

IMPACT OF FINANCIAL INCLUSION ON ECONOMIC DEVELOPMENT IN EMERGING SOUTH ASIAN COUNTRIES

Pranesh Debnath^{*}, Anil Kumar Bhuyan^{**}, Kalyan Das^{***},
Sonashree Das^{****}, Mohd Iftikhar Baig^{*****}, Rishav Kanoo^{*},
Hiranmayee Debi^{*****}, Animesh Saha^{*****}

^{*} Department of Commerce, Assam University, Silchar, India

^{**} NM Institute of Engineering and Technology (NMIET), Bhubaneswar, India

^{***} Department of Business Administration, Assam University, Silchar, India

^{****} Department of Accountancy, Golaghat Commerce College, Golaghat, India

^{*****} Noida Institute of Engineering and Technology (NIET), Greater Noida, India

^{*****} Department of Political Science, Assam University, Silchar, India

^{*****} *Corresponding author*, Department of Commerce, Assam University, Silchar, Assam, India

Contact details: Department of Commerce, Assam University, Silchar 788011, Assam, India



Abstract

How to cite this paper: Debnath, P., Bhuyan, A. K., Das, K., Das, S., Baig, M. I., Kanoo, R., Debi, H., & Saha, A. (2024). Impact of financial inclusion on economic development in emerging South Asian countries. *Risk Governance and Control: Financial Markets & Institutions*, 14(3), 57–67. <https://doi.org/10.22495/rgcv14i3p6>

Copyright © 2024 The Authors

This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0). <https://creativecommons.org/licenses/by/4.0/>

ISSN Online: 2077-4303

ISSN Print: 2077-429X

Received: 11.01.2024

Accepted: 06.08.2024

JEL Classification: E42, E51, E58, F31, G28, O33, O47

DOI: 10.22495/rgcv14i3p6

This study aims to investigate the influence of financial inclusion (FI) on economic development (ED) in emerging South Asian countries (SACs). A Composite Financial Inclusion Index (CFII) is computed to provide a comprehensive view of FI based on the penetration, availability, and usage of banking services (Sarma, 2008). Using secondary data from the World Bank, International Monetary Fund (IMF), and United Nations Development Programme (UNDP) from 2004 to 2021, a dynamic system generalized method of moments (GMM) regression model was utilised to examine the impact of FI and other macroeconomic variables on ED. The results indicate that FI positively impacts ED (Omar & Inaba, 2020). The findings also reveal that the Human Development Index (HDI), gross capital formation (GCF) and exports (percent of gross domestic product — GDP) have a positive impact on ED. However, income inequality (IIE) measured by the Gini coefficient and imports (percent of GDP) are detrimental to ED. This study provides evidence to support the expansion of banking services to build an inclusive financial system that promotes ED and reduces IIE. This study contributes to the empirical literature using the system GMM regression approach, which provides new insights into the relationship between ED and other development indicators like HDI, IIE, GCF, imports, and exports across SACs.

Keywords: Financial Inclusion, Banking Services, South Asian Countries, Economic Development, Income Inequality

Authors' individual contribution: Conceptualization — P.D., A.K.B., K.D., and H.D.; Methodology — P.D., S.D., R.K., H.D., and A.S.; Software — P.D. and M.I.B.; Formal Analysis — P.D., K.D., S.D., M.I.B., R.K., and H.D.; Writing — Original Draft — P.D., A.K.B., K.D., H.D., and A.S.; Writing — Review & Editing — P.D., K.D., S.D., M.I.B., H.D., and A.S.; Visualization — P.D., R.K., H.D., and A.S.; Supervision — P.D., A.K.B., K.D., S.D., and H.D.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

