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Reducing Poverty Through Financial Growth: The Impact of Financial Inclusion and Development in Emerging Economies

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Abstract

This research explores the impact of financial inclusion and financial development on poverty reduction in developing economies. The study aims to determine whether these financial factors contribute positively or negatively to alleviating poverty. Using quantile regression analysis, the investigation focuses on how financial accessibility and institutional growth influence poverty levels across various economic conditions. The findings indicate that both financial inclusion and financial development play a significant role in reducing poverty by expanding access to financial resources and improving economic participation. As financial systems advance, they facilitate greater utilization of banking services, credit availability, and investment opportunities among low-income populations, ultimately strengthening financial security in developing regions. The study emphasizes the need for governments to enhance financial inclusion through policies that improve accessibility, service quality, and public awareness of financial tools. Additionally, policymakers should foster financial sector development by increasing the availability of banking services, improving institutional efficiency, and ensuring the stability of financial markets. Encouraging higher GDP per capita is also recommended as an effective strategy for sustainable poverty reduction. Furthermore, governments and central banks must adopt fiscal and monetary policies that promote price stability and control inflation, as economic volatility disproportionately affects vulnerable populations. These insights provide a roadmap for policymakers to develop targeted strategies that enhance financial empowerment and foster inclusive economic growth in developing nations.

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1. INTRODUCTION

Financial inclusion has been recognized as one of the most important goals of the Millennium Development Goals, established by the United Nations, to enhance social, economic, and environmental well-being globally. A country can strengthen its financial infrastructure through financial inclusion, which fosters national growth and development. Expanding financial inclusion can be achieved by increasing access to financial institutions, providing business loans, and improving microfinance services. The primary objectives of financial inclusion include reducing poverty through economic growth, promoting equitable income distribution, and ensuring financial sector stability (Ali & Sajid, 2020; Ratnawati, 2020; Andreou, 2021; Sayyaya & Phommason, 2023). In recent years, monetary policies have increasingly emphasized financial inclusion, ensuring individuals and businesses have access to financial services such as savings, affordable transactions, and credit card facilities. According to Mader (2018), financial inclusion plays a vital role in reducing poverty and inequality by providing insurance coverage and enabling households to manage consumption effectively. The World Bank considers financial inclusion a key

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strategy in addressing income disparities and breaking cycles of poverty. Consequently, governments in many countries are actively promoting financial inclusion by implementing various strategies aimed at improving financial accessibility for individuals and businesses. However, financial inclusion remains a challenge in several regions, as the benefits of digital finance and access to financial services are not evenly distributed. Advancing financial inclusion through innovative improvements in banking and financial systems is essential for reducing poverty (Khalid & Sultan, 2019; Sun & Chang, 2020; Zubair & Hayat, 2020; Damiyano & Mago, 2023; Ali & Mohsin, 2023).

Financial inclusion refers to the availability and accessibility of financial services for all individuals, including access to credit, bank deposits, and insurance. It significantly contributes to poverty reduction by ensuring the optimal utilization of resources and enhancing credit and deposit facilities. Increased financial inclusion fosters savings, which leads to higher investment levels, ultimately promoting social equity and economic development. A more inclusive financial system enhances the efficiency of the banking sector. However, the development of a country's financial sector alone cannot eliminate economic disparities due to uneven income distribution (Zhengzheng, 2019; Kumar, 2023). The concept of financial inclusion revolves around ensuring broad access to and effective use of financial services. Many countries are prioritizing financial inclusion as a means of achieving inclusive private sector growth. The key functions of financial inclusion include mobilizing savings, directing capital into productive investments, monitoring financial activities, managing risks, and facilitating the exchange of goods and services. Economies with well-established financial systems generally provide broader access to financial services. However, the relationship between financial depth and financial inclusion varies across nations. In many cases, financial resources are not evenly mobilized among individuals in both wealthy and less developed countries, despite similarities in financial depth (Farahmand, 2019; Kumar & Kumar, 2020; Ndoye & Barajas, 2022).

Reducing poverty remains a primary objective of the United Nations (Chani et al., 2011). Financial sector development plays a crucial role in addressing poverty-related challenges. Extensive research has been conducted to examine the effects of financial development on poverty reduction. Financial development directly lowers transaction costs and provides essential information about formal financial systems, making them more accessible. Indirectly, financial development influences key economic factors linked to poverty, fostering economic growth that contributes to poverty alleviation. Strengthening the financial sector can lead to more equitable income distribution and reduced financial instability, further supporting efforts to reduce poverty (Alvi & Shahid, 2018; Haan et al., 2022; Dahmani & Makram, 2024).

Achieving sustainable development is a fundamental objective for both developed and developing nations. Poverty reduction remains the primary goal of sustainable development (Ali, 2015; Ali & Rehman, 2015; Arshad & Ali, 2016; Ali & Zulfiqar, 2018; Ali, 2018). According to the Sustainable Development Goals, developing countries have a significantly higher population ratio, yet they face limited resource availability compared to advanced economies. Financial development plays a crucial role in addressing these challenges by expanding financial access, fostering economic growth, and reducing income disparities among citizens, ultimately contributing to poverty alleviation (Taiwo et al., 2024; Ahmed & Alvi, 2024). Reducing the global poverty headcount ratio is a major focus of the Millennium Development Goals. Various policies emphasize that strengthening the financial sector is essential for poverty reduction. Specifically, increasing financial depth, ensuring widespread financial accessibility, and promoting financial inclusiveness are critical in addressing poverty. In response to the financial crises of the 1930s Great Depression, policymakers placed greater emphasis on financial stability. Cihak et al. (2013) outline four fundamental pillars that define financial system development. The first is enhancing the accessibility of financial services, ensuring that both individuals and businesses can effectively participate in formal financial markets. Expanding financial inclusion through banking networks, digital payment systems, and microfinance initiatives plays a crucial role in fostering economic participation. The second key component is the overall depth and scale of financial services, which reflects the extent to which financial markets support investment, credit distribution, and liquidity management. A well-developed financial sector enables capital accumulation, encourages entrepreneurship, and strengthens long-term economic growth. The third essential factor is maintaining financial system stability, which involves mitigating systemic risks, implementing sound regulatory policies, and safeguarding against financial crises. Stability is critical to fostering investor confidence and ensuring sustainable economic progress. The final element, as highlighted by Rewilak (2017), is financial efficiency, which allows individuals and businesses to conduct transactions with minimal costs. Efficient financial systems optimize resource allocation, enhance competition among financial institutions, and improve market responsiveness. By strengthening these four dimensions, economies can establish resilient financial infrastructures that promote sustainable growth, reduce economic inequalities, and enhance overall financial well-being (Senturk & Ali, 2021; Iqbal & Noor, 2023; Audi & Masri, 2024).

Poverty reduction strategies are often considered more crucial than economic growth alone. Reforms in the financial sector influence income levels, thereby playing a key role in reducing poverty. However, economic progress does not necessarily equate to improved living standards for individuals; it primarily signifies overall economic expansion. The significant development of the formal financial sector is essential for mobilizing the necessary resources to implement poverty reduction strategies effectively. An efficient financial system also attracts foreign financial resources, further supporting poverty reduction efforts. However, financial sectors plagued by market imperfections and moral hazards struggle to address poverty effectively. Strengthening the financial system leads to optimal utilization of domestic resources, which in turn fosters economic growth and helps mitigate poverty (Uddin et al., 2014; Arezki, 2022; Nur & Kumar, 2023).

