands at 64.69. The maximum value recorded is 152.547, while the minimum value is 1.295. The high level of trade openness in a country tends to attract foreign capital, including foreign banks. Therefore, the high trade openness observed in the African sample suggests that more foreign banks can be attracted to these countries.

The correlation matrix results are presented in Table 4.12, revealing the relationships between variables. When considering the independent variables, there is no evidence of multicollinearity, as the correlations among the predictors do not approach a value of 1. To further investigate this, a variance inflation factor (VIF) analysis was conducted, and the findings from Table 4.13 indicate that none of the variables need to be removed from the model. This additional analysis reinforces the absence of multicollinearity within the dataset.

Table 4.12: Pairwise Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) MFD	1.000							
(2) FBP	-0.220***	1.000						
(3) INSQ	0.558***	0.031	1.000					
(4) TO	0.269***	-0.118***	0.332***	1.000				
(5) COMP	0.013	0.082*	0.133**	0.124***	1.000			
(6) CPI	-0.069	-0.005	-0.209***	0.158***	-0.028	1.000		
(7) EX	-0.173***	-0.008	-0.190***	-0.005	0.133**	-0.283***	1.000	
(8) GDPPC	-0.010	0.023	0.009	0.006	-0.054	-0.005	-0.062	1.000

Note: MFD = Financial Development Index, FBP = Foreign banks presence, CPI = Inflation, INSQ = Institutional Quality Index, Exchange = Exchange rate, GDPPC = income equality, TO = Trade Openness, Comp = Competition. ***, ** and * are significant levels at 1%, 5% and 10% respectively.

Source*:* STATA 17 Output from Research Data, 2023

Table 4.13: Variance Inflation Factor (VIF) Results

	VIF
Foreign banks presence	1.300
Institutions quality	1.300
Trade openness	1.270
Competition	1.200
Inflation	1.170
Exchange rate	1.090
Income equality	1.050
Mean VIF	1.200

Note: None of the values for the individual variables are above 5 as prescribed by the rule of thumb whilst the mean VIF is also below the rule of thumb of 10.

Source: STATA 17 Output form Research Data, 2023

4.3.2 GMM Results on FBP, Institutions and Financial Development Nexus

The regression results from two-step system GMM estimation are presented in Table 4.14 and Table 4.15, where the study used four different measures of financial development including the composite financial development, financial market access index, financial markets efficiency and financial markets index (FMI). The variables of interest are FBP and institutional quality. The study also examine the effects of the lag of the financial development and the standard control variables, including, competition, trade openness, real exchange rate, income equality and inflation.

The results, as shown in Table 4.14 illustrates that the lags of all the various measurements of financial development are statistically significant and had the expected signs. By implication, when a country is able to boost its financial development, in the future its financial development will be affected positively by previous level of financial development. Table 4.14 also indicated that FBP at all levels affect financial development positively. The positive effect suggests that, the presence of foreign banks increases competition in the host country, which in turn changes the behaviour and performance of incumbent local banks (Yin, 2021). This can help borrowers to access funds at a lower rate (Bremus, 2015). By implication, when there is competition among banks due to increase in FBP, efficiency improves (Ofori-Sasu

et al., 2019). The findings concur with the study by Gopalan and Rajan (2018), Hassan et al. (2012), and Kobeissi and Sun (2010). However, the result is inconsistent with the Detragiache et al. (2008), Claessens and Van Horen (2014b) who found negative effect of FBP on financial development. The results also show that FBP has a greater positive impact on financial market efficiency index and minimal impact on FMI, as compare to the other measures of financial development. This result support the findings of Rai et al. (2021) and Azmeh (2018), who found that FBP boosts the efficiency of financial market.

The findings in Table 4.14 illustrate that, while institutions spike financial development index and FMI, it hampers financial market access index and financial market efficiency index. The positive effect of institutional quality suggest that the financial systems have been well regulated and supervised to ensure that savers' confidence is not undermined by bank failures and that savings are channelled to more productive investments rather than in the pockets of connected individuals, or invested in high-risk projects (Girma & Shortland, 2007). The negative effect could be that in some countries in Africa, the institutions that oversees the financial market are inactive and do not ensure efficient allocation of resources.

The study introduces an interaction term as shown in equation (3.7) and the results are presented in Table 4.15. The study found that FBP had a higher positive effect on financial development and larger coefficients (0.5890, 0.447, 0.425 and 0.289) as compared to small coefficients in Table 4.14 (0.381, 0.364, 0.415 and 0.191). The results as shown in Table 4.15 illustrate that institutional quality plays a very significant role in FBP-financial development nexus. Table 4.15 showed that the coefficient of the interaction term is statistically significant, hence the study proceed to find the net effect of FBP. This is shown by the computation from equation (3.8) where the study used the unconditional and conditional effect of FBP coefficients (0.5890 and 0.4845 respectively) and the mean value of institutional quality (-0.5344) in the case of Column 1 of Table 3.6.

$$\frac{\partial FD_{it}}{\partial FBP_{it}} = \emptyset_2 + \emptyset_8(\overline{InsQ_{it}}) = 0.5890 + 0.4845\ (-0.5344) = 0.3300$$

Table 4.14: FBP, Institutional Quality and Financial Development

VARIABLES	FDI	FMAI	FMEI	FMI
	Model 1	Model 2	Model 3	Model 4
MFD_{t-1}	2.545***			
	(1.109)			
$FMAI_{t-1}$		0.615**		
		(0.281)		
$FMEI_{t-1}$			1.492***	
			(0.485)	
FMI_{t-1}				1.522***
				(0.312)
Foreign bank presence	0.381***	0.364***	0.415***	0.191***
	(0.0589)	(0.0755)	(0.143)	(0.0322)
Institutional quality	0.409***	-0.298***	-0.229**	0.107***
	(0.126)	(0.103)	(0.104)	(0.0321)
Competition	0.132***	0.00543	-0.00682	0.101***
	(0.0303)	(0.0116)	(0.0103)	(0.0112)
Trade Openness	0.00326***	0.000608***	-0.000274	0.00227***
	(0.000827)	(6.85e-05)	(0.000306)	(0.000251)
Real exchange rate	-0.00120	0.000762	-0.000137	-0.000987
	(0.000229)	(0.000361)	(0.000322)	(0.000166)
Income equality	0.0726***	0.301***	0.237***	0.147***
	(0.0258)	(0.0863)	(0.0733)	(0.00589)
Inflation	-0.0229***	-0.00836**	-0.0104***	-0.00343
	(0.00780)	(0.00417)	(0.00345)	(0.00247)
Constant	-1.153***	-2.526***	-1.938***	-1.465***
	(0.107)	(0.701)	(0.624)	(0.0500)
Number of instruments	20	20	20	20
F-Statistics	325.10***	312.12***	214.21***	317.00***
P-Value	0.000	0.000	0.000	0.000
AR (1)	0.071	0.041	0.061	0.054
AR (2)	0.147	0.167	0.271	0.321
Sargan Test	0.141	0.154	0.123	0.211
Hansen Test	0.281	0.381	0.231	0.421

***Note**:* ***, ** and * are significant levels at 1%, 5% and 10% respectively. Values in parenthesis are standard errors. MFD is Financial Development Index. FMAI is financial market access index. FMEI is financial market efficiency index. FMI is financial market index. Column (1) is where FDI is the dependent variable. Column (2) is where FMAI is the dependent variable. Column (3) is where FMEI is the dependent variable. Column (4) is where FMI is the dependent variable

Source*:* STATA 17 Output from Research Data, 2023

The study did similar computation for Column 4 since the coefficient of the interaction term is statistically significant, where the study had net effect value of 0.1543 as in the computation below;

$$\frac{\partial FD_{it}}{\partial FBP_{it}} = \emptyset_2 + \emptyset_8(\overline{InsQ_{it}}) = 0.2890 + 0.2520\ (-0.5344) = 0.1543$$

The net effect of 0.3300 and 0.1543 suggest that in the presence of institutional quality, FBP induce financial development by 0.3300 and 0.1543 units. In other words, while FBP positively influence financial development, institutional quality magnifies the positive effect. This means that in the presence of less corruption, better government effectiveness, favourable rule of law, political stability among others, foreign banks will be more efficient in promoting financial development of the host countries. In addition, quality institutions do not only attract foreign banks but also builds their confidence level, which could attract new investors into the country (UNCTAD, 2019). The findings are necessary for Africa, since better institutions could reduce "*cherry pecking*" behaviour of foreign banks in Africa. This is because better institutions help the allocation of financial resources through regulations and absence of corruption. Therefore, when there are better institutions, small firms who tend to create more employment won't collapse because they will get access to credit from these foreign banks.

In terms of the controls, competition has a positive effect on MFD and FMI (see column 1 and 4 of Table 4.14). This means that an increase in competition in the banking sector results in greater effectiveness, provision of better financial services to consumers, development that is more prominent, lower costs, and global competitiveness. Competition also allows efficient banks to enter into the financial market (through advertisements and creating awareness of their presence), dislodging inefficient banks. With the liberalization of the financial sector in the last decade, the number of banks in Africa has doubled and the level of competition in the industry has increased (Dary & Haruna, 2013). The positive result is akin to Ricky-Okine et al. (2020) who showed that competition enhances financial development in SSA. The study's finding is inconsistent with that of Carbó et al. (2009), who concluded that banking competition could have a negative effect on credit allocation for small firms with information issues.

Table 4.15: The Moderation Role of Institutional Quality

VARIABLES	FDI	FMAI	FMEI	FMI
	Model 5	Model 6	Model 7	Model 8
MFD_{t-1}	4.103***			
	(1.121)			
$FMAI_{t-1}$		0.915***		
		(0.145)		
$FMEI_{t-1}$			1.612***	
			(0.504)	
FMI_{t-1}				1.781***
				(0.451)
Foreign bank presence	0.5890***	0.447***	0.425***	0.289***
	(0.1230)	(0.135)	(0.125)	(0.124)
Institutional quality	0.898***	-0.854***	-0.793**	0.396***
	(0.0263)	(0.431)	(0.231)	(0.210)
(FBP× Institutions)	0.04845**	0.349	0.4370	0.2520***
	(0.0335)	(0.4102)	(0.2604)	(0.0410)
Competition	0.214***	0.00413	0.321	0.234***
	(0.103)	(0.00202)	(0.0240)	(0.1370)
Trade openness	0.00962***	0.0608***	-0.0413	0.0318***
	(0.00473)	(0.0105)	(0.116)	(0.181)
Real exchange rate	-0.00530	0.00912	-0.0718	-0.0731
	(0.00212)	(0.0101)	(0.168)	(0.421)
Income inequality	0.1429***	0.278***	0.321***	0.428***
	(0.0234)	(0.0430)	(0.142)	(0.191)
Inflation	-0.0189***	-0.0361**	-0.0221	-0.0394***
	(0.00201)	(0.0175)	(0.0151)	(0.0117)
Constant	-3.315***	-1.312***	-2.671***	-1.143***
	(0.32)	(0.103)	(0.310)	(0.290)
F-Statistics	417.00	376.12	300.21	389.00
P-Value	0.000	0.000	0.000	0.000
AR (1)	0.041	0.052	0.071	0.053
AR (2)	0.147	0.167	0.271	0.321
Sargan Test	0.100	0.111	0.142	0.101
Hansen Test	0.191	0.279	0.215	0.312
Net Effect	0.3300	n/a	n/a	0.1543

Note: ***, ** and * are significant levels at 1%, 5% and 10% respectively. Values in parenthesis are standard errors. FDI is Financial Development Index. FMAI is financial market access index. FMEI is financial market efficiency index. FMI is financial market index. Column (1) is where FDI is the dependent variable. Column (2) is where FMAI is the dependent variable. Column (3) is where FMEI is the dependent variable. Column (4) is where FMI is the dependent variable

Source: STATA 17 Output from Research Data, 2023

Furthermore, trade openness enhances MFD and other individual index (i.e., financial market access index and FMI). This implies that when an economy is open to foreign

investors, these investors come with advance technology and innovation, allows competitions and spillover effects, which will then induce financial development (Rajan & Zingales, 2003). Also, through the accessibility of more efficient technology, an open trading regime could build the result of financing business people, cultivating the development of dynamic capital sectors, and stay away from a 'low growth trap' equilibrium (Ginebri et al., 2001). Empirically, studies (Menyah et al., 2014; Wajda-Lichy et al., 2020; Xu, 2011) also had positive effect of trade openness on financial development.

Income equality measured with real GDP per capita exhibited a positive effect on financial development (MFD and the other three individual indexes of financial development) with coefficients of 0.076, 0.301, 0.237 and 0.147 respectively (see Table 4.14). This implies that when there is an equitable distribution of national income, financial systems in these 28 African countries will develop. Although the regression output suggests that an increase in income level induces financial development in Africa, by experience most countries in the study's sample shared different thoughts. For instance, Kenya is seen to have wide income gap even though their economy has witnessed some level of growth since 2005, millions are still affected with extreme levels of inequality. Whereas Côte d'Ivoire, South Africa and Uganda have also experienced a rise in inequality since the 1990s. South Africa remains the most unequal African country and indeed, one of the most unequal in the world (Bhorat et al., 2016).

In Table 4.14, inflation dampens the different measures of financial development such as MFD, financial market access index, financial market efficiency index with exception of FMI. Intuitively, the negative results mean that as inflation rises, the real return on money and capital decreases. This decline will spike crisis in the credit market and lead to the low access to credit. This also suggest that, there will be credit allocation inefficiencies since the financial sectors will lend less and could have a negative impact on investment. The countries under study have implemented numerous policies to maintain the inflation rate at a single digit; unfortunately, the rates still fluctuate. For example, Kenya has been experiencing low inflation rates for some years now. The result confirms the study by Tinoco Zermeño et al. (2018), who identified that inflation has a negative effect on financial development for developing countries.

4.3.3 Sensitivity Analysis

A sensitivity analysis was undertaken by using private credit which was measured with domestic credit to private sector (% of GDP) as a proxy of financial development as against MFD. The whole model in Table 4.16 is significant at 5 percent whereas that of financial development index in Table 4.14 is significant at 1 and 5 percent. Additionally, the coefficient of FBP on MFD was higher (0.381 as shown in column (1) of Table 4.14) and statistically significant at 1 percent whilst that of private credit exhibited a 5 percent significance and a smaller coefficient (0.152 as shown in Table 4.16).

Table 4.16: FBP, Institutional Quality and Private Credit

VARIABLES	Private Credit
Bank credit to private sector $_{t-1}$	2.545***
	(0.145)
Foreign bank presence	0.152**
	(0.0621)
Competition	0.00521**
	(0.00623)
Trade openness	-0.00101
	(0.000120)
Real exchange rate	-0.00107***
	(0.000254)
Institution quality	0.00108***
	(0.00052)
Income equality	0.0126***
	(0.0108)
Inflation	-0.0119***
	(0.0213)
Constant	-3.133***
	(0.218)
Number of Instruments	16
F-Statistics	217.21**
P-Value	0.034
AR (1)	0.049
AR (2)	0.147
Sargan Test	0.056
Hansen Test	0.514

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Source: STATA 17 Output from Research Data, 2023

The implication of the positive effect of FBP on private credit is that foreign banks can bring additional capital into the domestic banking system, which can increase the

availability of credit to borrowers (Claessens & Van Horen, 2012). This can have a positive impact on investment and economic growth, particularly in industries that may have been previously underserved by domestic banks (Laeven & Valencia, 2012). For example, FBP has been shown to increase lending to SMEs in emerging markets (Degryse et al., 2012).

4.4 Foreign Bank Presence, Financial Development and Inclusive Growth

In this section, the study provides the empirical results regarding the nexus between FBP, financial development and inclusive growth. There are three sub-sections which discusses the empirical results of the study. These sub-sections are descriptive and correlation matrix, GMM results, and robustness checks for inclusive growth and GMM.