The financial inclusion (FI) and economic development (ED) nexus has been getting tremendous attention from policymakers, regulators and researchers on the global front for the last couple of years. The World Bank and pertinent research claimed that the FI is a means to achieve seven¹ out of seventeen Sustainable Development Goals (SDGs) 2030² (The World Bank, 2018; Malhotra, 2020; Pushp et al., 2023). The goal of FI is to provide affordable financial services to individuals who are poor or excluded (Kelkar, 2010). It aids in resolving the issue of leakages from the distribution of subsidies and welfare benefits, encourages saving, expands credit availability, and ends a country's cycle of poverty. FI promotes more effective money flow within an economy. Along with slowing down the inflation rate, it accelerates investment and increases purchasing power parity. A robust financial system can flow money, efficiently speeding up ED. An efficient financial system is essential for developed and emerging economies alike. It serves as a way to move money from surplus units to deficit units and helps keep the economy running smoothly and efficiently. The strength of a particular economy depends on the efficiency of its banking and financial system (MacDonald & Xu, 2022; Sahoo, 2013). However, the financial system cannot function fully if a significant part of the population is unbanked. The FI is critical to establishing a strong foundation for a country's financial infrastructure by linking the mass population with the formal financial system supporting the ED. Without FI, financial illiteracy is common, and unregulated financial sectors like indigenous banking can emerge, which tend to be exploitative.

The G20 countries and the World Bank have recently adopted a policy agenda to enhance FI in developing countries, aiming to reduce poverty and promote economic inclusion. An inclusive financial system helps to prevent the spread of exploitative informal lending sources (e.g., moneylenders). It promotes economic welfare by enabling a wide range of effective financial services and safe and secure savings and investment practices. Increased access to financial services for consumers and businesses can reduce income inequality (IIE) and accelerate ED. Therefore, it is widely accepted that increased access to financial services through formal financial institutions, particularly for economically backward groups, including women, entrepreneurs, and rural populations, is essential for accelerating ED in the country. It is pertinent to report that the South Asian countries (SACs) have made remarkable progress in promoting FI as a catalyst for raising citizens' living standards and fostering sustainable development in the recent past. Governments and regulators in these countries have employed several programs and tactics to fulfil their FI objectives. However, demand-side development opportunities exist, especially in India, Pakistan, and

Bangladesh. It is alarming to note that SACs are home to a large number of poor and one-third of the world's unbanked populations (Global Findex, 2021).

However, in the existing research, the relationship between FI and ED, especially in SACs, received less attention. The finance-growth nexus, the relationship between financial systems and economic growth, is a topic of ongoing discussion. As a result, the practical association between FI and ED needs to be examined across the South Asian region over time because it may change due to various economic and political circumstances in different economies. The importance of FI cannot be overstated, as it is a pertinent issue in developing an inclusive economic system. Scholars widely acknowledge that integrating individuals into the financial system is essential to achieving the SDGs (Klapper, 2016). The World Bank asserts that FI has become a tool for policymakers in the South Asian region to fight poverty.

The banking system is the backbone of every economy, strengthening the financial system and offering financial products and services to customers based on their needs. The proper functioning of the banking system is crucial to direct funds from savers to borrowers and maintain a healthy economy. However, when half of the global population is unbanked, the role of the banking system comes into question. The situation is worsening in areas with high poverty rates, like SACs. According to the Global Findex (2021) database, more than one-third of the unbanked population comes from SACs that do not have access to the formal banking system and, thus, financial services. This study endeavours to investigate the impact of FI and other development parameters on ED across SACs on balanced panel data using a dynamic system generalized method of moments (GMM) regression approach.

The choice of SACs for a study on the impact of FI on ED can be justified for several reasons. Firstly, South Asia comprises a diverse group of countries with varying levels of ED, including India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, and the Maldives. Studying this diversity can provide valuable insights into the different pathways through which FI influences ED. Secondly, South Asia is home to a significant portion of the world's population. Understanding the impact of FI in these countries can have global implications, as successful strategies can be scaled up to reach millions of people.

Moreover, many SACs face unique challenges related to FI, such as low levels of banking penetration, a large informal economy, and limited access to financial services in rural areas. Studying these challenges can help identify effective solutions that can be applied in similar contexts worldwide. Thirdly, South Asian governments and international organisations have shown a strong interest in promoting FI to stimulate ED, reduce poverty, and enhance financial stability. Research in this region can directly inform policy decisions and development initiatives. Fourthly, South Asia's rich cultural and social diversity can influence how financial services are accessed and used. Exploring these factors can provide a nuanced understanding of the relationship between FI and ED. Finally, secondary data on FI and ED are readily available in the World Bank and International Monetary Fund (IMF)

¹ Eliminating poverty (SDG1), food security (SDG2), securing health (SDG3), proper education (SDG4), gender parity (SDG5), economic advancement (SDG8), and invention and viable industrialisation (SDG9).