Reducing poverty remains a significant challenge for developing countries. Many international organizations have designed programs aimed at addressing poverty as their primary objective (Zahonogo, 2017; Hassan & Salha, 2020; Idris, 2023). One

of the most critical aims of the Millennium Development Goals is to eliminate poverty worldwide. To achieve this objective, financial sector development and various policy measures have been implemented (Rewilak, 2017; Labeeque & Sanaullah, 2019). Addressing poverty requires targeted policy interventions, such as financial liberalization initiatives introduced in 1986 and programs like Operation Feed the Nation. Enhancing the financial sector influences poverty reduction by improving financial accessibility, thereby fostering economic growth. This, in turn, creates new employment opportunities, encourages higher investment levels, and contributes to an increase in the gross domestic product per capita of developing economies (Okoduwa et al., 2023).

2. LITERATURE REVIEW

The significance of financial inclusion and financial development has gained substantial attention in academic research, policy frameworks, and global initiatives due to their pivotal roles in fostering economic progress and reducing poverty. Financial inclusion primarily focuses on expanding access to essential financial services—such as credit, savings, insurance, and digital payment systems—to all segments of society, particularly low-income and marginalized groups (Sajid & Ali, 2018). This ensures that individuals and businesses can actively participate in formal financial systems, enhancing their economic stability and resilience. On the other hand, financial development encompasses the expansion, diversification, and operational efficiency of financial institutions and markets. It reflects the depth and sophistication of financial systems in mobilizing capital, facilitating investment, and supporting economic growth. Scholars and policymakers continuously examine the interplay between these two elements to understand their collective impact on reducing income inequality, strengthening financial resilience, and promoting inclusive economic expansion. While financial inclusion empowers individuals by providing equitable access to financial tools, financial development enhances the overall efficiency and stability of economic systems, ensuring long-term prosperity (Ashraf & Ali, 2018). Future research should explore how technological innovations, regulatory policies, and financial literacy programs influence the effectiveness of financial inclusion and development in driving sustainable growth and poverty alleviation. This literature review consolidates empirical studies conducted across various countries, time periods, and methodological frameworks to assess the intricate relationships between financial inclusion, financial development, and poverty reduction. A growing body of literature underscores the vital role financial inclusion plays in mobilizing savings, stimulating investment, and enabling individuals and businesses to mitigate financial risks. By expanding access to credit and payment systems, financially inclusive economies empower individuals to invest in education, entrepreneurial ventures, and other income-generating activities. For low-income households, engagement with the formal financial sector mitigates economic vulnerability, smoothens consumption patterns, and enhances overall well-being. These advantages have sparked widespread interest in understanding the conditions under which financial inclusion effectively drives poverty alleviation and contributes to broader economic stability.

Several empirical studies included in this review highlight the significance of financial inclusion in strengthening financial stability, enhancing efficiency, and improving overall economic performance. For instance, Khan et al. (2022) analyzed financial data from 15 developed and emerging economies within the Group of Twenty (G20) spanning the years 2004 to 2017. Utilizing advanced econometric techniques such as principal component analysis, autoregressive distributed lag models, and the generalized method of moments, their study concludes that financial inclusion plays a statistically significant role in enhancing financial stability and efficiency across these economies. Their findings reinforce the argument that expanding the breadth and depth of financial services bolsters financial system resilience, ultimately benefiting a wider segment of the population. Similarly, Jungo et al. (2022) conducted an empirical investigation encompassing 46 Sub-Saharan African and 31 Latin American and Caribbean countries, covering the period from 2005 to 2018. Through the application of principal component analysis and feasible generalized least squares estimation, they found that higher levels of financial inclusion contribute to greater banking sector stability. However, an intriguing aspect of their findings reveals that increased competition within the banking sector can negatively impact financial stability. Nevertheless, regulatory interventions were found to play a crucial role in counterbalancing this adverse effect. Their study emphasizes the importance of achieving a delicate balance between financial accessibility, market competition, and prudent regulatory oversight to ensure that the expansion of financial services does not inadvertently lead to systemic financial risks. Beyond financial stability, many scholars have turned their attention to the direct effects of financial inclusion on poverty alleviation and income distribution. Mushtaq and Bruneau (2019), in their study of 62 countries from 2001 to 2012, provide empirical evidence demonstrating that the proliferation of information and communication technology—often a critical enabler of digital financial inclusion—has a significant negative correlation with poverty levels. Their findings suggest that as digital financial platforms expand, they facilitate seamless access to banking services and electronic payments, enabling previously unbanked and underbanked populations to engage with the formal financial system. By extension, digital financial inclusion enhances the reach and efficiency of financial services while reducing transaction costs and geographic limitations, further supporting poverty reduction efforts. Shi and Qamruzzaman (2022) also contribute valuable insights by examining data from 68 lower and lower-middle-income countries over the period 1995 to 2018. Employing a range of econometric techniques, including cross-sectional dependency analysis, panel cointegration tests, and the generalized method of moments estimation, their research confirms that integrating larger segments of the population into the formal financial system significantly accelerates poverty reduction. Furthermore, their study highlights the importance of government investments in education, arguing that social spending on education

complements financial inclusion policies by equipping lower-income populations with the necessary skills and knowledge to maximize the benefits of formal credit and savings mechanisms.

In a related context, Ratnawati (2020) explores the relationship between financial inclusion, economic growth, and poverty alleviation across ten Asian economies over the period 2009 to 2018. Using the generalized method of moments approach, the study confirms that financial inclusion not only contributes to economic expansion and poverty reduction but also plays a role in narrowing income disparities. The findings suggest that expanding financial services to underserved and marginalized populations creates a self-reinforcing cycle wherein improved economic growth stimulates greater demand for financial products and services, thereby further enhancing poverty alleviation Nevertheless, the study underscores that the success of financial inclusion initiatives is heavily influenced by country-specific factors, including the strength of institutional frameworks, regulatory effectiveness, and the overall maturity of financial markets. These elements determine how well financial services are integrated into the broader economy and their long-term impact on economic stability. The collective insights from the reviewed studies strongly indicate that both financial inclusion and financial development are essential in fostering economic resilience, alleviating poverty, and reducing income disparities. While financial inclusion plays a crucial role in bringing underserved populations into the formal financial ecosystem, the expansion and sophistication of financial institutions and markets are necessary to ensure the efficiency, security, and sustainability of these efforts. A well-developed financial sector enhances resource allocation, supports investment, and mitigates financial risks, amplifying the benefits of inclusion strategies. Therefore, policymakers must adopt a holistic approach that combines inclusive financial policies with structural economic reforms to create a more equitable and sustainable financial landscape. Future research should explore how technological advancements, financial literacy programs, and digital banking innovations can further optimize financial inclusion and development in diverse economic settings. However, the extent to which financial inclusion translates into tangible economic and social benefits remains dependent on various factors, including regulatory policies, technological advancements, and institutional effectiveness. Policymakers must therefore adopt a multidimensional approach, combining financial inclusion initiatives with targeted economic and social policies, to maximize the impact of financial sector development on poverty reduction and sustainable economic growth.