4.4.1 Descriptive Summary and Correlation Matrix

Table 4.17 presents the results of the descriptive statistics, while the correlation matrix is presented in Table 4.18. The normalized inclusive growth index (IGI) has a mean of 0.4304, indicating that inclusive growth in these African countries is very minimal. The African sample has a higher number of domestic banks than foreign banks, with a mean of 0.4529 for foreign banks, indicating that foreign banks hold about 45% of the total assets of the sample of 28 African countries used in the study (see Table 4.17). On a country-specific basis, the data highlights that Mozambique (92.8%) and Rwanda (92.5%) experience substantial inflows of FBP, whereas Libya (8.6%), Nigeria (7.2%), and Sudan (8%) demonstrate relatively lower levels of FBP inflow (see Figure 1.2). The average value for financial development is 0.1582, with a range from 0.0505 to 0.6484. This indicates that, on average, the financial system of the 28 African countries is less developed since it falls within the lower range of the index. Analysing the data at a national scale, it becomes apparent that South Africa (55.5%) leads in terms of financial development In contrast, Sierra Leone trails with a modest 6.7% (see Figure 1.5).

Institution quality has a mean of -0.5048, which suggest that the African sample has weak institutions and governance since the mean value is in the range of low institutions and governance. This could however reduce the inclusive growth agenda in Africa. On average trade openness has a mean of approximately 65% with a maximum value and

a minimum value of approximately 127 and 16 respectively. The elevated level of trade openness in a nation can serve as a magnet for increased foreign capital infusion, including foreign banks. Therefore, given the notably high trade openness within the African sample, it implies a heightened potential for attracting a greater number of foreign banks. This therefore confirms to a statement made by Alagidede et al. (2013), Aitken and Harrison (1999) and World Bank (1997) that some African countries implemented diverse macroeconomic policies such as trade liberation to attract more foreign capital such as foreign bank. The data on inflation demonstrates a wide range of inflation rates, with both negative (*minimum value of -9.7976*) and high positive (maximum value of 324.9969) values as shown in Table 4.17. This suggests a significant level of volatility and fluctuations in the general price level during the observed period. Such variability can have implications for various economic factors, including purchasing power, investment decisions, and policy considerations.

Table 4.17: Descriptive Statistics

Variables	Obs	Mean	SD	Minimum	Maximum
Inclusive growth	532	0.4304	0.2427	0.0000	1.0000
Foreign bank presence	448	0.4529	0.3186	0	1
Financial development	530	0.1582	0.1148	0.0505	0.6484
Institutional quality	532	-0.5048	0.4999	-1.6639	0.8539
Bank concentration	461	65.0282	24.4253	0.000	100
Inflation	512	8.2414	18.0785	-9.7976	324.9969
Population growth	532	2.4197	0.8385	0.0545	5.6050
Trade openness	513	65.1263	26.2538	1.2951	152.5471
Labor Force	532	62.2746	15.2282	22.71	88.6
Domestic capital	514	24.0082	8.0626	1.0968	53.988
Government expenditure	513	14.4440	4.2941	0.9517	27.9400
Infrastructure	530	4.1185	6.4294	0.0569	34.2728

Notes: Obs. is the observation for the study. SD represent standard deviation

Source: STATA 17 Output from Research Data, 2023

Table 4.17 indicate that the population has been growing at a moderate average rate with relatively consistent levels of variability. The presence of both low and high

population growth rates suggests that there have been periods of slower population growth as well as periods of rapid population expansion. This characteristics provide valuable insights into the dynamics and patterns of population growth for the studied period, which can be relevant for various research or policy purposes. The results from Table 4.17 highlight that the labour force has exhibited a mean size of 62.2746 with moderate variability. The data shows a range of labour force sizes, with the smallest size recorded at 22.7100 and the largest size recorded at 88.6000. This descriptive provide valuable insights into the dynamics and characteristics of the labour force during the studied period, which can be relevant for analysing employment trends, workforce capacity, and labour market dynamics and its effect on inclusive growth. The average domestic capital stands at 24.0082 with a moderate degree of variability (refer to Table 4.17). The data encompasses a spectrum of domestic capital levels, ranging from a minimum of 1.0968 to a maximum of 53.988. This behaviour of the data offer valuable insights into the typical level and range of domestic capital, which can be useful in examining investment trends, economic growth, and developmental dynamics during the analysed period.

On average, government spending is about 14%. and it ranges from a minimum of 0.9517% to a maximum of 27.94% (see Table 4.17). This nature of the data shows the magnitude and fluctuations in government spending, which can be pertinent for examining fiscal policies, public sector investments, and the overall economic governance within the specified period. The data on infrastructure shows that the average infrastructure score is 4.1185 with minimum and minimum of 0.0569 and 34.2728 respectively. This reveal the level and variability of infrastructure quality, offering a useful framework for assessing infrastructure conditions, pinpointing areas requiring improvements, and evaluating the impact of infrastructure on economic and social factors throughout the analysed period.

Table 4.18 presents the pairwise correlation matrix results, highlighting three key findings. Firstly, it reveals the direction of the relationship between two variables, indicating whether it is positive or negative. Secondly, it assesses the strength of the relationship, categorizing it as either strong or weak. Lastly, it aids in detecting the presence of multicollinearity between two variables.

Table 4.18: Pairwise Correlation Matrix

	IGI	FBP	INSQ	COMP	CPI	POP	TO	FD	LF	GCF	GE	TS	V_1	V_2
IGI	1													
FBP	-0.464***	1											1.99	2.04
FD	0.428***	-0.249***	0.558***	-0.047	-0.081*	-0.600***	0.298***	1						2.38
INSQ	0.068	0.127***	1										1.92	2.15
COM	-0.306***	0.034	-0.054	1									1.23	1.19
CPI	-0.100**	0.033	-0.223***	0.110**	1								1.19	1.17
POP	-0.672***	0.4693***	-0.443***	0.097**	0.119***	1							4.11	4.16
TO	0.312***	-0.1447**	0.3452***	0.215***	0.160***	-0.399***	1						1.41	1.45
LF	-0.771***	0.525***	-0.097**	0.047	0.137***	0.560***	-0.208***	-0.497***	1				1.95	1.95
GCF	0.059	0.0886	-0.007	0.027	0.0308	0.043	0.318***	-0.001	-0.0029	1			1.43	1.40
GE	0.090	0.0893*	0.343***	0.319***	-0.0702	-0.194***	0.413***	0.421***	-0.137***	0.179***	1		1.21	1.28
TS	0.652**	-0.421***	0.470***	-0.112**	-0.110**	-0.7965	0.478***	0.556***	-0.452***	-0.0364	0.185***	1	3.32	3.70
MV													1.98	2.08

Notes: ***, ** and * are significant levels at 1%, 5% and 10% respectively. IGI = Normalised Inclusive Growth; FBP = Foreign bank presence; INSQ = Institutional quality index; COM = Bank concentration; CPI= inflation; Pop = population growth; TO = trade openness; FD = financial development; LF = labor force; GCF = Domestic capital; GE = Government expenditure; TS = Infrastructure; MV is the mean of variance inflation factor (VIF); V_1 is the VIF results when the model was estimated without FD whereas V_2 is when FD was included

Source: STATA 17 Output form Research Data, 2023

For instance, Table 4.18 reveals that institutional quality (INSQ), trade openness (TO), financial development (FD), government expenditure (GE), domestic capital, and telephone (TS) exhibit a positive relationship with the inclusive growth index (IGI). On the other hand, factors such as FBP, bank concentration (COM), inflation (CPI), population growth (POP), labour force (LF) demonstrate a negative relationship with IGI (refer to Table 4.18). Furthermore, it is observed that labour force, infrastructure, and population display a stronger relationship with IGI compared to the other variables. Regarding the predictors, there is no indication of high multicollinearity since the relationships among them do not approach a value of 1, as suggested by the rule of thumb. The VIF results in Table 4.18 reveals that none of the individual VIFs are greater than 5 and mean VIF is also less than 10. Hence, there is no multicollinearity.

4.4.2 GMM results on FBP, Financial Development and Inclusive growth

Tables 4.19 and 4.20 present the regression output from two-step system GMM estimation, where some countries such as South Africa and Nigeria, with special characteristics, were excluded separately to assess their impact. For instance, South Africa has cutting-edge financial and banking frameworks that ensure efficient allocation of financial services that are appropriate and secure. Such performance can be attributed to the exhaustive banking regulations and powerful monitoring by the South African Reserve Bank (El Menyari, 2019). In the case of Nigeria, it has been identified as the most populated country in Africa, with a population of about 223.8 million in 2023[14], making it the second most populous country in the world after China. Hence, some of the models in the present study were estimated without South Africa and Nigeria. This also implies that in both Tables (i.e., Table 4.19 and Table 4.20), column (2) excludes South Africa, column (3) excludes Nigeria, and column (4) excludes both countries from the sample.

The results from Table 4.19 indicate that FBP significantly contributes to inclusive growth. This suggests that an increase in FBP can enhance the allocation of financial resources in a more productive way, promoting growth and development, which is supported by previous empirical studies (see, Wu et al., 2010; El Menyari, 2019). The findings suggest that African governments can take advantage of the benefits of FBP

[14] https://www.worldometers.info/population/countries-in-africa-by-population/

by integrating modern banking techniques into the banking sector and improving the capital level in the stock market. However, when South Africa was excluded from the sample, the impact of FBP on inclusive growth was found to be minimal. Similar results were obtained when Nigeria was excluded, and the impact was even worse when both South Africa and Nigeria were excluded from the sample (see Table 4.19). The present study's findings are consistent with those of El Menyari (2019), who found that FBP has a significant positive effect on economic growth in Africa, particularly in South Africa.

Table 4.19: FBP and Inclusive Growth

Variables	**(1)**	**(2)**	**(3)**	**(4)**
L. Inclusive growth	0.7560***	0.8003***	0.8247***	0.9516***
	(0.1090)	(0.0711)	(0.0345)	(0.0841)
Foreign banks presence	0.2415***	0.1284***	0.1536***	0.0239***
	(0.0675)	(0.0278)	(0.0164)	(0.0027)
Bank concentration	0.0768	-0.0011	0.0014	0.0037
	(0.1256)	0.0006	(0.0016)	(0.1234)
Institutional quality	0.3427***	0.2312***	0.0047	0.1284***
	(0.1068)	(0.0121)	(0.0040)	(0.0278)
Population	0.0026	-0.0019	-0.0769*	-0.0011***
	(0.0018)	(0.010)	(0.0413)	(0.0004)
Inflation	-0.0138***	-0.0011**	-0.0131***	-0.0023**
	(0.0042)	(0.0003)	(0.0040)	(0.0011)
Infrastructure	0.0057	0.0027	-0.0004	0.0092***
	(0.0493)	(0.0019)	(0.0042)	(0.0023)
Government expenditure	0.0033***	0.0045***	0.0612***	0.0007
	(0.0007)	(0.0001)	(0.0043)	(0.0014)
Domestic capital	0.0108***	0.0077***	0.0047	0.0020***
	(0.0024)	(0.0004)	(0.0040)	(0.0006)
Trade openness	0.0090	0.0012	0.0042	-0.0001
	(0.0170)	(0.0062)	(0.0948)	(0.0004)
Labor force	0.0148**	0.0475	-0.0004	0.0195
	(0.0058)	(0.0386)	(0.0042)	(0.0186)
Constant	0.1830*	0.0146***	0.0765***	0.0004**
	(0.0990)	(0.0013)	(0.0043)	(0.0042)
Observations	304	292	292	280
Number of instruments	24	23	24	21
F-Statistics	3215.10***	1638***	1741***	2876***
P-Value	0.000	0.000	0.000	0.000
AR (1)	0.013	0.037	0.033	0.041
AR (2)	0.147	0.271	0.143	0.167
Sargan Test	0.161	0.143	0.312	0.152
Hansen Test	0.281	0.315	0.281	0.381

Notes: The values in the parenthesis are standard error whilst ***, ** and * are significant levels at 1%, 5% and 10% respectively.

Source: STATA 17 Output from Research Data,2023

Moreover, the current research investigates how financial development moderates the relationship between inclusive growth and other variables which is presented in Table 4.20. This is based on the idea that a well-established financial system can reduce information asymmetry and improve the efficient allocation of financial resources.

Table 4.20*:* The Moderation Role of Financial Development

VARIABLES	(5)	(6)	(7)	(8)
L. Inclusive growth	0.6913***	0.7614**	0.7192***	0.8762***
	(0.2210)	(0.3714)	(0.0273)	(0.0728)
Foreign bank presence	0.3431***	0.2132***	0.1793***	0.1061***
	(0.0492)	(0.0132)	(0.0618)	(0.0214)
Bank concentration	-0.0013	-0.0316	0.0351	0.0027
	(0.0039)	(0.0317)	(0.0260)	(0.0051)
Institutional quality	0.3518	0.24301***	0.2025***	0.2764***
	(0.0200)	(0.0429)	(0.0026)	(0.0622)
Population	-0.0009	-0.0005	0.0040	0.0051
	(0.0012)	(0.0016)	(0.0122)	(0.0031)
Inflation	-0.0044***	0.0094***	-0.00864***	-0.0044***
	(0.0013)	(0.0031)	(0.0024)	(0.0011)
Infrastructure	0.0015	0.0352	0.0036	0.0093
	(0.0040)	(0.0611)	(0.0109)	(0.0071)
Government expenditure	0.0342***	0.0142**	0.0121**	0.0072***
	(0.0021)	(0.0062)	(0.004231)	(0.0024)
Domestic capital	0.0117***	0.0102**	0.0143**	0.0080***
	(0.0033)	(0.0007)	(0.0053)	(0.0024)
Trade openness	0.0036	0.0027	0.0022	0.0075
	(0.0024)	(0.0048)	(0.0067)	(0.0088)
Labor Force	0.0028	0.00741	0.0020	0.0009
	(0.0020)	(0.0037)	(0.0088)	(0.0012)
Financial development	0.0183***	0.0046**	0.0163***	0.0013***
	(0.0010)	(0.0024)	(0.0038)	(0.0002)
Interaction term	0.0368***	0.0028**	0.0250**	0.00251***
	(0.0123)	(0.0011)	(0.0120)	(0.0001)
Constant	0.6213**	0.7084**	0.6081***	0.5974***
	(0.2751)	(0.2805)	(0.1326)	(0.1932)
Observations	304	292	292	280
Number of Groups	26	25	25	24
Number of Instruments	24	23	24	21
F-Statistics	4398.54***	3795.98***	2847***	2655.99***
P-Value	0.000	0.000	0.000	0.000
AR (1)	0.001	0.09	0.010	0.100
AR (2)	0.218	0.312	0.152	0.121
Sargan Test	0.010	0.027	0.023	0.051
Hansen Test	0.217	0.123	0.316	0.382
Net Effect	0.3489	0.2176	0.1833	0.1064

Notes: The values in the parenthesis are standard error whilst ***, ** and * are significant levels at 1%, 5% and 10% respectively.

Source: STATA 17 Output from Research Data, 2023

The findings in Table 4.20 suggest that financial development has a significant direct impact on inclusive growth. However, when South Africa was excluded from the sample, the coefficient of financial development declined from 0.01831 in Table 4.19 to 0.00459 in Table 4.20, demonstrating the significant impact of South Africa's developed financial sector on the results. Additionally, Table 4.20 reveals that the interaction term between FBP and financial development is positive and statistical significant at 1 and 5 percent. Since both coefficients of FBP and the interaction term are significant, it is important to determine the net effect. To identify this net effect, the present study computed it based on equation (3.11), with the results shown in Table 4.20. The coefficients of the net effect imply that in the presence of financial development, FBP enhances inclusive growth by 0.3799, 0.216, 0.2043, and 0.1086, respectively. The joint effect of FBP and financial development can lead to a more diverse range of financial products. This can cater to the specific needs of various segments of the population, from microloans for small businesses to affordable housing loans for low-income individuals. This implies that when the financial sector is developed, SMEs (which contribute largely to economic activities in Africa) will have access to financial resources for their productive activities. The joint effect of FBP and financial development can also facilitate international trade and investments. This can create new economic opportunities and provide access to global markets for local businesses, thus expanding economic participation. Foreign banks often bring advanced financial technology and innovative solutions. Hence, in the presence of financial development of the host country, can lead to the creation of digital banking services, mobile payment platforms, and other technology-driven solutions that can make financial services more accessible and convenient, particularly in areas with limited physical banking infrastructure. Thus, the results of the study conform to the assertion by El Menyari (2019) that the level of impact on growth is dependent on the financial development.