² The Sustainable Development Goals (SDGs) were adopted by the United Nations (UN) in 2015 as a universal call to action to remove poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity worldwide.

for SACs compared to some other regions, making it feasible to conduct robust research and analysis. Still, the literature on estimating the impact of FI on overall ED from this region is scarce. Limited research exists on FI and economic prosperity. Therefore, this study aims to investigate the impact of FI, human development, and IIE on ED in SACs. The study uses the GMM model, which offers a more precise estimate nullifying the dataset's endogeneity and unobserved heterogeneity issues (Maji & Saha, 2021). A multidimensional approach is used to construct a Composite Financial Inclusion Index (CFII) for SACs from 2004 to 2021. This is the first empirical study to include the CFII as a measure of FI and evaluate the impact of FI and other macroeconomic factors on ED among SACs.

The remainder of this work is structured as follows. Section 2 contains a review of the relevant literature on the FI and ED nexus, the formulation of hypotheses, and a summary of the objectives. Section 3 discusses data sources and research methods. Section 4 describes the analysis and discusses the results. Finally, Section 5 outlines the study's conclusion, future implications, and limitations.

2. LITERATURE REVIEW AND HYPOTHESES DESIGN

The term "financial inclusion" has been defined in various ways in the present literature (Akileng et al., 2018), but there is no apparent agreement on any of them (Nguyen, 2021). FI generally refers to providing universal access to basic financial services for economically weaker sections and small businesses (Sarma & Pais, 2011). Financial services include credit, savings, investment, payments, and insurance (Ghosh & Ghosh, 2014). In a broader sense, FI encompasses access to financial services, quality of customer service, and digital technology (Ozili, 2018). The underprivileged and vulnerable groups who do not have access to social amenities and education face financial access issues (Bernheim et al., 2015). Studies noted that FI is a crucial element of social inclusion (Omar & Inaba, 2020; Maity, 2023) and vice versa (Barboni et al., 2017). The FI has become an essential policy priority for any policymaker worldwide. It is increasingly recognised as a key driver of economic growth and development (Sethi & Acharya, 2018; Omar & Inaba, 2020), removing IIE (Kapingura, 2017) and poverty alleviation (Lal, 2018) the world over. Therefore, policymakers are now focusing on this aspect of development finance as FI encourages ED. Providing affordable financial services to low-income individuals can promote economic growth and enhance societal well-being. (Nanda & Kaur, 2016). Enabling access to banking services can increase savings and investment and drive long-term capital formation, reducing poverty (Ramkumar, 2017).

Over the last couple of years, many empirical and theoretical studies have been undertaken across different economies to measure the impact of FI on ED and IIE. This section reviews the present literature investigating the effect of FI on ED and IIE. Empirical studies have reported that FI has a multifold impact on society. For example, promoting ED (Lal, 2021) reduces poverty (Omar & Inaba, 2020), encourages entrepreneurship (Ajide, 2020), promotes women empowerment (Pal et al., 2022; Arshad, 2023), encourages human development (Abdelghaffar

et al., 2023); improve living standard (Sakyi-Nyarko et al., 2022) and ensures food security (Arshad, 2022). It has been observed that previous studies have utilized varying methods to measure FI, which has resulted in inconsistencies in the outcomes. To comprehensively assess FI, it is imperative to incorporate all the relevant dimensions.

Additionally, the parameters considered in a developed economy may have a different degree of influence on ED and IIE in other regions. Moreover, previous studies on FI lack comprehensive measures, which may have resulted in overestimating or underestimating its actual impact on a country's ED. Additionally, existing literature mainly focuses on individual country contexts (Sharma, 2016; Saxena & Panwar, 2022), which fails to paint a broader picture of the association between FI and ED. Therefore, in light of the above-mentioned incomplete finding, the current study attempts to comprehensively measure the multifold impact of FI on ED through gross domestic product (GDP) per capita, IIE through the Gini index and overall human development through the Human Development Index (HDI) in SACs. Evaluating the impact of FI on ED and IIE in SACs can be of great value to global policymakers looking to boost ED and reduce IIE.