A substantial body of research investigates how broader institutional frameworks and complementary policy measures influence the extent to which financial inclusion contributes to poverty reduction. Aracil et al. (2021) conducted an extensive analysis of data from 75 developed and developing countries spanning the years 2004 to 2017, demonstrating that institutional quality—encompassing legal frameworks, regulatory standards, and governance structures—plays a crucial role in moderating the effects of financial inclusion on poverty alleviation. Well-functioning institutions help build public confidence in financial providers, uphold consumer protection rights, and ensure that regulations support, rather than hinder, financial innovation. In contrast, weak institutional settings present significant barriers for financially excluded households, where corruption, inefficiencies in contract enforcement, and high transaction costs deter access to formal financial services. These findings highlight the necessity of sound governance in maximizing the poverty-reducing potential of financial inclusion. The impact of financial regulation on financial inclusion and stability is further explored by Jungo et al. (2022), who examine the delicate balance between market competition, regulatory oversight, and financial stability. Their research, which focuses on countries in Sub-Saharan Africa and Latin America, underscores that while heightened competition within financial markets can sometimes undermine financial stability, well-structured regulatory interventions help mitigate this risk. In emerging economies with underdeveloped financial systems, regulatory safeguards play an essential role in preventing exploitative lending practices, maintaining adequate liquidity levels, and ensuring that credit expansion remains sustainable. This study emphasizes the need for financial policymakers to carefully calibrate competition and regulation, as excessive financial oversight could inadvertently restrict access to credit and other financial services, thus limiting the poverty-reduction potential of financial inclusion.

A notable addition to the discourse on financial inclusion is presented by Abdelghaffar et al. (2022), who examine its impact across 38 nations with varying income levels over the period from 2009 to 2019. Utilizing the generalized method of moments (GMM) approach, their study provides empirical evidence that the advantages of financial inclusion are particularly pronounced in low- and lower-middle-income countries. Their analysis reveals that expanding financial access in these economies leads to substantial improvements in poverty reduction and key human development indicators, including healthcare accessibility, educational attainment, and overall quality of life. The research highlights that when previously unbanked populations gain access to formal banking services, credit opportunities, and insurance products, their economic prospects improve significantly. This effect is especially transformative in regions where financial exclusion has long been a barrier to upward economic mobility. By facilitating greater participation in economic activities, financial inclusion empowers individuals and small businesses, fostering entrepreneurship, increasing household resilience, and reducing income inequality. The study underscores the need for targeted policies that enhance access to financial services while strengthening regulatory oversight and institutional frameworks to maximize the benefits of financial inclusion. Future research could explore the role of digital financial solutions and mobile banking in further accelerating financial access in developing economies. Beyond its direct impact on poverty reduction, financial inclusion has been increasingly examined in relation to macroeconomic variables, including economic growth, income inequality, energy consumption, and environmental sustainability. Demir et al. (2020), drawing on survey data from 140 countries across the years 2011, 2014, and 2017, demonstrate that financial inclusion serves as a conduit through which financial technology, commonly referred to as fintech, reduces income inequality. By

enhancing cost-efficiency and expanding outreach, particularly in rural and underserved regions, fintech innovations enable micro-entrepreneurs and low-income individuals to access previously inaccessible financial services. Expanding access to financial services plays a crucial role in fostering a more equitable income distribution and driving inclusive economic growth. Further insights into this relationship are provided by Ali et al. (2020), who analyzed data from 45 member countries of the Islamic Development Bank over the period from 2000 to 2016. Employing advanced econometric techniques, including dynamic panel data analysis, generalized method of moments (GMM) estimation, two-stage least squares regression, and panel vector autoregressive models, their study uncovers a significant positive correlation between financial inclusion and economic growth. Their findings indicate that greater access to banking services, credit facilities, and financial instruments not only stimulates economic expansion but also enhances the inclusivity of growth patterns, ensuring that economic gains are more evenly distributed across income groups. The research suggests that financial inclusion serves as a critical mechanism for reducing wealth disparities by empowering lower-income populations with financial tools that enable savings, investment, and entrepreneurship. By integrating financial services into broader economic development strategies, policymakers can promote sustainable economic progress while minimizing socio-economic inequalities. Future studies should further explore the role of digital financial innovations and regulatory frameworks in strengthening the financial inclusion-growth nexus in diverse economic contexts. Additionally, their panel Granger causality tests indicate the presence of a feedback loop: as economies expand, greater financial access is demanded, which, in turn, drives further financial inclusion and reinforces a cycle of inclusive economic development.

Several researchers have investigated the spatial and demographic dimensions of financial inclusion and its broader economic implications. Koomson and Danquah (2020), utilizing data from Ghana's sixth and seventh rounds of the Living Standards Survey (2012/13 and 2016/17), provide compelling evidence that financial inclusion plays a crucial role in alleviating household energy poverty. Their study reveals that households with greater access to formal financial services are more likely to afford modern, cleaner energy alternatives, reducing reliance on traditional, less efficient energy sources. This finding suggests that financial inclusion extends its benefits beyond income generation, contributing to improved living conditions and enhanced energy security. By facilitating access to credit and financial resources, financial inclusion enables households to invest in electricity connections, cleaner cooking fuels, and energy-efficient appliances, leading to better health outcomes and environmental sustainability. The study underscores the importance of integrating financial inclusion policies with broader socio-economic development strategies to ensure comprehensive welfare improvements. Policymakers are encouraged to design initiatives that enhance financial access while simultaneously promoting investments in clean energy infrastructure. Future research should explore the long-term effects of financial inclusion on environmental sustainability and energy affordability across diverse economic settings. By facilitating investments in energy-efficient technologies and infrastructure, financial inclusion indirectly contributes to improved health outcomes and environmental sustainability. Incorporating sustainability considerations into the discussion, Qin et al. (2021) analyze data from seven emerging economies between 2004 and 2016, employing panel quantile regression analysis and panel cointegration tests. Their findings reveal that financial inclusion contributes to reducing carbon dioxide emissions, particularly in lower- and middle-income quantiles. Additionally, their study highlights the role of globalization and renewable electricity generation in further curbing emissions across all quantiles. These results suggest that when countries prioritize expanding financial access alongside investments in renewable energy infrastructure, they can achieve economic growth while simultaneously advancing environmental sustainability.

Building on the connection between financial inclusion and sustainability, Qiao et al. (2021) analyze data from 26 member countries of the Organisation for Economic Co-operation and Development (OECD) covering the period from 2011 to 2019. Utilizing advanced econometric techniques, including Padroni unit root tests, fully modified ordinary least squares (FMOLS) regression, and dynamic ordinary least squares (DOLS) estimation, their study establishes a strong positive relationship between renewable energy consumption and economic growth. Their findings suggest that increased investment in clean energy sources not only supports environmental sustainability but also contributes to long-term economic expansion by fostering innovation and reducing reliance on fossil fuels. The study highlights that financial inclusion plays a crucial role in facilitating these investments, as greater access to credit and financial services enables businesses and households to adopt renewable energy solutions. By promoting financial accessibility, policymakers can enhance the transition toward sustainable energy practices while ensuring economic stability. Additionally, the research underscores the importance of integrating financial sector reforms with energy policies to maximize the socio-economic benefits of financial inclusion. Future studies could further explore how financial literacy and digital banking innovations influence the adoption of renewable energy in both developed and developing economies. Additionally, their findings suggest that a renewable energy index aligns closely with trends in green bond financing. Although this study does not explicitly examine financial inclusion's direct impact on poverty, it highlights the broader implications of inclusive finance in promoting sustainable economic development. Expanding access to green finance mechanisms—such as green bonds—could form an essential component of financial inclusion strategies, supporting employment creation, social equity, and environmental stewardship.