Regarding the control variables, although bank concentration and trade openness were statistically insignificant, the results show that higher levels of institutional quality are beneficial for inclusive growth (see Table 4.19 and 4.20). The positive results of institutional quality imply that sound institutions and governance will ensure the equitable distribution of public resources (Ofori & Asongu, 2022). Quality institutions also attract foreign investors (such as foreign banks) since they create a conducive

business environment. Additionally, the results indicate no relationship between population and inclusive growth with the inclusion of Nigeria and South Africa in the sample, as shown in column 1 of Table 4.20. However, when Nigeria is excluded, population significantly dampens inclusive growth. Strikingly, when both South Africa and Nigeria were omitted from the sample, population growth significantly impacted inclusive growth adversely. Thus, the exceptional qualities of these two countries play a significant role in this relationship. The negative impact of population shows that when population increases, there is pressure on public resources which deter some people in the population to get access to public goods. This study is similar to El Menyari (2019) who concluded that SSA's population has a negative effect on economic growth. However, the results of the present study contradict the findings of Gyamfi et al. (2022).

In addition, the empirical results of the present study reveal a negative relationship between inflation and inclusive growth. This outcome suggests that when inflation is high and prices rise rapidly, the purchasing power of individuals, particularly those with fixed or low incomes, is eroded. This means they can afford fewer goods and services, leading to a decrease in their standard of living. Inclusive growth seeks to improve the well-being of all citizens, but inflation disproportionately affects those with limited financial resources. The present study found a positive and significant effect of government spending on inclusive growth. Unfortunately, this relationship was statistically insignificant when South Africa and Nigeria were excluded from the sample (see Table 4.20). Government spending can help overcome barriers between the poor and the rich, which has the potential to reduce inequality. These findings are consistent with the empirical works of Haque and Khan (2019) and Razmi and Bazazan (2012). In accordance with neoclassical and endogenous theory, the labour force has a positive effect on inclusive growth, and the present study confirms this relationship. This means that as a country increases its workforce, its growth becomes more inclusive. As can be seen in Tables 4.19 and 4.20, domestic capital significantly and positively influences inclusive growth. However, when Nigeria is excluded from the sample, the relationship becomes negative. The positive effect of domestic capital on inclusive growth suggests that when private investment increases, it improves the welfare of citizens, leading to economic development. Empirically, this result is consistent with the findings of Zaghdoudi (2018), Hukom (2015) and Gyamfi et al.

(2022), but contradicts the findings of the following; (Bakari & Bouchoucha, 2021; Belloumi & Alshehry, 2018). Lastly, Table 4.19 shows that infrastructure significantly impacts shared growth prosperity when Nigeria and South Africa are excluded from the sample. By implication, when infrastructure measured with telephone subscribers increases, it helps citizens, especially the youth, to access ICT, which can equip them to realize their innovative ideas and contribute meaningfully to national development.

4.4.3 Robustness check for GMM Results and Inclusive Growth Index

Robustness Check for GMM Results

Robustness checks were conducted on the results using the lag of the dependent variable. The findings in Tables 4.19 and 4.20 demonstrate that the lag of inclusive growth has a positive and significant influence on inclusive growth. This implies that the past level of inclusive growth is one of the key drivers of the current level of inclusive growth. The results demonstrate their robustness, as they reveal a persistent level that signifies the superior performance of GMM when estimating such data. The next robustness check was the Hansen Test, where its p-values were statistically insignificant at conventional levels. Thus, the study fails to reject the null hypothesis of correlation between the set of identified instruments and residuals (Windmeijer, 2005). This implies that the instruments used to correct endogeneity are valid. Finally, the results of the Arellano-Bond test for autocorrelation [AR (2)] indicate the absence of second-order serial correlation in the residuals (Narayan et al., 2011).

Robustness Check for Inclusive Growth Index

To ensure the robustness of the inclusive growth index, the present study conducted diagnostic tests of PCA such as eigenvalues, the scree plot, KMO measure of sampling adequacy, and Bartlett's test. As shown in Table 4.21, the KMO test result for the present study is 0.759, which is satisfactory. When the KMO test result is above 0.5, the individual variables used in constructing the index are valid and best fit for constructing the index. The chi-square's p-value of 0.000 and the chi-square statistics of 3174.363 of the Bartlett test provide additional evidence for the interrelation between the variables used to create the index as shown in Table 4.21. In Table 4.22, evidence shows that the inclusive growth index is generated from the preceding components that are more than one and cumulatively account for 69.12% of the nine components which

meet the criterial for creating index using PCA that is if a component's eigenvalue is greater than 1 (Tchamyou et al., 2019). The index was in zeros, the present study normalized the index created to fall between the range of 0 and 1.

Table 4.21: KMO and Bartlett Test for Inclusive Growth Index

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.759
Bartlett's Test of Sphericity	Chi- Square	3174.363
	df	36
	Sig	0.000

Source: STATA 17 Output from Research Data, 2023

Table 4.22: Principal Component Eigenvalues

Components	Eigenvalue	Difference	Proportion	Cumulative
PC1	4.188	2.157	46.537	46.537
PC2	2.032	1.096	22.573	69.109
PC3	0.935	0.395	10.391	79.500
PC4	0.540	0.048	5.998	85.498
PC5	0.492	0.131	5.465	90.963
PC6	0.361	0.162	4.009	94.972
PC7	0.199	0.064	2.212	97.183
PC8	0.136	0.018	1.506	98.689
PC9	0.118	2.157	1.311	100.000

Source: STATA 17 Output from Research Data, 2023

4.5 Financial Development, Globalisation and Foreign Direct Investment

The empirical results pertaining to financial development, globalisation and FDI are presented and discussed in this section which has two main subsections. These sub-sections are descriptive statistics and correlation matrix, and 2SLS results.

4.5.1 Descriptive Statistics and Correlation Matrix

The study present the descriptive statistics in Table 4.23 whereas Table 4.24 present the correlation matrix. Table 4.23 shows an average FDI flow of about 4.2% with a standard deviation of 8%. This indicated that FDI grows by 4.2% of GDP which is quite minimal as compared to China which has an average FDI inflow of 6.3%.[15] In contrast to the overall sample, an analysis at the country level highlights distinct variations. Specifically, Liberia stands out with the highest FDI inflow, accounting for 24% of its GDP. On the other end of the spectrum, Burundi (4.8%) and Comoros (4.9%) display the lowest levels of FDI inflow, as illustrated in Figure 1.6. Although MFD indicates that the African sample generally has a less developed financial sector with a mean of 13.737, breaking down the index into FII and FMI reveals a different story. Specifically, FII is comparatively high with a mean of 21.744%, while FMI has a mean of 5.659%. This implies that although the African sample may excel in terms of FII, their FMI may still be lacking. These findings can be observed in Table 4.23. Examining the data on a country-wide level reveals a distinct pattern: South Africa takes the lead in financial development (i.e. MFD), showcasing a significant 55.5% figure. Conversely, Sierra Leone falls behind with a more modest 6.7%, as visually presented in Figure 1.5.

Out of the different measures of globalisation, political globalisation exhibits the highest mean value of 55.911%, while social globalisation presents the lowest level of globalisation (i.e., mean of 38.793%). Examining the data at the country level, it becomes evident that both Mauritius and South Africa stand out as highly globalized economies, each scoring 65%. On the other hand, Eritrea demonstrates a lower level of globalization, with a score of 29%. The degree of trade openness has a mean value of 71.234, with a minimum of 0.757 and a maximum of 230.958. Countries with high levels of trade openness tend to be more attractive to foreign investment, including FDI. The GDP growth of the African sample is 4.16% with its minimum and maximum value of -50% and 149.073% respectively. The average value of domestic capital is 24.028, with a maximum of 53.988 and a minimum of 1.097. This information suggests that there may be considerable variation in domestic capital across the African countries included in the analysis. The high maximum value indicates that some countries may

[15] https://www.china-briefing.com/news/china-records-steady-fdi-growth-in-2022/#:~:text=FDI%20inflows%20in%202022,growth%20rate%20of%208%20percent.

be investing heavily in domestic capital, while the low minimum value suggests that other countries may be allocating fewer resources to domestic capital.

Table 4.23: Descriptive Statistics

Variable	Obs	Mean	SD	Min	Max
Foreign direct investment	1160	4.2	8.009	-18.918	103.337
Financial development index	1176	13.737	10.692	0.00	64
Financial institution index	1176	21.744	13.156	0.00	73
Financial market index	1176	5.659	9.687	0.00	54
Globalisation index	1176	46.156	9.507	22.473	72.047
Economic globalisation	1176	43.633	11.084	21.031	84.887
Social globalisation	1176	38.793	13.405	10.466	78.315
Political globalisation	1176	55.911	16.776	14.829	89.152
Trade openness	1104	71.234	37.229	.757	230.958
Economic growth	1153	4.163	7.543	-50.339	149.973
Domestic capital	1047	22.7	10.053	-2.424	79.401
Infrastructure	1154	44.971	43.909	0.00	185.559
Inflation	1152	9.019	27.659	-78.562	513.907
Institutional quality index	1176	-0.616	0.599	-2.008	0.876

Note: Obs is observation; SD is the standard deviation; Min is the minimum value and Max is the maximum value.
Source: STATA 17 Output from Research Data, 2023

Roughly 45% of individuals, as measured by mobile phone subscribers, have access to infrastructure. This level of infrastructure development has the potential to attract increased foreign investment. On average, the inflation rate (with a mean of 9.019) remains below the acceptable single-digit limit. However, certain countries experience extreme fluctuations with the highest rate recorded at 513.907 and the lowest at -78.562. The composite index of institutions has a mean value of -.616, indicating weak institutions and governance in Africa, as the mean value falls within the low range of institutions and governance.

Table 4.24 Pairwise Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) FDI	1.000													
(2) FDi	0.012	1.000												
(3) FI	0.028	0.938***	1.000											
(4) FM	-0.024	0.828***	0.625***	1.000										
(5) GI	0.045	0.667***	0.631***	0.585***	1.000									
(6) EcGI	0.243***	0.585***	0.587***	0.433***	0.677***	1.000								
(7) SoGI	0.097***	0.673***	0.716***	0.461***	0.778***	0.677***	1.000							
(8) PoGI	-0.156***	0.219***	0.125***	0.342***	0.632***	-0.029	0.091***	1.000						
(9) TO	0.410***	0.294***	0.383***	0.085***	0.289***	0.664***	0.464***	-0.315***	1.000					
(10) GDPg	0.144***	-0.054*	-0.059**	-0.036	-0.060**	0.016	-0.099***	-0.029	0.128***	1.000				
(11) GCF	0.422***	0.223***	0.262***	0.109***	0.361***	0.367***	0.319***	0.134***	0.348***	0.039	1.000			
(12) Inf	0.047	0.363***	0.397***	0.244***	0.613***	0.404***	0.651***	0.259***	0.197***	-0.102***	0.287***	1.000		
(13) CPI	0.063**	-0.060**	-0.086***	-0.020	-0.052*	-0.074**	-0.094***	0.037	0.024	-0.059**	-0.051	-0.133***	1.000	
(14) insq	0.025	0.639**	0.676***	0.435***	0.531***	0.548***	0.638***	0.044	0.321***	0.011	0.194***	0.237***	-0.177***	1.000

Note: FDI denotes foreign direct investment; FDi is financial development index; FI denotes financial institution index; FM represent financial market index; GI is the globalisation index; EcGI is the economic globalisation; SoGI is the social globalisation; PoGI is the political globalisation; TO is trade openness; GDPg represent the economic growth; GCF is the domestic capital; inf represent infrastructure; CPI is the inflation; Insq represent institutional quality index; *** p<0.01, ** p<0.05, * p<0.1

Source: STATA 17 Output from Research Data, 2023

Table 4.24 present the correlation matrix which examines the relationships among the variables used for the study. While all variables exhibit a positive correlation with FDI, political globalization had a negative relationship with FDI. The different proxies of globalization are highly correlated with one another. For example, economic globalization and social globalization are highly correlated, with a correlation coefficient of 0.778. Likewise, the study observed a strong correlation with the disaggregated measure of financial development. As a result, to avoid the issue of multicollinearity, the study included these variables separately in the estimations of the study. The study went ahead and tested multicollinearity with VIF which is presented in Table 4.25. The results revealed no multicollinearity since the individual VIFs are less than 5 and mean VIFs are less than 10.

Table 4.25: Variance Inflation Factor

Variables	VIF_1	VIF_2	VIF_3	VIF_4	VIF_5	VIF_6	VIF_7
MFD	2.040						
FI		2.38					
FM			1.35				
GI				2.38			
EcGI					2.88		
SoGI						3.82	
PoGI							1.27
TO	1.31	1.34	1.32	1.31	1.90	1.49	1.57
GDPg	1.03	1.20	1.02	1.02	1.03	1.04	1.03
GCF	1.20	1.20	1.19	1.25	1.21	1.20	1.24
Inf	1.25	1.28	1.21	1.67	1.32	2.04	1.27
CPI	1.06	1.05	1.06	1.06	1.05	2.04	1.06
insq	2.03	2.14	1.56	1.67	1.61	2.01	1.25
Mean VIF	1.42	1.49	1.25	1.48	1.57	1.81	1.24

Note: MFD is financial development index; FI denotes financial institution index; FM represent financial market index; GI is the globalisation index; EcGI is the economic globalisation; SoGI is the social globalisation; PoGI is the political globalisation; TO is trade openness; GDPg represent the economic growth; GCF is the domestic capital; inf represent infrastructure; CPI is the inflation; Insq represent institutional quality index; VIF is variance inflation factor

Source: STATA 17 Output from Research Data, 2023

It is important to note that the discussions prior to this point are preliminary and require empirical testing. To investigate the effect of financial development and globalisation on FDI inflow in Africa, the study conducted empirical analysis which is presented in the following sub-section.

4.5.2 2SLS Results on Financial Development, Globalisation and FDI Nexus

This sub-section explores the interplay among financial development, globalisation, and FDI. Specifically, the analysis begins by investigating the impact of financial development on FDI. The study then explores the relationship between globalisation and FDI, as well as how globalisation affects the relationship between financial development and FDI. Addition, the study considers how the control variables may have influenced FDI. The findings are presented in Tables 4.26 to 4.29.

The analysis began by evaluating the effect of financial development on FDI. The study first used an MFD and then disaggregated it (FII and FMI) to identify which components may be more attractive to FDI. The findings in Table 4.26 indicate that the MFD has a significant coefficient of 0.0552 in attracting FDI (see Column 1 of Table 4.26). This suggests that, all things being equal, a one-unit increase in the MFD will result in a 0.0552-unit increase in FDI. This suggests that a well-developed financial system in a host country can lower transaction cost and reduce risks for foreign investors, making the country more attractive for FDI (Islam et al., 2020). The results could also mean that, financial development can facilitate the allocation of resources towards productive investments, improve access to credit and capital for local firms, and enhance the capacity of local firms to engage in international trade and investment. These factors can lead to increased investment and economic growth, creating a more conducive environment for foreign investment and promoting FDI inflows. The empirical findings conform to the eclectic theory who stipulate that financial development attract FDI.

Despite the descriptive summary indicating that the financial sector in the African sample is more developed than the financial market (see Table 4.23), the regression results demonstrate that it is the financial market that attracts FDI (see Table 4.26). Specifically, FMI has a significant positive effect on FDI inflows, as indicated by a coefficient of 0.1841 as shown in column (3) of Table 4.26. However, the analysis did not find any statistically significant effect of FII on FDI inflow (see column 2 of Table

4.26). The positive effect could mean that a robust stock exchange, for instance, allows investors to exit investments more easily, which can increase FDI. A developed financial market can lead to stability which can attract FDI because investors are more likely to commit capital to a country with a consistent regulatory framework and a history of economic stability. The findings align with the hypothesis of market-seeking FDI and other empirical studies (Bilir et al., 2019; Donaubauer et al., 2020; Otchere et al., 2016). The insignificant effect of FII on FDI may be due to the fact that their impact is not necessarily direct or immediate. This finding is supported by some empirical studies conducted in Africa and other developing countries (Phung & Mishra, 2016; Tsaurai, 2014).

The findings from Table 4.26 reveals that globalisation regardless of the proxy promote the inflow of FDI. The effect of globalisation on attracting FDI is such that if the globalisation is achieved by one unit there will be an increase of FDI into the economy by 0.4404, 0.3997, 0.4152 and 0.27 units, ceteris paribus. This suggest that globalisation has a positive impact by eliminating obstacles to foreign trade and fostering the attraction of FDI (Incekara & Savrul, 2012). Globalization facilitates the transfer of technology and expertise. Foreign companies bring advanced technology and management skills to African markets, which can lead to economic growth and innovation. Hence, it is imperative for policymakers to give careful consideration to this valuable variable and leverage its advantages.