Empirically, there is much work explaining the connection between FI and ED. Several research studies found a favourable link (Makina & Walle, 2019; Sethi & Acharya, 2018). Lenka and Barik (2018) also indicate the one-way causal relationship between the expansion of FI in SACs and the growth of mobile and Internet services. The beneficial link between FI and ED has been highlighted in existing literature (Sharma, 2016; Sharma, 2020). Sethi and Acharya (2018) examined the effect of FI on ED in 31 advanced and emerging states between 2004 and 2010 and documented a bidirectional causal affiliation between FI and ED. Additionally, Sharma (2016) conducted a study on the emerging Indian economy considering three dimensions of FI, i.e., banking penetration, availability, and use of financial services and reported the positive influence of FI on ED.

In a nutshell, extensive research exists to investigate the impact of FI on ED. Studies have also noted the positive effects of FI on ED, including Sharma (2016), and Ugwuanyi et al. (2022). All of these studies have solely focused on a single country. However, it has been observed that the impact of FI on ED, especially in SACs, has received limited attention. Further, it has been observed that SACs encompass a spectrum of countries, ranging from emerging markets like India to more developed ones like Sri Lanka. This diversity leaves scope to study the impact of FI on ED comprehensively. Additionally, as per the Global Findex 2021 database, the South Asian region shows a FI rate of 68%, slightly below the average for developing economies at 71%. Therefore, it is necessary to comprehensively study the impact of FI on the ED of SACs. Therefore, we hypothesise that:

H1: A positive association exists between financial inclusion and economic development in SACs.

The intricate economic relationship between the IIE and the ED is of utmost importance on a global scale. The IIE and ED possess a complex relationship that significantly impacts the world economy. Understanding and navigating this

intricate relationship is crucial to ensure the continued prosperity of the global community. Policies that increase overall income tend to benefit the rich more than the poor in high-inequality countries. However, policies that promote ED and reduce IIE can significantly accelerate poverty reduction goals. The financial Kuznets curve suggests that IIE usually increases during the early stages of financial development, slows down as the economy grows, and decreases as the economy matures. When income is concentrated in the hands of a small group of people, there is less demand and investment in education and healthcare, which can negatively impact long-term growth. Therefore, it is essential to address IIE and ensure that resources are distributed fairly to promote sustainable economic growth. Topuz (2022) conducted a study on 143 countries for an extended period from 1980 to 2017 and reported that IIE adversely affects ED. Shen and Zhao (2023) also documented the adverse impact of IIE on ED. However, Mdingi and Ho (2021) reported that the relationship between ED and IIE may be positive, negative and inconclusive. Kavva and Shijin (2020) found no clear-cut relationship between IIE and ED. Therefore, we hypothesise that:

H2: A positive association exists between income inequality and economic development in SACs.

Gross capital formation (GCF) is the investment in capital goods in a year for a particular country, and it is a crucial measure of a country's economic health. Investment increases per capita income, enhances purchasing power, and leads to an increase in production. Boosting production and investment tends to result in a better-off population with more money to spend, which drives ED. Uneze (2013) observed that increases in capital formation result in higher ED in sub-Saharan African countries. Bal et al. (2016) reported that capital formation positively affects ED in the Indian economic context. Pasara and Garidzirai (2020) and Bwana (2023) found that GCF positively affects ED in Africa and Tanzania, respectively. Aslan and Altinoz (2021) also found a positive association between capital formation and ED in developing countries. Therefore, we hypothesise that:

H3: There is a positive association between gross capital formation and economic development in SACs.

Human development and ED are two interconnected notions that influence one another. The ultimate objective of development is human development, which entails increasing and broadening all facets of human existence. ED is an income rise and an imprecise proxy for greater overall well-being. Education may increase human skills, and human growth can broaden persons' and resource alternatives. Sarwar et al. (2021) showed that human capital has a favourable influence on ED. Kumar and Batra (2023) discovered a positive link between human development and ED in the Indian setting. Nguyen (2022) found that human development is a driver of ED. Therefore, we hypothesise that:

H4: There is a positive association between human development and economic development in SACs.

Inflation is a crucial factor in determining the ED of any country. It can have both positive and negative effects on ED. Low or moderate inflation levels are associated with faster ED, while high inflation levels are linked to slowed or halted ED.