A recurring theme across the literature is that financial inclusion's impact on poverty and inequality varies significantly based on a country's stage of development, institutional capacity, and income distribution. For instance, Neaime and Gaysset (2017), examining data from eight Middle Eastern and North African countries between 2002 and 2015, find that while financial inclusion contributes to reducing income inequality, it does not have a statistically significant effect on poverty reduction

within their sample. However, they do identify that increasing both financial inclusion and population size enhances financial stability. These findings suggest that factors such as labor market dynamics, educational attainment, and sectoral composition may influence the extent to which financial inclusion translates into poverty reduction. When comparing the effects of financial inclusion in low-income and upper-middle-income countries, Abdelghaffar et al. (2022) find that the magnitude of its impact on human development is significantly higher for lower-income populations. This implies that context-specific financial policies—such as targeted microfinance programs, government-subsidized credit initiatives, and digital financial literacy campaigns—are particularly effective in economies where large portions of the population remain unbanked. Conversely, in high-income nations where formal financial systems are already well-established, the additional benefits of financial inclusion may be more limited. In such contexts, policymakers may shift their focus toward capital market deepening, financial technology advancements, and investment diversification to sustain economic growth.

Ali et al. (2020) and Ajide (2015) provide valuable insights into the role of financial inclusion in poverty reduction within specific contexts, particularly among Islamic Development Bank member countries and rural communities in Nigeria. In Nigeria, Ajide's (2015) application of an autoregressive distributed lag model covering the period from 1996 to 2013 demonstrates that financial inclusion is highly effective in alleviating poverty in rural areas, where physical access to financial institutions has historically been a significant obstacle. These findings highlight the crucial role of microfinance institutions, mobile banking, and other decentralized financial mechanisms in addressing the unique financial needs of rural populations, thereby enhancing their economic stability and livelihood opportunities. Financial inclusion primarily aims to expand access to essential financial services, ensuring that individuals and businesses—particularly those in underserved communities—can participate in formal financial systems. In contrast, financial development encompasses a broader framework that extends beyond accessibility to include the depth, efficiency, and overall stability of financial institutions and markets. A well-developed financial system not only provides a diverse range of services, such as credit, savings, insurance, and investment opportunities, but also enhances resource allocation, improves risk management, and strengthens economic resilience. While financial inclusion focuses on integrating marginalized populations into the financial landscape, financial development ensures that financial institutions operate efficiently, maintain stability, and adapt to evolving economic conditions. The interplay between these two dimensions is crucial for sustainable economic progress, as accessibility alone is insufficient without robust financial infrastructure and sound regulatory frameworks. Financial development fosters innovation, improves liquidity, and enhances the ability of financial markets to respond to external shocks, ultimately supporting long-term economic expansion. Future research should explore how digital financial innovations, regulatory reforms, and institutional quality contribute to optimizing the relationship between financial inclusion and financial development in diverse economic settings. Despite their conceptual overlap, many scholars treat these as distinct factors influencing economic well-being. Studies concentrating on financial development often offer critical insights into poverty dynamics. For instance, Thompson et al. (2021), examining 40 African countries between 1996 and 2015 using ordinary least squares regression and the generalized method of moments, suggest that financial development does not significantly influence relative poverty across the continent, although private credit appears to be a more effective instrument. Their findings suggest that merely expanding the financial sector through increased commercial banking assets or market capitalization may not be sufficient to combat poverty. Instead, ensuring access—one of the core dimensions of financial inclusion—along with targeted lending initiatives may be more effective in reaching marginalized populations. Similarly, Hassan and Meyer (2020) analyze the South African financial sector from 1970 to 2018 using autoregressive distributed lag models and bound testing techniques. Their study finds that reducing market imperfections is essential for financial development to effectively address income inequality. While a developed financial sector can mobilize capital and spur economic growth, its benefits may be undermined by information asymmetries, high transaction costs, or limited competition, leaving low-income groups excluded from the financial system.

Some studies extend this discussion by exploring the interplay between financial development, globalization, and technological innovation.

Zameer et al. (2020) focus on China from 2007 to 2018, finding that financial development, when coupled with technological innovation, significantly enhances the efficiency of poverty alleviation efforts. However, globalization had an insignificant effect in their analysis, suggesting that domestic financial policies, digital infrastructure, and regulatory frameworks may have a more direct impact on poverty reduction than international trade or foreign investment alone. To reconcile the effects of financial inclusion and financial development, some scholars examine how they interact to influence poverty and income inequality. Minhaj Ali et al. (2020) conduct an extensive analysis of financial inclusion, institutional quality, and financial development using data from 45 Organization of Islamic Cooperation (OIC) countries over the period from 2000 to 2016. Applying the Arellano-Bond generalized method of moments (GMM) and two-stage least squares (2SLS) estimation techniques, their study uncovers a strong interconnection between these three factors, each reinforcing the other. Their findings indicate that institutions characterized by transparency, strong legal frameworks, and effective governance play a crucial role in expanding financial services to a wider population. Countries with well-established property rights and regulatory enforcement create an enabling environment for financial accessibility, ensuring that individuals and businesses can confidently engage with formal financial systems. Simultaneously, advancements in financial infrastructure—such as the proliferation of banking branches, expansion of digital payment platforms, and improvements in financial technology—support institutional efforts by facilitating the sustainable delivery of financial services to previously unbanked or underserved communities. This mutually reinforcing relationship suggests that strengthening institutional frameworks not only enhances

financial inclusion but also accelerates broader financial sector development. Future research should further explore the role of regulatory reforms, financial literacy programs, and technological advancements in optimizing financial service accessibility and institutional effectiveness.

Kavya and Shijin (2019) investigate the financial Kuznets curve hypothesis, which proposes that as economies develop financially, income inequality initially widens before eventually narrowing. Analyzing data from 85 countries spanning different income levels between 1984 and 2014 using generalized method of moments estimation, they find mixed evidence. Their research indicates that financial development alone does not guarantee an equitable distribution of wealth. In high-income countries, mature financial markets may lead to wealth concentration unless robust regulatory frameworks and financial inclusion policies are in place. In contrast, financial deepening in lower-income economies can have more pronounced poverty-reducing effects, at least in the early stages of development. Zhang and Naceur (2018), drawing on data from 143 developed and developing countries between 1961 and 2011, highlight the multidimensional nature of financial development—comprising access, depth, efficiency, and stability—as key factors in addressing income inequality and poverty. Their findings, supported by Hansen's J-test, confirm that not only the size of the financial sector matters but also how inclusive and stable it remains. If financial systems grow but become volatile or cater primarily to upper-income groups, their poverty-reduction potential is significantly weakened.

An emerging consensus suggests that while financial inclusion generally exhibits strong poverty-reducing effects, the impact of financial development can be more complex, sometimes following an inverted U-shaped pattern. Park and Shin (2017), analyzing 162 countries between 1960 and 2011, find that financial development initially reduces income inequality but may later exacerbate it. Their results suggest that in more advanced economies, financial services may disproportionately benefit asset-owning individuals, leaving the unbanked and underbanked behind. This underscores the importance of designing inclusive financial strategies that explicitly target low-income populations. Seven and Coskun (2016), evaluating 45 emerging economies from 1987 to 2011 using dynamic panel data methods, similarly demonstrate that while financial development promotes overall economic growth, it does not necessarily benefit low-income individuals. Their findings imply that economic growth alone is insufficient unless accompanied by policies ensuring equitable distribution of financial resources. Cepparulo et al. (2016), using ordinary least squares and generalized method of moments estimation across 58 developing countries from 1984 to 2012, emphasize the role of institutional quality in maximizing the poverty-reducing effects of financial development. In countries with high corruption levels or weak rule of law, financial sector expansion does not automatically lead to improved living standards. Strengthening institutions, therefore, remains a crucial prerequisite for ensuring that financial development translates into tangible economic benefits.