The empirical findings in Table 4.26 indicate that among the three components of the globalization index, namely economic (0.3997 at 1% sig. level), social (0.4152 at 10% sig. level), and political globalization (0.2700 at 5% sig. level), economic globalization has a greater propensity to attract inflows of FDI compared to the other two components. The result implies that economic globalization has the potential to attract FDI through the creation of a more receptive and dynamic environment for foreign investors. The results also mean that economic globalization opens up African markets to the world. As countries become more integrated into the global economy, they offer larger consumer bases and potential profits for foreign investors.

Table 4.26: Results for Financial development, Globalisation and FDI

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Financial development index	0.0552**						
	(0.0261)						
Financial institution index		-0.0317					
		(0.0768)					
Financial market index			0.1841***				
			(0.0662)				
Trade openness	0.0815***	0.0766***	0.0815***	0.0453***	0.0217	0.0734***	0.0717***
	(0.0136)	(0.0144)	(0.0134)	(0.0150)	(0.0198)	(0.0161)	(0.0173)
Economic growth	0.0153	0.0155	0.0147	0.0280	0.0400*	0.0083	0.0173
	(0.0243)	(0.0221)	(0.0240)	(0.0205)	(0.0228)	(0.0233)	(0.0233)
Domestic capital	0.2271***	0.2379***	0.2288***	0.1929***	0.2118***	0.1844***	0.2025***
	(0.0354)	(0.0305)	(0.0365)	(0.0366)	(0.0375)	(0.0523)	(0.0422)
Infrastructure	-0.0048*	-0.0013	-0.0064**	-0.0401***	-0.0193***	-0.0580*	-0.0229***
	(0.0027)	(0.0052)	(0.0032)	(0.0104)	(0.0049)	(0.0305)	(0.0086)
Inflation	0.0121***	0.0129***	0.0123***	0.0112***	0.0126***	0.0106***	0.0113***
	(0.0034)	(0.0039)	(0.0035)	(0.0025)	(0.0043)	(0.0040)	(0.0024)
Institutional quality	0.3080	0.4815	0.2690	-0.0326	-0.7744	0.3070	0.3165
	(0.3372)	(0.3545)	(0.3395)	(0.3976)	(0.6048)	(0.4145)	(0.3186)
Globalization Index				0.4404***			
				(0.1377)			
Economic Globalization Index					0.3997***		
					(0.1096)		
Social Globalization Index						0.4152*	
						(0.2336)	
Political Globalization Index							0.2700**
							(0.1211)
Observations	921	920	914	895	895	908	914
R-squared	0.2251	0.2240	0.2205	0.1908	0.1574	0.1597	0.1589
F-Statistic	16.40***	14.79***	24.51***	63.68***	103.6***	44.43***	50.46***
Hansen Test P-Value	0.936	0.847	0.778	0.899	0.840	0.911	0.900
Kleibergen-Paap rk Test P value	0.959	0.885	0.842	0.930	0.889	0.939	0.955

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Africa is rich in natural resources like minerals, oil, and agricultural products. Economic globalization allows foreign companies to access and extract these resources for export to other parts of the world. For example, in some countries like Angola, Ghana, DR. Congo, Guinea, Nigeria and among others, the governments gave some resource development right to some foreign companies to extract and export Africa's natural resources.[16] FDI often comes with investments in infrastructure development. Global companies may build roads, ports, and factories in Africa, improving the overall business environment. This mostly occur in Africa where countries like Angola, Ghana, Nigeria and others build their roads, their dams, buildings and other infrastructure with the help of foreign investment due to economic globalisation.[17]

The study's empirical findings support the hypothesis that globalization serve as a catalyst for financial development to further promote the inflow of FDI (see Table 4.27). Globalization acts as a catalyst for financial development, which, in turn, facilitates the inflow of FDI. For instance, in Column (1) of Table 4.27, the study observes that MFD as a proxy for financial development leads to an increase in the inflow of FDI, which is further amplified by the presence of the globalization index. The joint impact of MFD and globalization index on the inflow of FDI is suggested by the coefficient of the net effect of financial development, which is determined as 0.6402 through equation (3.14) in sub-section 3.3.2. This result suggests that financial development can provide better access to financing and reduce information asymmetries, which can make investing in a foreign country more attractive to foreign investors. At the same time, globalization can facilitate the flow of capital and information across borders, thereby reducing transaction costs and improving the efficiency of international investment.

On the other hand, upon disaggregating the MFD into FII and FMI, the study found that the globalization index only interacts synergistically with FMI, thereby further augmenting the inflow of FDI (see Table 4.28 and 4.29). The net effect of FMI implies that in the presence of globalization, FMI enhances the inflow of FDI by 0.6028 units.

[16]https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/%28E%29%20AfricanBank%202007%20Ch4.pdf

[17] https://www.imf.org/en/Blogs/Articles/2014/10/28/infrastructure-investment-part-of-africas-solution

Table 4.27: The Moderation Role of Globalisation on MFD-FDI Nexus

VARIABLES	(1)	(2)	(3)	(4)
Financial development index (MFD)	1.6141***	0.3514	-0.1991	1.8161***
	(0.4836)	(0.7035)	(0.8760)	(0.5799)
Trade openness	0.0665***	0.0562***	0.0610***	0.0891***
	(0.0121)	(0.0150)	(0.0181)	(0.0143)
Economic growth	0.0236	0.0278	0.0237	0.0226
	(0.0203)	(0.0218)	(0.0192)	(0.0287)
Domestic capital	0.2095***	0.2276***	0.2285***	0.2291***
	(0.0331)	(0.0434)	(0.0366)	(0.0267)
Infrastructure	-0.0277***	-0.0127	-0.0203***	-0.0180***
	(0.0042)	(0.0093)	(0.0077)	(0.0069)
Inflation	0.0135***	0.0120***	0.0114***	0.0166***
	(0.0033)	(0.0036)	(0.0034)	(0.0044)
Institutional quality	-0.0868	0.2481	0.4228	-0.5220
	(0.5117)	(0.5509)	(0.4272)	(0.5288)
Globalization index (Gi)	0.3408***			
	(0.0703)			
Economic globalization index (Eg)		0.1455		
		(0.1454)		
Social globalization index (Sg)			0.1115***	
			(0.0319)	
Political globalization index (Pg)				0.2364**
				(0.0986)
MFD × Gi	-0.0211***			
	(0.0054)			
MFD × Eg		-0.0045		
		(0.0091)		
MFD × Sg			0.0032	
			(0.0096)	
MFD × Pg				-0.0217***
				(0.0075)
Observations	901	901	901	931
R-squared	0.1708	0.2227	0.2334	45
F-Statistic	122.6***	137.2***	104.6***	50.39***
Hansen P-Value	0.909	0.905	0.907	0.906
Kleibergen-Paap rk LM Test-P value	0.928	0.932	0.933	0.931
Net effect	0.6402	n.a	n.a	0.6028

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
Source: STATA 17 Output from Research Data, 2023

The result implies that when financial markets are developed, firms have better access to capital, which can help them finance investments, expand operations, and enter new markets. This can make a country a more attractive destination for FDI. Globalization can further enhance this effect by increasing the availability of capital across borders. Additionally, developed financial markets also offer better risk management tools such as insurance, hedging, and derivatives. This can reduce the risks associated with investing in foreign markets and make FDI more attractive. Globalization can further

enhance this effect by increasing the availability and diversity of these risk management tools. The study disaggregated the globalization index into economic, social, and political dimensions and analysed which of these variables could work in tandem with financial development variables to further enhance FDI inflows.

Table 4.28 shows that, political and social globalization form synergies with certain financial development variables to enhance FDI inflows. On the other hand, Table 4.29 reveals that political only globalisation plays a moderation role on the nexus between FMI and FDI. However, economic globalization does not have a joint effect with any of the financial development variables (see Table 4.28 and 4.29). Additionally, the study found that political globalization forms synergies with all of the financial development proxies examined, while social globalization only forms synergies with FII (see Table 4.28).

The joint effect of financial development and political globalization suggest that financial development can provide tools for managing risks associated with investing in foreign markets. Political globalization can facilitate this process by creating a more stable political environment and improving regulatory frameworks. This can reduce the risks associated with investing in foreign markets, making FDI more attractive. The process of political globalization can incentivize the African nations to embrace clear and investor-welcoming legal and regulatory systems. This includes establishing well-defined property rights, enforcing contracts, and implementing mechanisms for resolving disputes, all of which serve to bolster investor confidence. Governments can use political globalization platforms to promote their countries as investment destinations. Participation in international forums and organizations can increase a country's visibility and attractiveness to investors. On the other hand, Table 4.28 showed that FII rather dampens FDI inflows whereas social globalization reduces this effect. This suggest that development of financial institutions can dampen FDI inflows by creating more stringent regulatory environments and increasing bureaucratic hurdles for foreign investors. In contrast, social globalization, with its increased cultural integration and information exchange, can mitigate these negative effects, making it easier for foreign investors to navigate the business landscape.

Table 4.28: The Moderation Role of Globalisation on FII-FDI Nexus

VARIABLES	(1)	(2)	(3)	(4)
Financial institution index (FII)	0.0194	-0.6720	-1.1430***	1.1229*
	(0.2564)	(0.4652)	(0.3152)	(0.5879)
Trade openness	0.0723***	0.0698***	0.0334***	0.0775***
	(0.0125)	(0.0141)	(0.0111)	(0.0171)
Economic growth	0.0173	0.0155	0.0197	0.0236
	(0.0227)	(0.0219)	(0.0216)	(0.0225)
Domestic capital	0.2268***	0.2577***	0.2457***	0.2297***
	(0.0330)	(0.0469)	(0.0364)	(0.0293)
Infrastructure	-0.0067	0.0083	0.0032	-0.0163
	(0.0050)	(0.0068)	(0.0055)	(0.0105)
Inflation	0.0125***	0.0093**	0.0094**	0.0154***
	(0.0034)	(0.0040)	(0.0042)	(0.0038)
Institutional quality	0.2640	0.4099	-0.1591	0.0568
	(0.3830)	(0.4400)	(0.7919)	(0.4079)
Globalization index (Gi)	0.1049			
	(0.0756)			
Economic globalization index (Eg)		-0.1739		
		(0.1576)		
Social globalization index (Sg)			0.1176***	
			(0.0260)	
Political globalization index (Pg)				0.2648*
				(0.1568)
FII × Gi	-0.0012			
	(0.0033)			
FII × Eg		0.0088		
		(0.0064)		
FII × Sg			0.0118***	
			(0.0032)	
FII × Pg				-0.0143**
				(0.0071)
Observations	931	931	931	912
R-squared	0.2260	0.2018	0.1091	0.1776
F-Statistic	69.08***	123.1***	38.06***	35.89***
Hansen P-Value	0.784	0.788	0.970	0.977
Kleibergen-Paap rk LM Test-P value	0.825	0.826	0.975	0.987
Net effect	n.a	n.a	-0.6852	0.3234

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
Source: STATA 17 Output from Research Data, 2023

Table 4.29: The Moderation Role of Globalisation on FMI-FDI Nexus

VARIABLES	(1)	(2)	(3)	(4)
Financial market index (FMI)	0.1885***	-0.1156	-0.0309	1.1070**
	(0.0495)	(0.2702)	(0.0701)	(0.4558)
Trade openness	0.0733***	0.0747***	0.0656***	0.0689***
	(0.0130)	(0.0164)	(0.0111)	(0.0103)
Economic growth	0.0190	0.0198	0.0233	0.0262
	(0.0233)	(0.0237)	(0.0202)	(0.0224)
Domestic capital	0.2264***	0.2364***	0.2247***	0.2306***
	(0.0292)	(0.0318)	(0.0300)	(0.0304)
Infrastructure	-0.0107**	-0.0061	-0.0210***	-0.0054
	(0.0052)	(0.0041)	(0.0040)	(0.0039)
Inflation	0.0120***	0.0118***	0.0110***	0.0118***
	(0.0032)	(0.0035)	(0.0029)	(0.0034)
Institutional quality	0.1716	0.2167	0.4076	-0.0092
	(0.3445)	(0.3574)	(0.4289)	(0.6282)
Globalization index (Gi)	0.0846			
	(0.0539)			
Economic globalization index (Eg)		0.0175		
		(0.0623)		
Social globalization index (Sg)			0.1082***	
			(0.0262)	
Political globalization index (Pg)				0.0524*
				(0.0305)
FMI × Gi	-0.0019**			
	(0.0008)			
FMI × Eg		0.0030		
		(0.0041)		
FMI × Gg			0.0017	
			(0.0011)	
FMI × Pg				-0.0149**
				(0.0059)
Observations	931	931	912	912
R-squared	0.2263	0.2256	0.2347	0.2015
F-Statistic	53.30***	65.61***	94.48***	25.97***
Hansen P-Value	0.909	0.896	0.978	0.987
Kleibergen-Paap rk LM Test-P value	0.931	0.931	0.987	0.993
Net effect	0.1008	n.a	n.a	0.2739

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
Source: STATA 17 Output from Research Data, 2023

Turning to the control variables, the findings in Table 4.26 show that the inflow of FDI is significantly impacted by trade openness, domestic capital, infrastructure, and inflation. However, the study did not observed any influence of economic growth and institutional quality on the inflow of FDI. The positive effect of trade openness on FDI inflows support the assertions of Alagidede et al. (2013), Aitken and Harrison (1999), and the World Bank (1997) that certain African nations have pursued various macroeconomic policies, including trade liberalization, to encourage greater inflows of foreign investment such as FDI. The research findings indicate that the domestic investment variable in African countries has a positive and highly significant impact on

FDI inflows (see Table 4.26 to 4.29). This suggests that domestic investment is not simply a supplement, but rather a complement to FDI. When domestic investment increases, it can stimulate the development of infrastructure and create a favourable and sustainable business environment in the host country. This, in turn, can make the country more appealing to foreign investors, who may perceive it as having a lower risk profile and greater potential for growth and profitability. The results conform with some empirical studies (Islam et al., 2020; Nkoa, 2018; Sghaier & Abida, 2013).

The infrastructure of a country plays a major role in creating favourable conditions for businesses to operate effectively and efficiently (Islam et al. 2020). However, the results showed an opposite outcome where the study found infrastructure to dampen the inflow of FDI (see Table 4.26). This can be attributed to the fact that most of the infrastructure system in Africa is less developed. For example, African countries often have inadequate road networks, unreliable power supplies, and limited access to telecommunications, which puts them at a disadvantage compared to other developing countries (Ayetor et al., 2021; Lakmeeharan et al., 2020; Myovella et al., 2020). In fact, high levels of inflation can be a deterrent to foreign investors. High inflation rates can lead to increased uncertainty, higher production costs, and reduced purchasing power, which can make it more difficult for foreign investors to operate and generate profits. However, the empirical results revealed that high levels of inflation rather attract FDI. This could be that high inflation depreciate currency which can make a country's assets cheaper for foreign investors in stronger currencies, creating an attractive investment opportunity for foreign firms. This result predicts the reality in Africa where most countries are associated with high inflation but still have some inflow of FDI. For instance, in countries like Ghana, Nigeria, Kenya are battling with their inflation rate but keep encouraging FDI.[18]

[18] https://www.worldbank.org/en/region/afr/overview

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This final chapter summarizes the key findings identified from the study, and provide conclusion and recommendations for both practical implication and further studies based on the findings of the study.

5.2 Summary

Africa has seen significant growth, however such growth could not reduce inequality and poverty. Therefore the need to pursue inclusive growth which reduces poverty and inequality. Since literature has proven that financial development promote income growth, reduce inequality and poverty, the current identifies possible factors that can promote financial development in the continent. Among these factors include FBP, promoting financial inclusion and institutional quality. Africa has seen quick entry of foreign banks and their exercises have power over the financial area. Hence, the study contributes to the field of finance and growth through four main objectives. First the study examines the interrelation between Fintech, FBP and inclusive finance. Second, the study determine nexus between FBP, institutional quality and financial development. Third, the study focused on the links between FBP, financial development and inclusive growth. Lastly, the study investigated the financial development, globalisation and FDI nexus. The thesis concentrated on 28 African countries for three objectives, covering a 19-year period from 2000 to 2018. For the final objective, the study included 49 countries and extended the period to 24 years, covering from 1997 to 2020. This selection of countries and time periods allowed for a comprehensive analysis of the research objectives. Additionally, the study used quantile regression as the estimation technique for objective whereas GMM was used for both objective 2 and 3. In the case of last objective, 2SLS was the estimation techniques. Data was extensively sourced from World Bank database (WDI, WGI and GFD), IMF, Bank Scope and KOF. For example, data on financial development, Fintech and inclusive finance variables were sourced from IMF whereas FBP data was collected from the Bank scope. Data on globalisation was sourced from KOF whilst data on the

remaining variables were sourced World Bank database. The summaries of findings of these specific objectives are presented below.