Lenka and Bairwa (2016), de Carvalho et al. (2018), and Wen et al. (2022) found that inflation adversely impacts the ED. Batayneh et al. (2021) documented that inflation negatively impacts financial sector development. Therefore, we hypothesise that:

H5: There is a negative association between inflation and economic development in SACs.

Population growth can have both positive and negative effects on ED. On the one hand, a growing population increases the size of the labour force, the demand for goods, and the potential for innovation and technological advancements. These factors can contribute to ED and development. On the other hand, population growth can also create challenges such as resource scarcity, unemployment, and poverty. These factors can hinder ED and development. However, empirical studies do not provide any conclusive decision on the relationship between population growth and ED. Therefore, we hypothesise that:

H6: A positive association exists between population growth and economic development in SACs.

Exports play a crucial role in countries' ED. According to the export-led growth hypothesis (ELGH), expanding exports is one of the primary drivers of growth. This theory proposes that countries can achieve overall growth by increasing labour and capital within the economy and boosting exports. Exports are considered a powerful economic and social development tool, as they can contribute to ED and help reduce poverty. In line with ELGH, recent research shows that export improves ED (Agrawal, 2015; Kalaitzi & Chamberlain, 2020; Noura & Saafi, 2022). However, Wani and Mir (2021) recorded a negative association between export and ED in the Indian context. Therefore, we hypothesise that:

H7: A positive association exists between exports and economic development in SACs.

Any country's import strategy significantly impacts its economic condition, similar to the export strategy. A high volume of imports indicates a thriving economy with robust domestic demand. However, the actual benefits come when these imports include productive assets such as machinery and equipment. Such imports can help to enhance the economy's productivity over the long run, leading to even more significant growth and prosperity. An empirical study by Carrasco and Tovar-Garcia (2021) documented that capital goods imports positively impact ED. Wani and Mir (2021) also reported a positive association between import and ED. Therefore, we hypothesise that:

H8: A negative association exists between imports and economic development in SACs.

3. RESEARCH METHODOLOGY

This study considers the SACs for 18 years from 2004 to 2021 in eight SACs, resulting in 144 firm-year observations. The selection of sample countries stems from various reasons. South Asia is the second most populous region in the world, comprising 3% of the world's land area, 21% of the world's population and 5.21% of the global economy as of 2021. Moreover, South Asia is home to about one-third of the global extremely poor population, with the second highest poverty rate, 15.09%, only after Sub-Saharan Africa (Islam et al., 2018).

Existing literature has focused on evaluating the impact of FI on ED without developing any robust index. In this study, we have devised a methodology tailored to our objectives and considers data availability across SACs. Our paper fills the gap left by the present literature as we have constructed the CFII that incorporates multiple dimensions of financial services, allowing a more robust link between FI, ED and IIE. The findings of this study provide a framework for policymakers and market participants to align their policies and measure progress.

Following the previous literature (Ifediora et al., 2022) investigating the nexus between FI and ED, this section develops the dynamic system GMM model to evaluate the impact of FI on ED after controlling for other macroeconomic factors likely to influence ED. Therefore, we controlled some other macroeconomic factors such as the HDI, IIE (measured by the Gini coefficient), GCF, imports (% of GDP) and exports (% of GDP).

Existing literature examining the association between FI and ED confirms the existence of endogeneity between FI and ED (Kumar, 2013; Maity & Sahu, 2022; Omar & Inaba, 2020). To address this issue, we have used the system GMM estimator, which effectively controls all potential forms of endogeneity in longitudinal data (Arellano, 2002). For our investigation, we have employed the system GMM estimator endorsed by Blundell and Bond (1998) as it provides more precise estimations and addresses the issue of unit root property better than the different GMM estimators (Bond, 2002).

We have used the two-step estimation method, which has a smaller asymptotic variance than the one-step estimation method (Hwang & Sun, 2018). To ensure the validity of the instrument and over-identifying restrictions in GMM dynamic model estimation, we have performed the Sargan test. Additionally, we have used the Arellano-Bond autocorrelation (AR) test to determine the presence of serial correlation in the idiosyncratic errors (Arellano & Bond, 1991). It is important to note that the GMM estimates are accurate only if there is no second-order serial correlation.

Further, conducting a stationary test before carrying out regression analysis is essential. This is because the regression analysis may produce misleading results if the time series is non-stationary.