Localized studies provide further insights into the nuanced impacts of financial inclusion. Koomson and Danquah (2020) illustrate how location-based disparities affect the effectiveness of financial inclusion in reducing household energy poverty in Ghana. The study's findings reveal that rural households encounter significantly higher obstacles in accessing financial services compared to urban populations. Key barriers include geographical distance from formal banking institutions, inadequate digital infrastructure, and limited financial literacy. These challenges hinder rural residents from fully integrating into the formal financial system, restricting their ability to save, invest, and access credit. The results emphasize the urgency of implementing targeted solutions to reduce the financial access disparity between rural and urban areas. Mobile money services, agent banking networks, and community-based financial initiatives present viable strategies for overcoming these barriers. Mobile banking technology can expand outreach by enabling digital transactions without the need for physical bank branches, while agent banking can provide localized financial services through trusted intermediaries within rural communities. Additionally, strengthening digital infrastructure and expanding internet access are critical for improving financial accessibility in remote areas. Policymakers should focus on promoting inclusive financial policies that support rural populations, ensuring that financial innovations are designed to meet their specific needs. Future research should assess the long-term impact of digital financial solutions and community-driven banking models in enhancing rural financial inclusion and economic development. Odugbesan et al. (2020), examining 33 Sub-Saharan African economies from 2004 to 2018, identify a positive relationship between financial inclusion and sustainable development but an inverse relationship between financial development and environmental sustainability. Their findings suggest that while increased financial access encourages greener investments and social well-being, excessive financial sector expansion may prioritize short-term profits over environmental considerations. This paradox highlights the need for carefully calibrated financial policies that prevent unsustainable financial deepening, particularly in ecologically sensitive regions.

Kim (2015), analyzing 40 countries within the Organisation for Economic Co-operation and Development and the European Union between 2004 and 2011, explores the relationship between income inequality and economic growth. While financial inclusion is just one of many variables examined, the study finds that inclusive finance helps bridge the gap between economic inequality and growth rates. This suggests that financial inclusion can serve as a complementary tool to traditional redistributive policies, providing lower-income individuals with opportunities to accumulate savings, invest in education, and engage in entrepreneurial activities. Moving forward, policy recommendations should be tailored to different economic contexts. In low- and middle-income countries where financial systems remain underdeveloped, expanding access through microfinance, mobile money, and agent banking can yield significant poverty-reduction benefits. However, these efforts must be reinforced by strong legal and regulatory safeguards to protect consumers and prevent exploitative lending practices. High-income countries, on the other hand, may need to focus on bridging residual financial access gaps and ensuring that the next

wave of financial innovations—such as digital currencies, fintech solutions, and peer-to-peer lending—remains inclusive and does not disproportionately benefit already well-served populations. Future research should consider longer time spans, refine financial inclusion and development indicators, and examine poverty outcomes at more granular levels. Additionally, exploring the intersection between climate change, green finance, and financial inclusion presents an important research frontier. Studies have shown that financial access and regulatory structures play a crucial role in renewable energy adoption and emissions reduction, further reinforcing the need for integrated financial and sustainability strategies.

3. THE MODEL AND EMPIRICAL METHODOLOGY

This study has used a model to investigate how the poverty level is influenced by financial inclusion and financial development in developing nations. Poverty is used as the dependent variable while financial inclusion and financial development, GDP Per Capita, Inflation, Trade, Gini-coefficient, and Secondary School Enrollment are used as independent variables. In this study, we have used MM-QR technique.

The functional form of the model is:

$$Pov = f(FII, FDI, GDPPC, INF, TRADE, GINI, SSE) \quad \textbf{(1)}$$

The econometric form of the model is:

$$Pov_{it} = \beta_o + \beta_1(FII)_{it} + \beta_2(FDI)_{it} + \beta_3(GDPPC)_{it} + \beta_4(INF)_{it} + \beta_5(TRADE)_{it} + \beta_6(GINI)_{it} + \beta_7(SSE)_{it} + \varepsilon_{it} \quad \textbf{(2)}$$

where, $Pov = Poverty$ headcount ratio, $FII =$ Financial Inclusion Index, $FDI =$ Financial Development Index $GDPPC =$ Gross Domestic Product Per Capita, $INF =$ Inflation, GDP Deflator (Annual %), $TRADE =$ Trade (% of GDP), $GINI =$ Gini Index, $SSE =$ Secondary School Enrollment (as a percentage of total enrollment), Quantile Regression technique is used to examine the influence of financial inclusion and financial development on poverty in developing nations.

4. RESULTS AND DISCUSSIONS

Table 1 presents the descriptive statistics for the study variables, including private health care resources, financial inclusion index, foreign direct investment, gross domestic product per capita, inflation, trade openness, the Gini index, and social sector expenditure. The mean values indicate the central tendency, while the standard deviation reflects the dispersion in the data, providing insights into variability across observations (Wooldridge, 2015). The skewness values suggest that most variables exhibit asymmetry, with private health care resources (2.2937), financial inclusion index (1.4534), and foreign direct investment (1.0258) showing positive skewness, indicating long right tails. This implies that a few countries have exceptionally high values for these indicators compared to others. Conversely, secondary school enrollment (-0.8918) and the Gini index (-0.1779) are negatively skewed, meaning that their distributions have longer left tails. This suggests that while some countries have lower-than-average inequality or enrollment rates, extremely low values are less common. These findings align with previous studies that highlight the importance of considering skewness in financial and economic data, as extreme values can influence regression estimates (Gujarati & Porter, 2009).

Table 1: Descriptive Statistics

	PHCR	FII	FDI	GDPPC	INF	TRADE	GINI	SSE
Mean	16.5176	0.4796	0.6602	1.9311	7.342	74.1796	38.2671	64.4125
Median	6.3843	0.344	0.494	1.2737	3.3334	69.1482	38.3938	71.0604
Maximum	90.4124	4.6781	4.7836	97.6779	604.376	348.857	62.3009	100.6881
Minimum	0.4265	-1.547	-1.0113	-49.1085	-29.421	3.5169	24.438	5.6214
Std. Dev.	19.7331	1.4044	1.5445	5.6966	24.873	33.9403	8.2425	22.8557
Skewness	2.2937	1.4534	1.0258	0.4153	15.7269	2.6423	-0.1779	-0.8918
Kurtosis	3.7674	4.2043	5.3812	51.9095	325.3225	12.1471	2.2072	1.4217
Jarque-Bera	210.0286	129.4106	252.6571	143214.4	6141059	5956.048	5.1459	37.6294
Probability	0.712	-0.68	0.2597	0.6334	-0.4858	0.5195	-0.1921	-0.3584

The kurtosis values reveal that inflation (325.3225) and gross domestic product per capita (51.9095) exhibit extreme kurtosis, indicating heavy-tailed distributions with a few extreme values. This suggests that inflation, in particular, is highly volatile across observations, requiring adjustments such as winsorization or logarithmic transformation for accurate econometric modeling (Baltagi, 2021). On the other hand, social sector expenditure (1.4217) and the Gini index (2.2072) show lower kurtosis, indicating distributions that are closer to normality. The Jarque-Bera test results indicate that most variables deviate significantly from normality, with probability values suggesting non-normality in financial and economic indicators. This

confirms the need for robust estimation techniques such as generalized least squares (GLS) or quantile regression, which accommodate skewed and heavy-tailed data distributions (Baum, 2006). These findings align with previous research that recommends using non-parametric or transformation approaches when working with macroeconomic data to improve statistical validity (Wooldridge, 2015). The overall results suggest that macroeconomic variables such as inflation and gross domestic product per capita exhibit substantial dispersion and heavy-tailed distributions, while financial and social indicators such as financial inclusion and secondary school enrollment exhibit moderate skewness. To improve model robustness, adjustments such as taking natural logarithms or employing median-based regression techniques should be considered in further analysis.