5.2.1 Fintech, FBP and Inclusive Finance

The study examines the impact of Fintech on inclusive finance and found that Fintech (proxied with; mobile phone used to pay bill and mobile phone used to send money) induces inclusive finance. The study found that mobile phone used to pay bills promote all levels of inclusive finance whereas mobile phone used to send money influences only lower and medium level of inclusive finance. The study also determines the direct effect of FBP on inclusive finance and realized that FBP do not affect the multidimensional inclusive finance but impede most of the individual inclusive finance indicators. The study also showed FBP plays a moderation on Fintech-inclusive finance nexus. With the exception of the competition, all the control variables have some relationship with inclusive finance. While stability, institutional quality promote inclusive finance, lending-deposit spread, education and population growth deter inclusive finance.

5.2.2 FBP, Institutional Quality and Financial Development

The study discovers that the FBP positively affects all aspects of financial development. The findings also reveal that institutional quality has varying effects on different measures of financial development. The research introduces institutional quality as a moderating factor, and the outcomes suggest that in the presence of quality institutions, FBP boosts financial development in all 28 African countries. Inflation impedes financial development, whereas the exchange rate has no effect on financial development. The rest of the control variables promote financial development especially when measured with MFD.

5.2.3 FBP, Financial Development and Inclusive Growth

The study found positive effect of FBP on inclusive growth whereas developed financial system has the potency to deepen the positive effect of FBP on inclusive growth for the 28 African countries. The study found significant positive effect of government expenditure on inclusive growth. Unfortunately, when South Africa and Nigeria were omitted from the countries, government expenditure was statistically insignificant. Domestic capital was found to induce inclusive growth, but when Nigeria

was excluded from the model, the result shows otherwise. Finally, the results from GMM show persistence of inclusive growth.

5.2.4 Financial Development, Globalisation and FDI

The results from 2SLS shows that both financial development and globalisation had a positive impact on FDI in Africa. However, when financial development was disaggregated into FII and FMI, FMI directly impacted FDI inflows, but the development of financial institutions did not. Regarding the breakdown of globalisation index, economic globalisation attracts more FDI as compared to social and political globalisation. The study showed that there is a joint effect of financial development and globalisation. However, it was observed that political globalisation proves to form synergy with the financial development index and the two major components-FII and FMI to further attract more FDI. With the exception of economic growth and institutional quality, all control variables were found to have an impact on FDI. Also, while trade openness, domestic capital and inflation have positive effect on FDI, infrastructure has a negative effect on FDI.

5.3 Conclusion

Inclusive growth and development in every country hinge on factors such as financial sector development, trade, and capital flow. To investigate how growth and development can be bolstered through financial development, trade, and capital inflows, this study focuses on improving access to financial services, enhancing overall financial development, and exploring the impact of capital inflows, particularly FBP, on growth and development in Africa. The study empirically identify strategies for attracting and retaining capital inflow, recognizing its pivotal role in driving economic progress and development across the continent. The study concludes that Fintech promote inclusive finance in Africa and that mobile phone used to pay bill has a greater impact than mobile phone used to transfer money.

The results revealed that both FBP and institutional quality promote financial development in Africa. Thus, the study concludes that a high level of financial development is associated with an increase in the inflow of FBP and quality institutions. The study also finds that institutional quality play a moderation role in the relationship between FBP and development of the financial sector. Thus, it was concluded that

allowing foreign banks and having quality institutions that will regulate these banks will lead to the development of the financial sector. Additionally, since the study finds that both financial development and FBP positively impact inclusive growth, the study concludes that FBP and financial development are required by Africa to enhance shared growth and prosperity.

Also, financial development influenced the relationship between FBP and inclusive growth in Africa. Hence, the study concludes that for Africa to enjoy the benefits from FBP, the financial sector must be developed. More inflow of FDI are required to promote the needs of Africa. Hence, the study revealed that both financial development and globalisation can attract more FDI. So Africa needs to develop the financial sector and take advantage of globalisation to attract more FDI. Additionally, the study reveals that Africa has high level of political globalisation and perquisite to enhance financial development to attract more FDI. Therefore, it was concluded that political globalisation must be enhanced.

5.4 Contributions to Knowledge

5.4.1 Contribution of the Study to Literature

The study made significant contributions to both theoretical and empirical research in the field. The study contribute to literature by showing that using mobile phone alone is not enough to determine either such phone is used for financial services or not (i.e., mobile phone as a proxy for Fintech). Hence, this study used two main functions of mobile phone that can be used for financial service (i.e., payment and transfer) in the African setting. The study's contribution is that these functions (Fintech) has the potential to promote inclusive finance in Africa. This insight adds to the existing literature on the role of technology in advancing financial inclusion, particularly in emerging markets. The impact of the joint effect of Fintech and FBP on promoting inclusive finance in Africa suggest that Fintech alone is not sufficient to promote inclusive but will need FBP to play a critical role. This contribution complement the efforts of World Bank and other development assistance programs aimed at promoting inclusive finance. Furthermore, existing literature on inclusive finance tends to allocate less attention to the distribution of inclusive finance. In Africa, where inclusive finance is in its early stages, when applying parametric methodology, the outcomes often

provide limited insight into the specific levels of inclusive finance impacted by Fintech and FBP. Consequently, this study employed a quantile regression, which examined the variation in inclusive finance across different quantiles, such as the 25th, 50th, 75th, and 90th percentiles. This research contributes to the literature by revealing that the use of mobile phones for sending money only enhances the 25th and 50th percentiles of inclusive finance. On the other hand, mobile phones used to pay bill promote all the levels of inclusive finance. Finally, the study adds to the cream skimming model by demonstrating that FBP does not directly facilitate inclusive finance. This underscores the importance of reinforcing regulatory institutions to oversee the operations of these banks.

The study has contributed to the literature on the determinants of financial development in developing countries such as Africa, with a focus on the role of institutional quality and the interaction between FBP and institutional quality. Unlike existing literature on foreign banks that mostly focuses on financial depth and financial inclusion as measures of financial development, this study utilized a financial development index that comprehensively measures all aspects of financial development, making a valuable contribution to the existing body of literature especially in the case of Africa. The study also reveals that FBP is best in promoting financial development when there is quality institutions which makes significance contribution to the North institutional theory. The study's contribution to the North institutional theory suggests that efforts to improve institutional quality in Africa can enhance the continent's ability to benefit from foreign banks. By creating an enabling environment that supports foreign banks' operations, African countries can leverage their expertise and resources to enhance financial development. Therefore, the study highlights the importance of institutional quality in driving the benefits associated with FBP in Africa.

The study identified that financial development moderates the relationship between FBP and inclusive growth in Africa. This implies that FBP alone is not enough to drive inclusive growth in Africa but financial development is also necessary. This study provides unique empirical evidence on how FBP can promote shared growth and prosperity in Africa. Despite the limited impact of FBP on inclusive growth in developing economies like Africa, this research sheds light on the potential benefits that FBP can bring to the region, contributing to the literature on the topic.

This research likewise offers valuable empirical evidence on the link between globalisation, financial development, and FDI in Africa. It makes a significant contribution to the existing literature by underscoring the importance of accounting for the moderating role of globalisation when examining the impact of financial development on FDI. These novel findings illuminate an underexplored aspect of the relationship between these factors, which could inspire further research in the field. Diverging from conventional empirical investigations, this research employs a comprehensive approach to gauge globalization. While previous studies typically rely on trade openness or only a subset of the globalization index as proxies for globalization, this study employs a more sophisticated measure. Specifically, it utilizes both globalization index and disaggregated form of the globalization index. This innovative methodology makes a noteworthy contribution to the existing body of literature by highlighting a significant finding: Africa demonstrates higher levels of political integration compared to economic and social integration. This discovery offers a valuable opportunity for policymakers to leverage this insight in their decision-making processes. The study contributes to the new financing such as resource-backed infrastructure and resource-financed infrastructure signifying that this financing strategy is possible when countries are highly integrated. Overall, this study enhances the knowledge of international finance and economics, with a particular focus on developing countries.

5.4.2 Policy Implications

The findings of the study have a number of important policy implication. Firstly, the study recommends that African nations can foster an enabling environment for Fintech firms to operate, which can help unlock the potential of inclusive finance. This can be achieved through the creation of regulatory frameworks that are supportive of Fintech companies. The regulations should be flexible and able to accommodate the dynamic nature of the Fintech industry. The framework should also be designed to protect consumers, maintain fair competition and promote innovation. Fintech companies require a reliable and efficient infrastructure to operate. Governments can provide support in the form of reliable power supply, internet connectivity, and affordable communication infrastructure to facilitate the use of mobile phone technology in digital

payments. A well-organized and adequately funded efforts can extend Fintech services to underprivileged communities, promoting financial inclusion across Africa.

Secondly, the study suggests that the presence of foreign banks in conjunction with Fintech can promote inclusive finance by enhancing access to financial services for underserved populations. Therefore, policymakers should encourage collaboration between Fintech firms and foreign banks to leverage their respective strengths and capabilities to enhance financial inclusion. This may help Fintech firms to be able to leverage the regulatory expertise of foreign banks to create products that are specifically designed for previously underserved segments of the population. This can be done by encouraging foreign banks to provide Fintech firms with access to their existing customer base, thereby expanding their reach and increasing their potential customer base.

Thirdly, to ensure that foreign banks can effectively contribute to inclusive growth, policymakers need to carefully consider the role of financial development in their policy decisions related to FBP in the domestic financial market. This involves promoting a well-developed financial system that can support the entry of foreign banks by strengthening regulatory frameworks, enhancing institutional capacity, and improving the infrastructure of the financial system. Policymakers must prioritize creating a stable and predictable regulatory environment that encourages foreign investment, while ensuring that the financial system is sufficiently developed to support the entry of foreign banks. By doing so, policymakers can create an environment where foreign banks can operate effectively and contribute to inclusive growth. However, policymakers must also be mindful of the potential risks associated with FBP such as the risk of financial instability or excessive risk-taking. Therefore, implementing prudential regulations that are designed to ensure the stability of the financial system and mitigate the risks associated with FBP is crucial.

Lastly, policymakers should prioritize policies that improve the connectivity of African economies with the global financial system, such as measures that promote cross-border investment and support for financial institutions operating in Africa. By promoting greater financial integration and connectivity with the global economy, policymakers can enhance the prospects for FDI inflows. Furthermore, the study suggests that political globalisation plays a crucial role in promoting the financial development-FDI

nexus in Africa. Therefore, policymakers must avoid policies that could undermine the growth of international trade agreements and organizations, as well as the emergence of global governance mechanisms aimed at addressing issues such as climate change and international security. Instead, they should work towards promoting a stable and predictable international policy environment that supports the growth of international trade and investment, which could contribute to further economic growth and development in Africa. This is because as financial development attracts FDI, political globalisation also fosters a more open and interconnected global economy, which can facilitate the flow of capital and support cross-border investment.

5.5 Areas for Further Studies

The study provides areas for further study contingent on the shortcomings of the study. The study focused basically on Africa as a panel but didn't pay much attention on segregating the sample in terms of income level or region. Hence it will be expedient for further studies to re-examine the relationship between FBP, financial development and inclusive growth, by grouping the countries into low income, middle income and high countries to see which income level enjoy much benefits from foreign banks.

The results of FBP on financial development showed positive whilst that of inclusive finance exhibit insignificant result and in some cases negative results, hence future studies can examine the threshold level of FBP on either financial development or inclusive finance. This will help to know at which level Africa should restrict the entry of foreign banks. The data on FBP was limited (i.e., it ends in 2015), therefore the study couldn't capture the post COVID-19 effect on financial development. Thus, the current study suggests that further study can be country level since data can be collected from the country's central bank.

In addition, due to limited data on culture and type of foreign banks, the study limits the estimation to the proportion of asset held by foreign banks in Africa. The study therefore recommends that further studies could focus on culture, classification of foreign banks and other characteristics if there is an improvement of data, to see how these characteristics could influence financial development.

Although, the study employed a more robust proxy of globalisation, this proxy couldn't capture environmental globalisation. Hence, other studies could consider a globalisation variable that captures environmental globalisation.

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APPENDICES

Appendix A

Table A.1: Fintech on ATM per 100, 000

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
FT	0.2319***	0.2423***	0.3187***	0.4145**	0.0412	0.0799*	0.0802*	0.3634
	(0.0648)	(0.0559)	(0.0425)	(0.1797)	(0.0382)	(0.0422)	(0.0451)	(0.3001)
STA	-0.0588	0.1352	0.0987	-0.1538	-0.0884	-0.1301	-0.1013	0.0994
	(0.1797)	(0.1225)	(0.0704)	(0.3572)	(0.2268)	(0.2139)	(0.1093)	(0.3022)
LDS	-0.2071	-0.1963**	-0.1905*	-0.6573	-0.8679**	-0.6539***	-0.5791***	-0.7679
	(0.2962)	(0.0828)	(0.1085)	(0.8794)	(0.3666)	(0.2447)	(0.2099)	(1.1013)
Com	-5.1039*	-3.5220**	-1.9059	0.7249	-1.7038	-3.2511	0.9476	0.1632
	(2.5945)	(1.9285)	(2.4608)	(4.4180)	(3.2788)	(5.4058)	(3.9070)	(6.6300)
Edu	0.0112*	0.0208**	0.0254***	0.0440	-0.0072	-0.0019	0.0591**	-0.0136
	(0.0065)	(0.0082)	(0.0072)	(0.0308)	(0.0087)	(0.0156)	(0.0231)	(0.0314)
InsQ	15.7544***	12.5383***	10.4573***	13.6390**	6.4003**	7.2085*	10.3701**	2.6916
	(3.2031)	(1.9039)	(1.8587)	(6.3466)	(3.1824)	(4.0292)	(4.6560)	(6.1434)
Pop	-2.8588*	-4.1389***	-4.8434***	-10.5288	-5.1017**	-9.0500***	-7.9885***	-30.2203***
	(1.4636)	(1.5152)	(1.5271)	(7.8289)	(3.7957)	(3.3559)	(2.4322)	(10.5780)
Constant	22.0322***	24.0539***	27.3969***	56.3960***	29.6695	42.1677***	41.4534***	106.2197***
	(7.7297)	(5.2298)	(4.3953)	(18.9447)	(14.1355)	(12.4302)	(7.7148)	(24.5635)
Obs.	181	181	181	181	136	136	136	136
R^2	0.2517	0.4187	0.5214	0.4676	0.1722	0.2706	0.4178	0.5288

Notes: Column (1 to 4) is when cell phone used to pay bill is used as a proxy for Fintech whereas when cell phone used to send money as a measure of Fintech incorporate column (6 to 8). ***p<0.01, **p<0.05 *p<0.1. FT is Fintech; STA is banks stability; LDS is Lending-deposit spread; Com is banks' competition; InsQ is institutional quality index; Pop is population growth; Obs is observation.