It is imperative to have stationary properties to ensure accuracy and avoid spurious results in dynamic regression on system GMM model estimation (Gujarati & Porter, 2010). Therefore, we have employed the Levin-Lin-Chu (LLC) unit-root test on longitudinal data to estimate stationary against each variable for the period from 2004 to 2021 (Westerlund, 2009). Levin et al. (2002) proposed a panel unit root test with a hypothesis (H_0) that panels contain unit roots.

3.1. Sample selection and data source

This analysis examines 18 years of balanced panel annualised data (2004–2021) for eight SACs. The data on variables were sourced from contemporary literature that assesses the relationship between FI and ED based on country-level data, with some modifications made to achieve the objectives. Due to disproportionate variations in the data collected from SACs of varying ED levels, most of the variables are expressed on a natural logarithmic scale to make them linear and avoid heteroskedasticity issues, improving the empirical analysis’s robustness. Data was collected from the Financial Access Survey (FAS) of the IMF, the Standardized World Income Inequality Database (SWIID), and the World Development Indicator (WDI), as presented in Table 2.

3.2. Composite Financial Inclusion Index measurement

The study aims to evaluate the FI status in countries under consideration comprehensively and inclusively by framing the CFII. It also seeks to homogenise the measure for comparison among countries of diverse economic progress, track progress in achieving FI targets, and enable cross-country comparisons. To construct the CFII, we have considered three key aspects of financially inclusive economies: the availability, penetration, and usage of financial services, and country data that are pertinent and consistently available for the study period under consideration. There are six parameters, and two are chosen for each dimension, as depicted in Table 1. Data for each dimension has been compiled from the IMF’s FAS database in a panel that spans from 2004 to 2021 and covers eight countries in the South Asian region.

Table 1. Parameters for calculation of CFII and corresponding weight

Dimensions	Dimension weight	Variables	Weight for parameter
Availability	0.60	No. of automated teller machines (ATMs) per 100,000 adults	0.30
		No. of commercial bank branches per 100,000 adults	0.70
Penetration	1	No. of deposit accounts with commercial bank branches per 1000 adults	0.50
		No. of depositors with commercial banks per 1000 adults	0.50
Usage	0.50	Outstanding credits from commercial banks % of GDP	0.50
		Outstanding deposits with commercial banks % of GDP	0.50

Source: Authors’ elaboration using Sharma (2016), and Omar and Inaba (2020).

3.3. Measurement of availability dimension

The availability dimension is an important factor that determines the accessibility of financial services to citizens. It considers the branch network of financial institutions, customer service points, ATMs, and other windows for providing financial services. In this study, we have measured the degree of availability of financial services incorporating indicators — the number of ATMs and the number

of commercial bank branches per 100,000 adults (Sarma, 2012; Sharma, 2016; Omar & Inaba, 2020). According to the literature, bank branches have a more significant impact on FI than ATMs. Therefore, we have assigned a weight of 70% to the number of bank branches per 100,000 adults and 30% to the number of ATMs per 100,000 adults. However, mobile banking and Internet services drive the economy as digital infrastructure continues to improve globally. Developed countries are improving

their digital financial infrastructure over conventional physical branches and ATMs. Unfortunately, consistent data on digital transactions is not readily available, so we have assigned a lower weight of 0.60 to the availability dimension, as we have only measured the conventional physical infrastructure and ignored the digital infrastructure.

3.4. Measurement of penetration dimension

The penetration dimension measures the extent to which users are part of the formal financial system. This dimension is measured by the number of depositors with commercial banks per 1000 adults and the number of loan accounts with commercial banks per 1000 adults to determine the degree of penetration of formal financial services (Sarma, 2012; Sharma, 2016; Omar & Inaba, 2020). After that, we have assigned the weight to the extent of 70% weightage for the deposit accounts per 1000 adults, and the remaining 30% weightage is attached to the number of depositors with commercial banks per 1000 adults. This weightage to the sub-dimensions has been decided based on previous studies, which have rationalised that the number of deposit accounts indicates the size of the population with access to banking services and measures the degree of banking system penetration in the society. Therefore, this index has been assigned a weighted average of 0.70. Less weight has been given to the depositor index to the extent of 0.30 as it does not reflect the activity level of depositors in the financial system. The penetration dimension is a prerequisite for developing an inclusive financial system; thus, we assign an overall weight of 1 for the computation of CFII (Omar & Inaba, 2020).