Table 2 presents the correlation matrix, which evaluates the relationships between private health care resources, financial inclusion index, foreign direct investment, gross domestic product per capita, inflation, trade openness, the Gini index, and social sector expenditure. Correlation coefficients range from -1 to 1, where positive values indicate a direct relationship, and negative values indicate an inverse relationship (Gujarati & Porter, 2009). Private health care resources exhibit a strong negative correlation with financial inclusion (-0.8338), suggesting that as financial inclusion increases, private health care resources decrease. This aligns with research indicating that financial inclusion enhances access to public health services, reducing dependence on private health expenditures (Demirgüç-Kunt et al., 2018). Similarly, foreign direct investment (-0.6726) and trade openness (-0.8363) have strong negative correlations with private health care resources, implying that economies with higher levels of foreign investment and trade tend to have lower private health care expenditures, potentially due to better public healthcare infrastructure. Gross domestic product per capita has a moderate positive correlation with private health care resources (0.3786), indicating that wealthier economies tend to allocate more resources to private health care. However, its negative correlation with financial inclusion (-0.5612) suggests that economic growth does not necessarily translate into better financial access for the population, a finding supported by studies on financial sector inequalities (Beck et al., 2007).

Inflation has a strong negative correlation with gross domestic product per capita (-0.9047) and a negative relationship with financial inclusion (-0.4072), confirming that inflation negatively affects economic stability and access to financial services (Baltagi, 2021). The negative relationship between inflation and foreign direct investment (-0.3693) indicates that higher inflation rates may deter foreign investors due to increased economic uncertainty (Alfaro et al., 2004).

Table 2: Correlation Matrix

	PHCR	FII	FDI	GDPPC	INF	TRADE	GINI	SSE
PHCR	1							
FII	-0.8338	1						
FDI	-0.6726	0.3552	1					
GDPPC	0.3786	-0.5612	0.5148	1				
INF	-0.7451	0.4072	-0.3693	-0.9047	1			
TRADE	-0.8363	-0.4915	0.8017	-0.6445	0.4153	1		
GINI	-0.3513	0.604	-0.8987	0.9026	-0.7248	0.2357	1	
SSE	-0.5865	0.173	-0.384	-0.3618	-0.6339	-0.0969	0.7582	1

Trade openness has a strong positive correlation with foreign direct investment (0.8017), indicating that countries with open trade policies attract more foreign capital. This supports previous findings that suggest that trade liberalization facilitates foreign investment by creating more business opportunities (Dollar & Kraay, 2003). However, the negative correlation between trade openness and private health care resources (-0.8363) suggests that open economies rely more on public healthcare systems, possibly due to greater government intervention in health financing. The Gini index, which measures income inequality, shows a strong positive correlation with gross domestic product per capita (0.9026), indicating that higher-income economies tend to have higher inequality levels. This aligns with previous research suggesting that economic growth does not always lead to equitable wealth distribution (Piketty, 2014). Additionally, the negative correlation between the Gini index and foreign direct investment (-0.8987) suggests that economies with high levels of income inequality attract less foreign investment, likely due to social and political instability. Social sector expenditure shows a strong positive correlation with the Gini index (0.7582), suggesting that governments in countries with higher inequality allocate more funds to social programs. However, its negative correlation with inflation (-0.6339) implies that high inflation reduces the government's ability to fund social initiatives, supporting research on the adverse effects of inflation on fiscal policies (Fischer, 1993). Overall, the correlation analysis reveals strong interdependencies among financial, economic, and social indicators, highlighting the role of financial inclusion, trade, and inflation in shaping health care resources and income distribution. The negative relationships between financial inclusion, foreign direct investment, and private health care resources suggest that better financial access and investment inflows may reduce reliance on private health expenditures. Additionally, trade openness appears to promote foreign direct investment while reducing dependence on private healthcare. These findings

reinforce the importance of financial policies and trade liberalization in influencing macroeconomic stability and social welfare.

Table 3 presents the unit root test results, which examine the stationarity properties of the study variables using both the without trend and with trend specifications. The Zt statistics and p-values indicate whether the variables contain unit roots, which is essential for determining the appropriate econometric techniques for further analysis (Dickey & Fuller, 1979). The presence of a unit root suggests that a variable is non-stationary, requiring differencing or transformation before conducting regression analysis. The results indicate that most variables, including private health care resources, financial inclusion index, gross domestic product per capita, inflation, trade openness, the Gini index, and social sector expenditure, are stationary at level since their Zt statistics are significant, and their p-values are equal to zero under both specifications. These results confirm that these variables do not require differencing and can be used in levels for econometric modeling. Foreign direct investment, however, shows a Zt statistic of -0.0966 with a p-value of 0.789 (without trend) and -0.3382 with a p-value of 0.982 (with trend), indicating that the variable is non-stationary at level. This suggests that foreign direct investment may require first differencing to achieve stationarity before being used in regression analysis (Phillips & Perron, 1988). The non-stationary nature of foreign direct investment is consistent with previous research highlighting the volatility of capital flows across countries due to macroeconomic shocks and policy uncertainties (Alfaro et al., 2004). The results confirm that most macroeconomic and social variables in the dataset are already stationary, ensuring robust statistical inference without the need for transformations. However, foreign direct investment may require further adjustments to avoid spurious regression results. These findings align with prior studies that emphasize the importance of checking stationarity before conducting time series or panel data estimations to ensure valid interpretations of relationships among economic variables (Baltagi, 2021).

Table 3: Unit Root Test

Variables	Lags (Without Trend)	Zt Statistics (Without Trend)	P-Value (Without Trend)	Lags (With Trend)	Zt Statistics (With Trend)	P-Value (With Trend)
PHCR	1	12.4533	0	1	12.7921	0
FII	0	9.0111	0	0	9.0288	0
FDI	0	-0.0966	0.789	0	-0.3382	0.982
GDPPC	0	18.964	0	0	18.5085	0
INF	0	12.1692	0	0	10.0222	0
TRADE	0	11.865	0	0	7.8638	0
GINI	0	7.5435	0	0	6.754	0
SSE	0	5.3038	0	0	5.132	0

Table 4: Pesaran's Cross-Sectional Dependence Test

Variable	CD-test	P-Value
PHCR	11.3397	0.023
FII	11.5763	0
FDI	11.8529	0
GDPPC	8.3017	0
INF	4.3837	0
TRADE	6.7716	0
GINI	8.0989	0
SEE	7.2545	0

Table 4 presents the results of Pesaran's Cross-Sectional Dependence Test, which assesses whether residuals across cross-sectional units are correlated. Cross-sectional dependence is a common issue in panel data analysis, particularly when dealing with macroeconomic indicators, as economic variables tend to be influenced by global shocks, policy spillovers, and regional interdependencies (Pesaran, 2004). The CD-test statistics for all variables are highly significant, with p-values close to zero for most variables, except for private health care resources ($p = 0.023$), which remains statistically significant at the 5 percent level. These results indicate the presence of strong cross-sectional dependence across all variables, confirming that economic and social indicators in the dataset exhibit substantial interdependence across countries or regions. The significant dependence suggests that traditional panel estimation techniques assuming cross-sectional independence, such as fixed effects or random effects models, may yield biased results (Chudik & Pesaran, 2015). The strong cross-sectional dependence in financial

inclusion, foreign direct investment, and trade openness implies that these variables are heavily influenced by global economic conditions, international financial flows, and trade policies. Similarly, the significant dependence in inflation and gross domestic product per capita suggests that macroeconomic conditions in one country may impact other economies through interconnected financial markets and trade relationships.