Source: STATA 17 Output from Research Data, 2023

Table A.2: Fintech and Bank Account

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
FT	9.6749***	7.7400*	19.0947***	10.8797	2.8084***	2.4290***	2.7767***	2.075
	(1.9052)	(4.4872)	(6.3516)	(8.3385)	(0.7107)	(0.7764)	(0.9594)	(1.919)
STA	0.4016	-1.4945	-17.0474	0.6382	-0.9669	0.4484	-13.483**	-9.064***
	(1.6096)	(6.0088)	(10.5850)	(21.7988)	(2.2140)	(1.9758)	(6.6842)	(14.529)
LDS	-11.3136***	-11.7169**	-6.7922	-11.7747	-5.0096	-12.317***	-11.155**	-16.641
	(4.0890)	(5.5418	(6.5707)	(9.8305)	(4.4992)	(3.1771)	(4.7221)	(4.819)
Com	-117.8634**	-98.0099	-6.9531	37.0951	-122.194**	-90.6151*	2.8662	73.499
	(48.1549)	(62.3842)	(146.5907)	(152.4404)	(47.2032)	(51.3906)	(91.1008)	(67.618)
Edu	0.0123	0.3034*	1.1344	2.1246	0.2942	0.1640	1.4863	1.360
	(0.1579)	(0.1782)	(0.7258)	(1.2918)	(0.2374)	(0.2341)	(0.7017)	(0.965)
InsQ	31.0269	126.5721	102.0964	249.4095	-27.4481	-58.1091	-141.259**	-284.300
	(44.5697)	(132.5566)	(180.7066)	(248.7170)	(62.2184)	(43.5108)	(72.7754)	(209.625)
Pop	-16.3812	-145.9487	-390.861**	-164.7360	27.8704	-7.60916	111.0546	131.314
	(42.97)	(135.5596)	(177.0111)	(235.6877)	(83.2662)	(80.5222)	(88.9668)	(161.515)
Constant	313.8205**	799.8585*	1722.946***	1000.4370	53.0890	235.9914	37.3089	-18.393
	(130.0323)	(465.8109)	(643.9398)	(744.5050	(227.8886)	(231.8629)	(244.6813)	(448.231)
Obs.	108	108	108	108	99	99	99	99
R^2	0.2733	0.2554	0.4046	0.6037	0.2692	0.231	0.2639	0.4215

Notes: FT is Fintech; STA is banks stability; LDS is Lending-deposit spread; Com is banks' competition; InsQ is institutional quality index; Pop is population growth; Obs is observation. Column (1 to 4) is when cell phone used to pay bill is used as a proxy for Fintech whereas when cell phone used to send money as a measure of Fintech incorporate column (6 to 8). Significant levels at 1%, 5% and 10% are represented by ***, ** and * respectively.

Source: STATA 17 Output from Research Data, 2023

Table A.3: Fintech and Bank Branches

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
FT	0.0351	0.0395	0.0737*	0.1657***	-0.0011	0.0212**	-0.0553	-0.0597
	(.02483)	(0.0292)	(0.0406)	(0.0422)	(0.0079)	(0.0091)	(0.0265)	(0.0543)
STA	0.1448***	0.1999***	0.1496**	0.3467***	0.1966***	0.2229***	0.4257	0.3971**
	(0.0330)	(0.0413)	(0.0728)	(0.0930)	(.045154)	(0.0668)	(0.1275)	(0.1513)
LDS	0.0701	-0.0366	-0.0264	-0.1538	0.0544	-0.1015	0.0006***	0.2233
	(0.0748)	(0.0642)	(2.6931)	(0.1235)	(0.0680)	(0.0654)	(0.1275)	(0.3712)
Com	-2.0203	-2.1699	-1.4041	-1.9711	-1.9491***	-1.3735*	-0.5089	-0.6938
	(4.818)	(1.6726)	(2.6931)	(2.0413)	(0.3508)	(0.7965)	(1.2149)	(1.50531)
Edu	0.0016	0.0003	-0.0007	-0.0073*	-0.0012	-0.0036	-0.0048	-0.0084
	(0.0020)	(0.0025)	(0.0043)	(0.0037)	(0.0016)	(0.0023)	(0.0046	(0.0064)
InsQ	3.0809***	5.1085***	4.0498**	9.0843***	2.1983***	2.4756***	1.9990	5.3528**
	(0.7404)	(0.7592)	(1.9989)	(1.8299)	(0.6502)	(0.7701	(1.2942)	(2.3948)
Pop	-1.9220***	-2.1721***	-3.9471***	-0.2452	-1.6275***	-2.2467***	-2.5646**	-5.0798***
	(0.6184)	(0.4073)	(1.2813)	(1.3680)	(0.4964)	(0.7725)	(1.2197)	(1.8113)
Constant	7.1825***	9.5373***	16.8898***	12.6562***	5.4056***	9.7326	8.7067**	18.9370***
	(2.2197)	(1.4426)	(2.9434)	(2.4292)	(2.1726)	(2.5387)	(3.5406)	(5.9341)
Obs.	200	200	200	200	158	158	158	158
R^2	0.3681	0.3999	0.504	0.6069	0.3031	0.3189	0.3688	0.478

Notes: Column (1 to 4) is when cell phone used to pay bill is used as a proxy for Fintech whereas when cell phone used to send money as a measure of Fintech incorporate column (6 to 8). Significant levels at 1%, 5% and 10% are represented by ***, ** and * respectively FT is Fintech; STA is banks stability; LDS is Lending-deposit spread; Com is banks' competition; InsQ is institutional quality index; Pop is population growth; Obs is observation.

Source: STATA 17 Output from Research Data, 2023

Table A.4: Fintech on Borrowers from Commercial Banks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
FT	0.3150	0.8086	2.8256***	2.6292***	0.3933***	0.6812***	1.1366**	1.4321***
	(0.4539)	(0.7689)	(1.0323)	(0.9682)	(0.1489)	(0.2224)	(0.4487)	(0.4896)
STA	0.6820	1.3735**	2.5942**	1.3486	0.3513	1.0850*	2.7185**	1.7187
	(0.4955)	(0.6909)	(1.0282)	(1.7335)	(0.4408)	(0.6178)	(1.2733)	(1.4941)
LDS	-2.2233***	-1.5920*	-4.6799**	-8.7402***	-2.5780***	-3.0100*	-5.5174**	-6.2786**
	(0.5911)	(0.9437)	(2.0873)	(2.3868)	(0.7569)	(1.6135)	(2.1712)	(2.4178)
Com	15.1860	1.0233	-5.2283	-43.9701	14.0909	3.7796	11.3314	-0.5798
	(11.9290)	(10.6454)	(13.1332)	(51.9762)	(17.8793)	(10.6029)	(13.3383)	(22.7052)
Edu	-0.0130	0.0048	0.0179	0.0523	-0.0005	-0.0775**	-0.1494	-0.1895**
	(0.0330)	(0.0373)	(0.0655)	(0.0833)	(0.0257)	(0.0332)	(0.0990)	(0.0797)
InsQ	-7.6671	8.1371	92.9368**	144.0581***	-4.5985	-14.2530	25.2348	68.8476**
	(4.9304)	(18.1558)	(38.5765)	(22.4017	(6.6674)	(15.7238)	(39.1155)	(30.6619)
	-3.1490	-3.9306	-10.9202	19.5566	-17.7111***	-39.9873**	-97.5848***	-65.6607**
Pop	(5.6695)	(7.5517)	(23.0703)	(24.7985)	(6.5734)	(19.6014)	(28.9214)	(33.1581)
Con.	37.9212**	41.3846	163.6974**	194.8747***	80.9430***	146.8541**	370.4716***	364.5064***
	(18.1753)	(30.1170)	(66.1721)	(50.6499)	(18.3871)	(68.7565)	(93.8341)	(68.8487)
Obs.	198	198	198	198	159	159	159	159
R^2	0.0893	0.0915	0.3114	0.5242	0.1194	0.1466	0.3564	0.564

Notes: FT is Fintech; STA is banks stability; LDS is Lending-deposit spread; Com is banks' competition; InsQ is institutional quality index; Pop is population growth; Obs is obersavation. Column (1 to 4) is when cell phone used to pay bill is used as a proxy for Fintech whereas when cell phone used to send money as a measure of Fintech incorporate column (6 to 8). Significant levels at 1%, 5% and 10% are represented by ***, ** and * respectively.

Source: STATA 17 Output from Research Data, 2023

Table A.5: Fintech on Commercial Bank Branches

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
Fintech	0.0190	0.0326	0.0924***	0.1686**	-0.0070	-0.0219**	-0.0217*	0.0025*
	(0.0152)	(0.0263)	(0.0322)	(0.0659)	(0.0065)	(0.0103)	(0.0123)	(0.0332)
Stability	0.1779***	0.1759***	0.1767***	0.1312**	0.2168***	0.1976***	0.2251***	0.3479***
	(0.0351)	(0.0270)	(0.0335)	(0.0608)	(0.0273)	(0.0452)	(0.0325)	(0.0831)
Lending-deposit	0.1324**	0.1635**	0.0827	-0.0861	0.1171	0.0528	0.0325	0.1436*
spread	(0.0660)	(0.0664)	(0.0636)	(0.1157)	(0.0725)	(0.0530)	(0.0413)	(0.0758)
Competition	-1.0434	-2.1979	-1.5915	-0.4130	-1.1333	-0.9784	-0.5319	-0.3449
	(3.6629)	(2.8084)	(0.8339)	(1.1083)	(1.5931)	(0.9882)	(1.0502)	(1.0334)
Education	-0.0002	0.0003	0.0053	0.0103**	-0.0002	-0.0023	-0.0021	-0.0032*
	(0.0019)	(0.0035)	(0.0049)	(0.0040)	(0.0022)	(0.0022)	(0.0020)	(0.0019)
Institutional	3.4791***	4.7766***	4.2292***	5.6670***	2.4180***	2.1367***	1.5270**	1.0324
quality	(0.9095)	(0.4515)	(0.7586)	(1.7903)	(0.5518)	(0.7727)	(0.6186)	(1.5537)
Population	-2.9357***	-2.7087***	-3.3417***	-1.1864	-2.2973	-3.1934***	-2.9677***	-3.2642**
	(0.4190)	(0.3496)	(0.4352)	(1.7647)	(0.6296)	(0.6157)	(0.3608)	(1.5240)
Constant	9.2876***	10.0828	13.2262***	12.3055***	6.7460***	11.5283***	11.5822***	10.4473***
	(1.3757)	(0.7632)	(1.5215)	(2.3713)	(2.3195)	(1.4849)	(0.9595)	(2.7538)
Observation	199	199	199	199	160	160	160	160
R-squared	0.3877	0.4300	0.5573	0.5931	0.3496	0.3549	0.4508	0.3865

Notes: ***, ** and * are significant levels at 1%, 5% and 10% respectively. Column (1 to 4) is when mobile phone used to pay bills as a proxy for Fintech whereas mobile phone used to transfer money as a measure of Fintech incorporate column (6 to 8).

Source: STATA 17 Output from Research Data, 2023

Table A.6: Fintech on Depositors of Commercial Bank

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
FT	14.7032***	19.717***	16.5495***	18.1672***	2.8190	3.2083	-2.503	-3.276
	(4.4816)	(4.3009)	(4.6798)	(2.5237)	(1.7200)	(2.9442)	(4.205)	(5.215)
STA	-7.5787**	-12.304***	-3.5799	-27.6460**	-1.1548	-10.3742	10.184	-6.842
	(3.7808)	(3.0140)	(11.0237)	(12.7077)	(3.7686)	(6.9458)	(13.127)	(13.819)
LDS	15.8240	27.481***	23.0403	95.4197***	9.7492	11.8569	46.437	14.388
	(11.9375)	(6.3756)	(19.2108)	(30.1556)	(9.0541)	(13.7513)	(28.446)	(30.475)
Com	-24.9969	-44.4345	40.8300	223.7979	-4.4856	30.5085	75.941	646.727
	(97.7046)	(87.7078)	(284.4069)	(439.6344)	(41.6346)	(43.6947)	(100.118)	(497.566)
Edu	-0.6080***	-0.4297**	-0.4328	-0.8835	-0.7549*	-1.337***	-2.238**	-1.936**
	(0.1758)	(0.1723)	(0.5501)	(0.7898)	(0.3832)	(0.3691)	(0.699)	(0.871)
InsQ	207.6005**	311.378***	500.1318**	32.9629	36.4325	15.0285	178.791	-779.084
	(86.9362)	(43.5890)	(197.2611)	(418.0064)	(71.3518)	(127.4200)	(230.263)	(733.637)
Pop	-494.639***	-595.526***	-487.19***	-869.277***	-435.377***	-595.377***	-695.81***	-730.219**
	(71.9559)	(34.9902)	(158.6892)	(331.5761)	(153.0708)	(129.1199	(178.947)	(307.082)
Con.	1751.196***	2129.57***	2109.34***	3041.12***	1410.77***	2123.07***	2317.45***	3132.56***
	(199.2963)	(129.8730)	(435.5126)	(757.6292)	(394.3040)	(333.8155)	(572.118)	(563.136)
Obs.	199	199	199	199	160	160	160	160
R^2	0.3323	0.4444	0.4547	0.4205	0.159	0.2668	0.2409	0.1832

Notes: FT is Fintech; STA is banks stability; LDS is Lending-deposit spread; Com is banks' competition; InsQ is institutional quality index; Pop is population growth; Obs is obersavation. ***, ** and * are significant levels at 1%, 5% and 10% respectively. Column (1 to 4) is when mobile phone used to pay bills as a proxy for Fintech whereas mobile phone used to transfer money as a measure of Fintech incorporate column (6 to 8).

Source: STATA 17 Output from Research Data, 2023

Table A.7: FBP on ATM per 100,000 Adults and Banks Accounts

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
FBP	-7.6906***	-9.7389***	-2.1301	2.1196	-61.7132	-50.5125	-242.7486*	-397.9996***
	(1.7933)	(2.8834)	(3.4541)	(4.6110)	(82.5869)	(81.1789)	(143.4202)	(148.3217)
STA	0.0002	-0.1538	-0.1693	-0.7664***	7.5500***	5.0386	5.7191	16.3527
	(0.0787)	(0.1699)	(0.1181)	(0.2736)	(2.2189)	(3.9317)	(5.5487)	(10.1657)
LDS	-0.3363*	0.1455	-0.0031	-0.1748	-11.4831***	-12.2250*	7.4142	13.9038
	(0.1881)	(0.1901)	(0.3037)	(0.8637)	(3.8622)	(6.8293)	(10.1220)	(17.4491)
Com	0.8767	-3.1946	-0.7073	1.2563	-111.3208	-97.3033	-28.6392	45.1225
	(2.8896)	(2.7744)	(2.3777)	(3.0509)	(115.6869)	(109.3625)	(135.5710)	(114.4097)
Edu	0.0035	0.0146*	0.0351***	0.0107	0.0597	0.0434	1.0216	1.3389**
	(0.0041)	(0.0080)	(0.0085)	(0.0252)	(0.2319)	(0.1839)	(0.6401)	(0.5258)
InsQ	10.9063***	14.4578***	13.5922***	16.0580**	37.3169	110.2239	334.1634**	319.6229***
	(2.5534)	(1.9698)	(1.9740)	(7.6635)	(120.6835)	(171.1390)	(143.0513)	(120.1331)
Pop	1.9373*	-1.3774*	-0.6119	-6.3785	-134.4792**	-154.9233*	-213.7729**	-123.3192
	(1.1170)	(0.7959)	(2.0672)	(5.2610)	(61.6921)	(85.4917)	(79.9624)	(86.3555)
Constant	11.6400***	24.3625***	24.0506***	60.4695***	541.8366**	759.0247**	1088.7310***	795.1159
	(4.2678)	(5.8093)	(5.2500)	(18.0664)	(223.1083)	(335.8744)	(265.4900)	(86.3555)
Obs.	223	223	223	223	120	120	120	120
R^2	0.1707	0.2723	0.3965	0.4128	0.2069	0.2694	0.437	0.604

Notes: FBP is foreign bank presence; STA is banks stability; LDS is Lending-deposit spread; Com is banks' competition; InsQ is institutional quality index; Pop is population growth; Obs is observation. ***, ** and * are significant levels at 1%, 5% and 10% respectively. Column (1) to (4) is the results of ATM per 100,000 adults whilst Column (5) to (8) is when bank accounts is used as the dependent variable.

Source: STATA 17 Output from Research Data, 2023

Table A.8: FBP on Borrowers and Depositors of Commercial Banks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
FBP	-5.2614	-0.3675	-2.6842	-20.1147	-283.9397***	-214.8919*	-233.5999	-410.8659
	(6.5788)	(9.5567)	(16.8754)	(30.7907)	(50.5241)	(120.9839)	(186.4741)	(317.9554)
STA	0.2357	1.4162***	2.1477	0.7336	-4.5725	-10.3406***	-4.8372	-8.3108
	(0.2548)	(0.4064)	(1.2835)	(2.0072)	(4.4312)	(3.8065)	(6.1675)	(12.8207)
LDS	-1.6972***	-1.1336	0.7391	-0.6602	32.3748***	35.9700***	30.4085*	17.7246
	(0.5661)	(0.8804)	(2.6037)	(3.8458)	(6.2929)	(4.1439)	(17.9346)	(17.6004)
Com	8.0960	2.7540	5.4047	21.6767	-36.7793	-16.0346	37.2894	216.8432
	(10.1074)	(12.6337)	(15.9629)	(42.1487)	(77.3801)	(96.8518)	(65.9648)	(267.3292)
Edu	0.0357	-0.0037	0.0181	-0.1622	0.0562*	0.0462	-0.2137	-1.1641*
	(0.0227)	(0.0389)	(0.0514)	(0.1006)	(0.1457)	(0.2323)	(0.5587)	(0.6404)
InsQ	1.0430	-2.4599	51.0950	84.3765***	398.6270***	539.1887***	877.5190***	868.1956*
	(7.2293)	(7.8484)	(34.0510)	(32.7527)	(50.4393)	(89.5037)	(166.7527)	(493.8344)
Pop	7.8666*	-1.5583	-30.2957*	-29.2849	-231.9321***	-340.3125***	-155.8061	-52.6913
	(4.2935)	(4.4765)	(16.1177)	(21.8823)	(63.6456)	(70.4744)	(129.7476)	(269.7760)
Constant	11.0536	24.4900**	144.8161***	284.7282**	1021.1440***	1579.4440***	1617.6190***	2105.3830***
	(12.5203)	(11.2805)	(46.3719)	(88.4710)	(222.1113)	(225.0196)	(327.5410)	(681.7485)
Obs.	241	241	241	241	242	242	242	242
R^2	0.0488	0.528	0.1598	0.3723	0.2073	0.2825	0.3628	0.3091

Notes: FBP is foreign bank presence; STA is banks stability; LDS is Lending-deposit spread; Com is banks' competition; InsQ is institutional quality index; Pop is population growth; Obs is observation. ***, ** and * are significant levels at 1%, 5% and 10% respectively. Column (1) to (4) is when borrowers from commercial bank is the dependent variable whilst Column (5) to (8) is when depositors from commercial bank is the dependent variable.

Source: STATA 17 Output from Research Data, 2023

Table A.9: FBP on Bank Branches and Commercial Banks Branches

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
FBP	-1.4390***	-2.7981***	-0.6385	-1.5792	-1.5907	-1.9590**	0.7348	5.0426***
	(0.6711)	(0.7993)	(1.6845)	(1.5154)	(0.7342)	(0.9553)	(1.0360)	(1.7056)
STA	0.1572***	0.1350***	0.0883	0.4179***	0.1478***	0.1055***	0.1088**	0.0521
	(0.0187)	(0.0346)	(0.0580)	(0.1574)	(0.0237)	(0.0355)	(0.0459)	(0.0707)
LDS	0.0627***	0.0744***	0.0446	-0.0264	0.0912	0.0829	0.1120	0.0499
	(0.0205)	(0.0231)	(0.0571)	(0.1267)	(0.0550)	(0.0557)	(0.0811)	(0.1512)
Com	-1.3634	-1.8717	-0.9843	-0.6296	0.1180	-1.5542	-0.7982	0.1590
	(1.6885)	(1.5514)	(2.3535)	(1.6024)	(1.9505)	(2.1622)	(0.9613)	(0.6222)
Edu	-0.0010*	-0.0022*	0.0004	-0.0055	-0.0007	-0.0010	0.0041	0.0040
	(0.0014)	(0.0013)	(0.0036)	(0.0054)	(0.0011)	(0.0014)	(0.0030)	(0.0040)
InsQ	3.6570***	5.0473***	3.9266***	10.2385***	4.0538***	4.3254***	3.3442***	3.1538***
	(0.8424)	(0.9891)	(1.4887)	(1.8898)	(0.6389)	(0.4753)	(0.4738)	(0.7555)
Pop	-1.7630***	-1.9306***	-3.2484***	1.7045	-2.0123***	-2.4889***	-3.2496***	-2.9746***
	(0.3357)	(0.4491)	(0.9191)	(1.5776)	(0.2758)	(0.3574)	(0.4424)	(0.7778)
Constant	8.1814***	11.1567***	15.6841***	8.3938	9.2517***	12.2392***	13.9206***	15.9221***
	(0.7854)	(1.3215)	(2.5514)	(5.3129)	(1.3590)	(1.4868)	(1.7435)	(2.6657)
Obs.	245	245	245	245	242	242	242	242
R^2	0.3344	0.3526	0.4004	0.4918	0.3428	0.3567	0.4241	0.4326

Notes: FBP is foreign bank presence; STA is banks stability; LDS is Lending-deposit spread; Com is banks' competition; InsQ is institutional quality index; Pop is population growth; Obs is observation. Column (1) to (4) is when bank branches is the dependent variable whilst Column (5) to (8) is when commercial bank branches is the dependent variable. ***, ** and * are significant levels at 1%, 5% and 10% respectively.

Source: STATA 17 Output from Research Data, 2023

Table A.10: FBP on Fintech and ATM per 100, 000 Nexus

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
Fintech	0.2101	0.2896	0.3434***	0.5999	0.1543***	0.1796**	0.2131	0.5517
	(0.1369)	(0.1044)	(0.0919)	(0.5834)	(0.0513)	(0.0718)	(0.2256)	(0.6010)
Stability	-0.1945	-0.0093	0.0385	-0.2150	-0.2017	-0.2261	-0.1662	0.0667
	(0.1680)	(0.1887)	(0.1489)	(0.2838	(0.1388)	(0.1478)	(0.2775)	(0.3496)
Lending- deposit	-0.2337	-0.1562	-0.2638*	-0.7354	-0.3360	-0.4705**	-0.6275*	-0.6101
spread	(0.1344)	(0.1338)	(0.1517)	(0.6432)	(0.1980)	(0.2272)	(0.3182)	(0.9528)
Competition	-1.2608	-3.0542	-1.8400	0.8759	0.0417	-2.8059	1.1796	-0.3214
	(3.1534)	(2.6335)	(2.2959)	(6.4510)	(6.4426)	(3.5115)	(4.2771)	(4.0897)
Education	0.0110**	0.0199***	0.0260***	0.0446	0.0038	0.0082	0.0628**	-0.0129
	(0.0043)	(0.0066)	(0.0082)	(0.0332)	(0.0070)	(0.0110)	(0.0268)	(0.0348)
Institutional quality	16.4824***	13.2250***	10.4363***	14.8743**	11.9591	12.2885***	10.3696**	3.1201
	(2.1580)	(1.9658)	(1.8953)	(6.9704)	(2.1519)	(2.9568)	(5.1957)	(8.8189)
Population growth	-0.3144	-3.2469**	-4.4382**	-8.7154	-1.7410	-2.0071	-6.7665	-30.5502**
	(2.6029)	(1.3981)	(1.7898)	(8.4535)	(1.8199)	(2.6971)	(7.4321)	(14.1201)
Foreign bank presence	-9.2942**	-5.4833	-2.2527	-1.0304	-9.4710	-12.6011**	0.2695	0.3375
	(3.6840)	(4.2300)	(4.1675)	(4.0992)	(1.9850)	(6.1856)	(5.4351)	(3.7723)
Interaction term	-0.1274	-0.0386	-0.0944	-0.3368	-0.1363	-0.1551	-0.2687	-0.2363
	(0.3066)	(0.1858)	(0.1783)	(1.1144)	(0.0916)	(0.1852)	(0.2750)	(1.0582)
Constant	22.8881**	26.6173***	28.8287***	54.9341***	25.9559	31.4006***	39.2576	105.6629
	(7.8212)	(5.0529)	(5.6972)	(24.2123)	(0.0916)	(6.3594)	(21.2984)	(29.9014)
Observation	181	181	181	181	136	136	136	136
R-squared	0.2907	0.4317	0.5230	0.4700	0.2950	0.3437	0.4286	0.5296

Notes: Column (1 to 4) is when cell phone used to pay bill is used as a proxy for Fintech whereas when cell phone used to send money as a measure of Fintech incorporate column (6 to 8). Significant levels at 1%, 5% and 10% are represented by ***, ** and * respectively. No net effect was computed.

Source: STATA 17 Output from Research Data, 2023

Table A.11: Moderation Role of FBP on Fintech-Bank Account

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
Fintech	13.1955**	20.0840**	35.7743***	38.8426***	9.3189***	5.7826*	0.7006	1.4492
	(6.5303)	(9.1382)	(7.4076)	(8.6559)	(2.1189)	(2.9282)	(2.4700)	(1.6188)
Stability	-0.7907	1.6618	-0.1151	29.3949**	2.9047	0.6648	3.7790	17.7984
	(3.1566)	(5.5146)	(10.5078)	(12.8309)	(2.2949)	(3.7402)	(11.7598)	(15.7304)
Lending-deposit	-11.1826**	-9.6842	-0.6831	8.1298	8.6120***	10.64**	13.7503	13.8333**
spread	(5.4352)	(7.3124)	(5.8928)	(6.1084)	(2.7315)	(5.3219)	(5.6031)	(6.1196)
Competition	-112.4450	-86.3310	-10.2086	47.0804	122.8858	100.3551	62.8500	122.0262
	(207.3292)	(204.6635)	(119.1754)	(139.4664)	(85.7755)	(80.8149)	(82.5115)	(225.0537)
Education	0.1206	0.1741	1.4008***	0.5823	0.0774	0.1585	0.9801	0.3428
	(0.2206)	(0.3330)	(0.5304)	(0.7251)	(0. 1365)	(0.38044)	(0.8002)	(0.9644)
InsQ	19.3294	94.8408	331.8424	227.3176	8.8104	1.6533	186.6658**	300.5975**
	(144.3888)	(161.1351)	(201.3902)	(145.8946)	(36.4119)	(65.0022)	(87.6633)	(144.8138)
Population	-4.7178	-84.7534	-125.8614	-166.2932	43.8978	50.2657	152.1852**	68.92149
	(84.4125)	(107.0475)	(165.8593)	(144.5673)	(26.6043)	(51.9938)	(74.5315)	(88.5011)
Foreign bank	8.4540	-81.6164	-330.301**	-426.0923	122.8858	1.5865	171.1962	272.0358*
presence	(123.2009)	(140.1694)	(158.5940)	(136.1458)	(22.8882)	(47.5266)	(127.4142)	(147.6505)
Interaction term	-6.4493	-17.7250	-35.196***	-37.7720***	0.4102	0.5742	0.0092	.3349787
	(11.1437)	(11.7472)	(7.6638)	(9.6176)	(1.0560)	(1.6412)	(1.6071)	(1.6233)
Constant	282.1464	614.8612	1010.5200*	812.7955**	108.8091	130.5532	107.9767	51.1103
	(301.7809)	(388.6399)	(520.4760)	(374.5813)	(84.61853)	(189.8032)	(221.4775)	(317.1903)
Observation	108	108	108	108	99	99	99	99
R-squared	0.2829	0.3007	0.5061	0.7139	0.3931	0.2775	0.3406	0.5558
Net Effect	-	-	19.8340	22.9023	-	-	-	-

Notes: Column (1 to 4) is when cell phone used to pay bill is used as a proxy for Fintech whereas when cell phone used to send money as a measure of Fintech incorporate column (6 to 8). Significant levels at 1%, 5% and 10% are represented by ***, ** and * respectively. InsQ is institutional quality

Source: STATA 17 Output from Research Data, 2023

Table A.12: Moderation Role of FBP on Fintech-Bank Branches

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
Fintech	-0.0434*	-0.0858*	-0.1290	0.1862	-0.0067	-0.0162	0.0350	0.1380**
	(0.0222)	(0.0449)	(0.1105)	(0.1692)	(0.0148)	(0.0208)	(0.0487)	(0.0530)
Stability	0.1563***	0.1414***	0.2253**	0.4788***	0.1901***	0.2064***	0.4216***	0.5629***
	(0.0239)	(0.0289)	(0.1121)	(0.1251)	(0.0255)	(0.0457)	(0.1416)	(0.1476)
Lending-deposit spread	0.0430	0.0934*	0.1507	-0.0438	0.0671	0.0052	0.0735	-0.0655
	(0.0466)	(0.0564)	(0.1216)	(0.1913)	(0.0454)	(0.0793)	(0.1908)	(0.3668)
Competition	-1.3101	-1.9519	-2.5038**	-1.3014	-2.3359***	-1.8040	-0.6550	0.0246
	(2.3211)	(1.2139)	(0.9822)	(0.9222)	(0.6799)	(1.2828)	(1.9102)	(2.1975)
Education	0.0000	-0.0016	-0.0032	-0.0021	-0.0023	-0.0031*	-0.0043	-0.0138
	(0.0017)	(0.0013)	(0.0056)	(0.0042)	(0.0023)	(0.0018)	(0.0043)	(0.0115)
Institutional quality	4.9226***	5.5053***	7.0262***	8.4811***	4.8140***	4.9053***	2.9608	3.5917
	(0.6224)	(0.5563)	(1.8784)	(2.4236)	(1.3608)	(1.4171)	(2.2081)	(3.1879)
Population growth	-0.9924***	-1.9490***	-2.3743**	-0.5576	-0.6104	-1.0691**	-1.7724	-2.4216
	(0.3083)	(0.2383)	(1.1496)	(1.8944)	(0.5096)	(0.5052)	(1.2174)	(3.2275)
Foreign bank presence	-2.7699***	-3.0054***	-3.0221	-1.6494	-2.8122**	-3.4454**	-1.3144	-0.8922
	(0.4808)	(0.6905)	(2.4948)	(2.8861)	(1.2186)	(1.4444)	(2.9899)	(3.6014)
Interaction term	0.1300***	0.2207***	0.3604*	-0.0209	0.0229	0.0323	-0.1468	-0.4162**
	(0.0353)	(0.0713)	(0.2103)	(0.2630)	(0.0358)	(0.0517)	(0.1007)	(0.1665)
Constant	7.5996***	11.2070***	13.1649***	10.0748***	5.4227***	8.4536***	7.3556**	13.1901**
	(1.3627)	(0.7233)	(2.4555)	(2.8492)	(1.7187)	(1.4856)	(3.1787)	(7.4831)
Observation	200	200	200	200	158	158	158	158
R-squared	0.4262	0.4628	0.5340	0.6156	0.3495	0.3526	0.3911	0.5484
Net Effect	0.0155	0.0141	0.1632	-	-	-	-	-0.050

Notes: Column (1 to 4) is when cell phone used to pay bill is used as a proxy for Fintech whereas when cell phone used to send money as a measure of Fintech incorporate column (6 to 8). Significant levels at 1%, 5% and 10% are represented by ***, ** and * respectively.

Source: STATA 17 Output from Research Data, 2023

Table A.13: FBP on Fintech-Borrowers from Commercial Banks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
Fintech	0.2357	1.4674	4.2195**	6.8557***	0.4242	1.5745**	3.0535***	2.4488***
	(0.4476)	(1.4570)	(1.8326)	(1.9567)	(0.5880)	(0.6910)	(0.9410)	(0.6870)
Stability	0.6709**	1.4594*	2.5070	0.6775	0.2584	0.6708	1.5723	0.9422
	(0.3291)	(0.7441)	(1.5385)	(1.2253)	(0.4366)	(0.6731)	(1.4809)	(1.0347)
Lending-deposit	-2.2525***	-1.6058	-6.0485**	-10.2873***	-2.6297**	-3.0971	-7.1831**	-8.9272***
spread	(0.5523)	(1.1129)	(2.3273)	(2.2783)	(1.0529)	(1.8979)	(2.9645)	(2.8241)
Competition	14.4383*	1.3124	-6.0708	0.1896	6.2297	2.4638	17.4501	10.3756
	(8.5042)	(10.4335)	(14.3625)	(29.3986)	(10.4993)	(16.6240)	(40.0594)	(37.9030)
Education	-0.0199	0.0092	-0.0008	0.0454	-0.0193	-0.0451	-0.1260	-0.1817
	(0.0215)	(0.0221)	(0.0574)	(0.0757)	(0.0485)	(0.0643)	(0.1133)	(0.1240)
Institutional	-6.4279	12.6576	82.9279***	128.7821***	7.3943	3.0912	16.1888	41.1516
quality	(5.6688)	(10.2007)	(19.7053)	(24.2119)	(10.0818)	(23.7508)	(48.9896)	(43.0002)
Population	-3.0806	-1.0359	-15.6919	23.3498	-13.0867	-34.3896	-80.7658**	-67.6971**
	(3.8315)	(5.1722)	(19.4171)	(29.2258)	(14.3413)	(25.1519)	(36.9870)	(28.7181)
Foreign bank	-2.7909	-11.1897	3.4180	15.2660	-29.6971	-9.8614	18.8128	11.0428
presence	(11.4015)	(13.2614)	(36.3920)	(30.1236)	(18.4079	(33.1412)	(55.0298)	(19.7869)
Interaction term	0.2827	-1.5801	-3.7865	-9.0089	0.4141	-1.6086	-4.5213**	-3.3578*
	(0.9732)	(1.8884)	(3.4419)	(3.8102)	(1.0254)	(1.1437)	(1.9882)	(1.8264)
Constant	40.1718***	39.9530*	182.9154***	198.2877***	89.3011**	153.9115*	354.9702***	391.7303***
	(8.8746)	(22.1907)	(45.2830)	(52.3259)	(35.5725)	(88.3275)	(76.9957)	(58.8123)
Observation	198	198	198	198	159	159	159	159
R-squared	0.0906	0.0953	0.3183	0.5395	0.1468	0.1708	0.3791	0.5713
Net Effect		-	-	-	-	-	1.0058	0.9281

Notes: Column (1 to 4) is when cell phone used to pay bill is used as a proxy for Fintech whereas when cell phone used to send money as a measure of Fintech incorporate column (6 to 8). Significant levels at 1%, 5% and 10% are represented by ***, ** and * respectively.