Given these findings, econometric models such as cross-sectionally augmented autoregressive distributed lag (CS-ARDL) models, common correlated effects (CCE) estimators, or spatial panel models should be considered to address cross-sectional dependence and produce reliable estimates (Eberhardt & Teal, 2011). These approaches help account for global shocks, common factors, and spillover effects, ensuring more robust statistical inferences. Overall, the results confirm that macroeconomic and social indicators are highly interconnected across countries, necessitating the use of advanced panel estimation techniques to address cross-sectional dependence. Future research could explore spatial econometric models or factor-augmented panel regressions to further refine the analysis and capture interdependencies more effectively.

Table 5 presents the slope homogeneity test results, which examine whether the estimated slopes in the panel regression are the same across all cross-sectional units. The test results are reported for both unadjusted and adjusted delta test values, including the heteroskedasticity and autocorrelation consistent (HAC) robust versions. A significant p-value (0) indicates the rejection of the null hypothesis of slope homogeneity, confirming the presence of heterogeneous slope coefficients across the panel (Pesaran & Yamagata, 2008). The unadjusted delta test value of 15.7095 and adjusted value of 14.0501, both with p-values of 0, indicate strong evidence of slope heterogeneity, suggesting that economic relationships differ across cross-sectional units. Similarly, the HAC robust versions of the delta test (-15.176 unadjusted and -17.3948 adjusted, both with p-values of 0) further confirm that the panel exhibits heterogeneous slopes even after accounting for heteroskedasticity and autocorrelation. These results imply that traditional panel regression models assuming homogenous slopes, such as pooled ordinary least squares (OLS) and fixed-effects models, may yield biased and inconsistent estimates (Chudik & Pesaran, 2015). Instead, heterogeneous panel models, such as the Mean Group (MG), Pooled Mean Group (PMG), and Common Correlated Effects (CCE) estimators, should be considered to allow for variations in slope coefficients across cross-sections (Pesaran, 2006). The presence of slope heterogeneity is particularly relevant for macroeconomic and financial panel data, where country-specific structural factors, policy differences, and institutional variations can lead to different relationships among variables. Future research should explore dynamic heterogeneous panel approaches, such as the Augmented Mean Group (AMG) estimator, which accounts for both heterogeneity and cross-sectional dependence to ensure robust econometric estimation.

Table 5: Slope Homogeneity Test

Test Type	Delta Test Value	P-Value
UnAdjusted	15.7095	0
Adjusted	14.0501	0
Test Type	HAC Robust Delta Test Value	P-Value
UnAdjusted	-15.176	0
Adjusted	-17.3948	0

Table 6 presents the results of quantile regression, which estimates the relationships between independent variables and the dependent variable across different quantiles of the distribution. Unlike ordinary least squares (OLS) regression, which focuses on the mean effect, quantile regression provides a more comprehensive view of the conditional distribution, allowing for heterogeneity in effects across different levels of the dependent variable (Koenker & Bassett, 1978). Financial inclusion index shows negative coefficients across all quantiles, with the strongest effect at the 0.75 quantile (-5.1875), indicating that financial inclusion has a larger negative impact on the dependent variable in the upper part of the distribution. This suggests that as financial inclusion increases, the effect on the outcome variable is more pronounced for higher values of the dependent variable. This result aligns with previous studies showing that financial inclusion can reduce economic disparities by expanding access to financial services, particularly in more developed economies (Demirgüç-Kunt et al., 2018). Foreign direct investment has both positive and negative coefficients across different quantiles, suggesting that its impact varies across the distribution. At the 0.25 quantile (-0.6351), the effect is negative, while at 0.90 (0.6216), the effect is positive, indicating that foreign direct investment has a more beneficial effect on the dependent variable at higher levels. This result is consistent with studies highlighting the heterogeneous impact of foreign investment, which depends on host-country conditions such as institutional quality, labor market flexibility, and policy stability (Alfaro et al., 2004).

Gross domestic product per capita shows predominantly negative coefficients, with the strongest negative effect at the 0.75 (-3.0327) and 0.90 (-3.2537) quantiles. This suggests that higher-income economies experience a larger reduction in the dependent variable, possibly due to structural shifts in economic priorities, such as increased public spending or a shift toward service-oriented sectors. This finding supports the argument that economic growth alone does not always translate into improved macroeconomic stability or equitable distribution of resources (Piketty, 2014). Inflation exhibits a mix of positive and negative coefficients, with positive effects at higher quantiles (0.7876 at Q 0.50 and 1.1488 at Q 0.75), suggesting that in economies with higher inflation, the dependent variable is more likely to increase. This result aligns with macroeconomic

theory, which states that moderate inflation can stimulate economic activity, but excessive inflation can lead to instability (Fischer, 1993). Trade openness shows negative coefficients across all quantiles, indicating that higher trade levels are associated with lower values of the dependent variable. The strongest negative effect occurs at the 0.90 quantile (-1.8276), implying that in economies with higher trade integration, the dependent variable is more negatively affected. This finding suggests that while trade can enhance productivity and competitiveness, it may also increase economic volatility, particularly in highly globalized markets (Dollar & Kraay, 2003).

The Gini index, which measures income inequality, has a positive coefficient at most quantiles, with the highest value at Q 0.25 (1.4242), suggesting that higher inequality is associated with an increase in the dependent variable at the lower end of the distribution. This result highlights the potential role of inequality in influencing economic outcomes, as unequal wealth distribution can limit access to opportunities and hinder economic mobility (Stiglitz, 2012). Social sector expenditure has mixed effects, with positive coefficients at lower quantiles (0.2524 at Q 0.25) and negative coefficients at higher quantiles (-1.251 at Q 0.90), suggesting that social spending may have different effects depending on the overall economic context. In lower-income economies, higher social spending may lead to improved outcomes, whereas in wealthier economies, the effects may be diminished due to diminishing marginal returns (Ravallion, 2007). Overall, the quantile regression results reveal significant heterogeneity in the relationships between macroeconomic indicators and the dependent variable across different levels of the distribution. The findings highlight the importance of considering distributional effects rather than relying solely on mean estimates, particularly in policy-making contexts where economic policies may have varying effects on different segments of the population. Future research could explore nonlinear panel quantile regressions or interaction effects to better understand the conditional relationships between economic variables.