Source: **STATA 17 Output from Research Data, 2023**

Table A.14: FBP on Fintech-Commercial Bank Branches

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
Fintech	-0.0584**	-0.0763***	-0.0441	-0.0762	-0.0072	-0.0114	-0.0132	-0.0025
	(0.0241)	(0.0247)	(0.0416)	(0.0768)	(0.0116)	(0.0163)	(0.0210)	(0.0506)
Stability	0.1662***	0.1311***	0.1486***	0.1625***	0.1849***	0.1639***	0.2348***	0.2932***
	(0.0253)	(0.0261)	(0.0541)	(0.0306)	(0.0255)	(0.0483)	(0.0319)	(0.0920)
Lending-deposit	0.1010**	0.1363***	0.0736	-0.0432	0.1160*	0.0813	0.0327	0.0586
spread	(0.0398)	(0.0338)	(0.0769)	(0.0779)	(0.0614)	(0.0721)	(0.0872)	(0.0945)
Competition	-1.0495	-1.9573	-1.0339**	-0.6672	-1.2541	-1.4477	-0.8639	-0.5419
	(2.1073)	(1.3612)	(0.4546)	(0.8326)	(2.0196)	(1.1109)	(1.1299)	(0.6257)
Education	-0.0015	-0.0008	0.0069***	0.0089***	-0.0001	-0.0018	-0.0020	-0.0024
	(0.0013)	(0.0007)	(0.0023)	(0.0023)	(0.0015)	(0.0012)	(0.0023)	(0.0024)
Institutional	4.4852***	5.2984***	4.1387***	5.3595***	3.9910***	3.3780**	1.2985	1.1437
quality	(0.6805)	(0.3025)	(0.9804)	(1.2804)	(1.1059)	(1.3292)	(1.0612)	(2.0705)
Population	-2.0121***	-2.0659***	-3.0742***	-1.6303	-1.3444**	-2.5114***	-3.0671***	-2.7840
	(0.4752)	(0.3373)	(0.7094)	(1.1364)	(0.5592)	(0.6717)	(0.4905)	(2.1110)
Foreign Bank	-2.3522***	-2.6935***	-0.5066	1.1082	-2.1647**	-1.7486	1.2327**	0.7565
Presence	(0.6360)	(0.8074)	(1.4844)	(0.9808)	(1.0498)	(1.3258)	(0.5955)	(1.2473)
Interaction Term	0.1679	0.2230***	0.2846***	0.4868***	0.0162	0.0006**	-0.0358	0.0312
	(0.0465)	(0.0373)	(0.1013)	(0.1353)	(0.0310)	(0.0465)	(0.0497)	(0.1902)
Constant	9.4033	10.9856***	13.1616***	11.9470***	6.5046***	11.0810***	11.3542***	10.0775**
	(1.6360)	(1.0906)	(2.0894)	(1.5483)	(1.3202)	(1.4391)	(1.2135)	(4.0643)
Observation	199	199	199	199	160	160	160	160
R-squared	0.4611	0.4965	0.5884	0.6664	0.3762	0.3743	0.4539	0.3977
Net Effect	-	0.0247	0.1289	0.1442	-	-0.0111	-	-

Notes: Column (1 to 4) is when cell phone used to pay bill is used as a proxy for Fintech whereas when cell phone used to send money as a measure of Fintech incorporate column (6 to 8). Significant levels at 1%, 5% and 10% are represented by ***, ** and * respectively.

Source: STATA 17 Output from Research Data, 2023

Table A.15: FBP on Fintech -Depositors from Commercial Bank

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q0.25	**q0.50**	**q0.75**	**q0.90**	**q0.25**	**q0.50**	**q0.75**	**q0.90**
Fintech	15.598**	20.170*	23.018	13.808	6.933**	12.661***	13.023**	13.870**
	(6.531)	(10.746)	(14.956)	(11.558)	(2.651)	(3.692)	(5.871)	(6.917)
Stability	-9.213**	-12.616**	-3.558	-30.750	-8.762	-14.282**	2.481	-14.681
	(4.010)	(6.048)	(8.705)	(20.720)	(6.020)	(5.951)	(10.875)	(17.168)
Lending-deposit spread	24.287***	30.273**	35.802	118.893***	23.966*	20.644*	21.543	32.486
	(7.429)	(11.762)	(21.593)	(35.310)	(12.157)	(12.085)	(21.613)	(32.797)
Competition	-41.355	-17.146	45.071	259.438	-25.732	9.052	152.389	544.690
	(47.879)	(54.069)	(80.531)	(313.883)	(63.228)	(47.704)	(172.715)	(368.323)
Education	-0.707**	-0.458**	-0.119	-0.839	-0.883**	-1.035***	-1.730**	-1.472**
	(0.294)	(0.182)	(0.323)	(1.042)	(0.364)	(0.236)	(0.771)	(0.630)
Institutional quality	292.697***	347.570***	639.040***	114.221	197.995	258.748***	326.124	-513.355
	(90.764)	(92.230)	(213.519)	(464.256)	(136.920)	(86.001)	(293.439)	(317.203)
Population	-492.359***	-563.988***	-356.003**	-830.22***	-419.62***	-430.55***	-307.696	-629.193***
	(107.493)	(72.018)	(150.584)	(284.518)	(137.299)	(117.184)	(194.604)	(200.260)
Foreign bank presence	-116.176	-98.734	-306.210	-410.231*	-129.951	-65.172	-202.979	-213.930
	(112.511)	(120.278)	(227.692)	(228.617)	(148.605)	(101.372)	(382.371)	(740.016)
Interaction term	-1.173	-6.313	-12.884	11.417	-8.960	-23.484**	-33.068**	-29.293**
	(12.650)	(13.027)	(23.359)	(20.606)	(5.886)	(9.261)	(12.986)	(12.476)
Constant	1811.971***	2100.344***	1856.230***	3083.443***	1581.56***	1898.56***	1898.541***	2922.634***
	(279.837)	(226.812)	(334.173)	(632.815)	(314.539)	(317.020)	(532.129)	(614.485)
Observation	199	199	199	199	160	160	160	160
R-squared	0.34	0.4504	0.4642	0.43	0.2083	0.3228	0.3047	0.2303
Net Effect	-	-	-	-	-	2.0251	-1.9535	0.6032

Notes: Column (1 to 4) is when cell phone used to pay bill is used as a proxy for Fintech whereas when cell phone used to send money as a measure of Fintech incorporate column (6 to 8). Significant levels at 1%, 5% and 10% are represented by ***, ** and * respectively.

Source: STATA 17 Output from Research Data, 2023

Appendix B

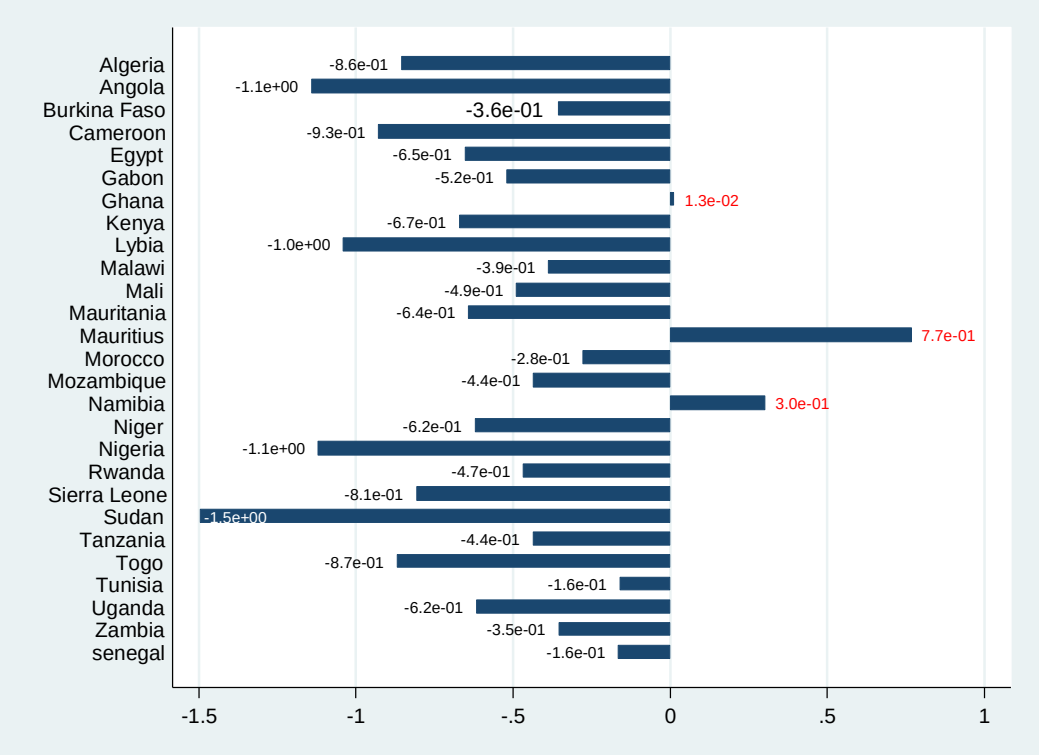

Figure B1: Average Within Countries Institutional Quality Index, 2000-2018

Source: World Governance Indicators, 2023

Appendix C

List of Papers Based on PhD Thesis

Published Papers

1. Iddrisu, K., Abor, J. Y., & Banyen, K. T. (2022). Fintech, Foreign Bank Presence and Inclusive Finance in Africa: Using a Quantile Regression Approach. *Cogent Economics & Finance*, 10(1), 2157120. https://doi.org/10.1080/23322039.2022.2157120
2. Iddrisu, K., Abor, J. Y. & Banyen, K. T. (2023). Foreign Bank Presence and Financial Development: The Role of Institutional Quality. *Review of Financial Economics.* https://doi.org/10.1002/rfe.1183.
3. Iddrisu, K., Abor, J. Y., and Banyen, K. T, Foreign Bank Presence and Inclusive Growth in Africa: Moderation role of Financial Development. *African Journal of Economic and Management Studies*

Journal Articles under Review

4. Iddrisu, K., Abor, J. Y., and Banyen, K. T., Exploring the Causal Relationship among Foreign Bank Presence, Financial Development and Inclusive growth in Africa.
5. Iddrisu, K., Abor. J. Y. and Banyen, K. T. Financial Development, Globalisation and Foreign Direct Investment: Empirical Evidence from Africa. *SN Business and Economics.*
6. Iddrisu, K., Abor. J. Y. and Issah, O. Financial Development and Inclusive Growth: Does Globalisation Matter?

Conference Presentations

1. Iddrisu, K., Abor, J. Y., and Banyen, K. T., Foreign Bank Presence and Financial Development: The Role of Institutional Quality. *University of Ghana business school seminar series. September, 2021, University of Ghana, Accra, Ghana.*

2. Iddrisu, K., Abor, J. Y., and Banyen, K. T., Foreign Bank Presence and Financial Development: The Role of Institutional Quality. *Global Development Finance Conference. South Africa, November, 2021, South Africa.*
3. Iddrisu, K., Abor, J. Y., and Banyen, K. T. Exploring the Causal Relationship among Foreign Bank Presence, Financial Development and Inclusive Growth in Africa. *World Finance Conference. August, 1 to 3, 2022, Turin.*

List of Other Papers

Published Papers

1. Adjasi, C.K.D., Ofoeda, I., Iddrisu, K., Akinsola, F. (2022). Cross-Border Banking and Banking Crisis in Africa. In Abor, J.Y., & Adjasi, C.K.D. (Eds). *The Economics of Banking and Finance in Africa*. London: Palgrave Macmillan https://doi.org/10.1007/978-3-031-04162-4_15

   Contributions: The candidate played a role in the study by interpreting some of the descriptive data, and also contributed to the introduction section of the paper. To reduce the similarity index, the paper was subsequently revised.

2. Iddrisu, K., Adom, P. K., Mohammed, J. I., & Karimu, A. (2023). Economics of Downstream Oil and Gas Project, Risk, and Decision Analysis. In Abor, J. Y., Karimu, A., & R. Brannlund (Eds.), *The Economics of the Oil and Gas Industry: Emerging Markets and Developing Economies*. London: Routledge. https://doi.org/10.4324/9781002215056-10

   Contributions: The author's contribution to the paper by providing the original draft of the paper, including the introduction section, as well as the sections on the economics of downstream oil and gas projects, and the risk and decision analysis.

3. Wachira, M. M., Iddrisu, K., Abban, G., & Abor, J. Y. (2023). Sustainable Financing in Developing Economies. In Abor, J. Y. (Ed.), *Sustainable and Responsible Investment in Developing Markets* (pp. 159–171). London: Edward Elgar Publishing. https://doi.org/10.4337/9781803927060.00019.

   Contributions: The author's contribution to this paper is providing the abstract, introduction, a historical overview of sustainable finance, a definition of sustainable finance, an analysis of the principles of sustainable finance, a discussion of the different categories of sustainable finance, and the conclusion of the paper.

4. Iddrisu, K., Ofeoda, I., & Abor, J. Y. (2023). Inward Foreign Direct Investment and Inclusiveness of Growth in Africa: Will Renewable Energy Make a Difference? *International Economics and Economic Policy*

Contributions: The author's contribution to the paper was significant, encompassing the provision of the initial draft, the curation of data and development of methodology, thorough review and editing of the paper, as well as providing valuable resources.

5. Iddrisu, K., Abor, J. Y., Insaidoo M & Banyen, K. T. (2023). Does China's Flow of FDI and Institutional Quality Matter for Poverty? Evidence from Africa. *Journal of Asian and African Studies.*

   Contributions: The author made a substantial contribution to the paper, which include providing the initial draft, curating the data and developing the methodology, reviewing and editing the paper, and providing valuable resources.

6. Iddrisu, K., Doku, J.N., Abor, J.A., & Dziwornu R. (2023). Financial Inclusion, Financial Stability and Inclusive Growth: Evidence from Selected African Countries. *Journal of Cogent Economics and Finance.*

   Contributions: The author played a major role in the paper, having provided the initial draft, curated the data and developed the methodology, meticulously reviewed and edited the paper, and offered valuable resources to enhance its quality.

7. Doku, J.N., Iddrisu, K. Bortey, D.N.A.S & Iadime, J (2023). Impact of Digital Financial Technology on Financial Inclusion in Sub-Saharan Africa: The moderation Role of Institutional quality. *African Finance Journal*

   Contributions: The author also played a substantial role in enhancing the introduction, literature review, methodology, and providing an analysis of the empirical findings. The author's contribution to this paper involves refining the draft into its final version.

Papers under Review

8. Amoah, L., Iddrisu K., Ojangole, P., and Abor, J. Y., *Global Development Finance: What Do We Know?*

Contributions: The author contributed to several subsections of the paper, including the abstract, the overview of financing for development, the section on international public financial resources, the discussion of international blended finance, the analysis of the financial role of diverse development banks, and the conclusion and summary of the paper.

9. Abor, J. Y., Subramanian, K., and Iddrisu. K., *Multilateral Development Banks: Contributions and Challenges.*

   Contributions: The author's contribution to the paper spanned across multiple subsections, specifically covering the topics of funding and operations of multilateral development banks, as well as the financing role of these banks.