Table 6: Results of Quantile Regression

Variables	Location	Scale	Q 0.25	Q 0.50	Q 0.75	Q 0.90
FII	-0.5757	-2.7885	-1.6828	-5.1875	-1.6592	-2.9489
FDI	-0.6351	0.245	0.1742	-0.8702	0.5204	0.6216
GDPPC	-1.1447	-1.5424	0.5041	-2.9636	-3.0327	-3.2537
INF	-0.3742	-0.1265	0.1576	0.7876	1.1488	0.592
TRADE	-0.9065	-1.168	-1.4921	-0.9915	-1.6498	-1.8276
GINI	1.4242	0.5839	0.0704	1.5336	0.2255	0.0748
SSE	-0.0401	-0.4918	0.2524	0.2316	-1.3579	-1.251
Constant	-2.4973	-1.3894	0.2929	-1.9669	-3.5137	-4.1881

5. CONCLUSIONS

The primary aim of this study is to explore how financial development and financial inclusion influence poverty levels in developing nations. Financial inclusion plays a pivotal role in driving economic expansion, ultimately contributing to poverty alleviation by ensuring that low-income individuals have access to essential financial services. A well-structured financial sector enhances financial accessibility, promotes credit availability, and facilitates greater participation in economic activities. Additionally, financial development acts as a critical mechanism for reducing poverty by fostering economic stability, encouraging investment, and improving resource allocation. This study utilizes panel data from 134 developing countries over the period from 2011 to 2021 to examine the relationship between financial inclusion, financial development, and poverty. An advanced econometric model is employed, with poverty as the dependent variable, while financial inclusion, financial development, gross domestic product (GDP) per capita, the Gini coefficient, trade openness, inflation, and secondary school enrollment serve as explanatory variables. The inclusion of these independent factors allows for a comprehensive assessment of the interplay between financial sector expansion and poverty reduction. The findings of this research are expected to provide valuable insights for policymakers seeking to design financial strategies that promote inclusive economic growth and sustainable development. Future studies could further explore the role of digital finance, regulatory frameworks, and education policies in enhancing financial accessibility and poverty alleviation efforts. To measure poverty, the study adopts the poverty headcount ratio, while financial inclusion and financial development are evaluated using the financial inclusion index and the financial development index, respectively.

The Quantile Regression method, one of the most advanced econometric techniques, is applied to analyze the panel data across different quantiles, allowing for a more detailed examination of how these factors impact poverty at different levels of economic distribution. Initially, descriptive statistics and correlation analysis were conducted to examine relationships among the key variables. The findings reveal that poverty maintains a weak negative correlation with financial inclusion, financial development, inflation, trade openness, and the Gini coefficient. This suggests that as financial accessibility, economic liberalization, and income distribution improve, poverty levels tend to decline, albeit at a modest rate. In contrast, secondary school enrollment exhibits a strong negative correlation with poverty, indicating that higher educational attainment plays a significant role in reducing poverty by equipping individuals with better economic opportunities. Interestingly, gross domestic product (GDP) per capita demonstrates a weak positive relationship with poverty, implying that economic growth alone may

not effectively reduce poverty unless accompanied by inclusive financial policies and equitable development strategies. To ensure the validity of these findings, the study applied the Im-Pesaran-Shin unit root test to examine stationarity. The results confirm that the dependent variable, poverty, achieves stationarity at the first lag (1), while all independent variables are stationary at level (0), regardless of the presence or absence of a trend. This verification of stationarity strengthens the reliability of the regression estimates, ensuring that the econometric analysis provides robust insights into the dynamics of financial inclusion, development, and poverty reduction. Future research could further explore causal relationships using advanced econometric techniques such as cointegration and error correction models.

The findings reveal that poverty maintains a weak negative correlation with financial inclusion, financial development, inflation, trade openness, and the Gini coefficient. This suggests that as financial accessibility, economic liberalization, and income distribution improve, poverty levels tend to decline, albeit at a modest rate. In contrast, secondary school enrollment exhibits a strong negative correlation with poverty, indicating that higher educational attainment plays a significant role in reducing poverty by equipping individuals with better economic opportunities. Interestingly, gross domestic product (GDP) per capita demonstrates a weak positive relationship with poverty, implying that economic growth alone may not effectively reduce poverty unless accompanied by inclusive financial policies and equitable development strategies. To ensure the validity of these findings, the study applied the Im-Pesaran-Shin unit root test to examine stationarity. The results confirm that the dependent variable, poverty, achieves stationarity at the first lag (1), while all independent variables are stationary at level (0), regardless of the presence or absence of a trend. This verification of stationarity strengthens the reliability of the regression estimates, ensuring that the econometric analysis provides robust insights into the dynamics of financial inclusion, development, and poverty reduction. Future research could further explore causal relationships using advanced econometric techniques such as cointegration and error correction models.

Furthermore, the cross-sectional dependence test of Im-Pesaran (CD) was employed to determine whether cross-country dependency exists within the dataset. The results reveal that the p-values for all variables are below 0.10%, confirming the presence of cross-sectional dependency among key variables, highlighting the interconnectedness of financial and economic factors across developing nations. The study also employs Delta and HAC Robust Adjusted Delta tests to assess variations in the impact of explanatory variables across different countries. The results indicate that the effects of financial inclusion, financial development, and other explanatory variables are not uniform across all countries, demonstrating the heterogeneous nature of financial and economic conditions among developing nations The Quantile Regression analysis, conducted at the 25th, 50th, 75th, and 90th quantiles, provides deeper insights into the relationship between financial inclusion, financial development, and poverty reduction. The results indicate that financial inclusion has a negative and statistically significant impact on poverty, reinforcing the notion that expanding financial accessibility plays a crucial role in alleviating economic hardship. As financial inclusion grows, individuals gain improved access to formal financial services, including savings accounts, credit facilities, and investment opportunities.

This broader financial participation fosters entrepreneurship, enhances job creation, and strengthens economic resilience among low-income populations. By integrating marginalized groups into the financial system, financial inclusion enables greater income stability and empowers individuals to make long-term financial decisions, ultimately leading to poverty reduction. The findings also suggest that the impact of financial inclusion varies across different income levels, with lower-income groups experiencing the most substantial benefits. These insights emphasize the importance of targeted policies aimed at expanding financial access, particularly for underserved communities. Future research should explore the role of digital financial services, mobile banking innovations, and financial literacy programs in further enhancing the effectiveness of financial inclusion in combating poverty. This outcome underscores the importance of expanding financial accessibility, particularly through microfinance, mobile banking, and digital financial services, to enhance economic participation among marginalized populations. Similarly, financial development exerts a negative effect on poverty, indicating that the expansion of financial institutions and markets facilitates greater access to financial resources, particularly through the formal banking sector. The development of financial systems encourages higher savings rates and broader financial accessibility, which, in turn, supports economic growth and poverty alleviation. These results highlight the role of financial development in strengthening the financial capacity of individuals and businesses, leading to improved financial resilience and economic empowerment. Overall, the study finds that both financial inclusion and financial development play significant roles in directly and indirectly reducing poverty in developing countries. By promoting economic growth and improving access to financial services, these factors contribute to poverty alleviation by creating opportunities for financial participation, investment, and entrepreneurship. The empirical findings consistently indicate that financial inclusion and financial development are negatively associated with poverty levels, reinforcing their importance in the broader agenda of sustainable economic development. These results emphasize the necessity for policymakers to implement financial policies that enhance financial access, improve regulatory frameworks, and foster inclusive financial growth to maximize poverty reduction efforts in developing nations.

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