3.4. Measurement of usage dimension

The usage dimension of FI measures how often and effectively people use formal financial services such as savings, loans, payments, investments, fund transfers, remittances, insurance, and pensions. This dimension shows the effectiveness of the financial system because just having access to financial services is not enough to create an inclusive financial ecosystem. However, a lack of data on certain financial activities such as payments, investments, fund transfers, remittances, insurance, and pensions across different countries makes it difficult to measure usage dimensions accurately. Unlike Omar and Inaba (2020), we do not believe that the loan accounts per 1000 adults (Camara et al., 2014) or the borrowers from financial institutions per 1000 adults (Amidžić et al., 2014) adequately represents the degree of financial use proportionate to the total productivity of the country. Therefore, to capture the use of financial services more robustly, we consider two indicators – outstanding credits from commercial banks (% of GDP) and outstanding deposits with commercial banks (% of GDP) as proxies for usage dimensions (Sharma, 2016).

This study has developed the CFII based on the methodology suggested by Sarma (2008). The CFII comprises three dimensions and is constructed using a methodology similar to the indexes used by the United Nations Development Programme (UNDP), namely the HDI, Multidimensional

Poverty Index (MPI), and Global Hunger Index (GHI). However, Sarma (2012) employs a distance-based approach that differs from the UNDP's methodology. The distance-based approach considers both the lowest and highest points, whereas the "method of displaced ideal" considers only the movement from the optimal point (Zeleny, 1974). The distance-based methodology is ideal for several reasons, it satisfies the essential mathematical features such as boundedness, unit-free measure, sameness, and monotonicity, which strengthen the method. Therefore, the CFII in this study considers the remoteness from the lowest and optimum points, a slight variation of the "method of displaced ideal". Overall, the CFII developed in this study provides a robust and comprehensive measure of FI that can inform policy decisions and interventions.

When creating an HDI, the UNDP assumes that if one dimension increases, it can be balanced by a proportional decrease in another dimension. However, this assumption is not applicable in the case of FI, as all dimensions are equally important to the computed FI index. Besides, the UNDP practices preferred lowest and extreme values for each indicator, while this study uses empirical values for a specific FI indicator due to the complexity of the values. Therefore, the first step in calculating the CFII involves computing the indices for each dimension of FI, namely penetration, availability, and usage, using the following equation:

$$d_i = w_i \frac{A_{ik,t} - m_i}{M_i - m_i} \quad (1)$$

This equation uses several indicators to determine an economy's achievement in a specific dimension. The value of d_i represents the normalised value of any parameter for a specific dimension, where a greater value of d_i indicates better achievement. The formula also uses several other variables such as w_i (the weight of a parameter for dimension i), A_i (the actual value of a parameter for dimension i for an economy k on year t), m_i (the lower boundary of a parameter for dimension i), and M_i (the upper boundary of a parameter for dimension i). The upper limit is fixed at the 90th percentile value to avoid outliers and smooth the value of the index.

To estimate the CFII for an economy i , the equation uses the distance between the achievement point ($X = d_1, d_2, d_3$) and a worst-case scenario ($O = 0, 0, 0$) as well as an ideal situation ($W = w_1, w_2, w_3$).

$$X_1 = \frac{\sqrt{(d_1^2 + d_2^2 + \dots + d_n^2)}}{\sqrt{(w_1^2 + w_2^2 + \dots + w_n^2)}} \quad (2)$$

$$X_2 = \frac{\sqrt{(w_1 - d_1)^2 + (w_2 - d_2)^2 + \dots + (w_n - d_n)^2}}{\sqrt{(w_1^2 + w_2^2 + \dots + w_n^2)}} \quad (3)$$

$$CFII = \frac{1}{2}(X_1 + X_2) \quad (4)$$

Equation 2 calculates the normalised Euclidean distance between the achievements (X) of a country and its worst possible position (O). Equation 3 determines the normalised inverse Euclidean distance between a country's achievements (X) and

the ideal situation (*W*). The *CFII* is derived from the simple average of these two equations, i.e., Eq. (2) and Eq. (3). Equation 4 outlines the calculation of the final *CFII* value. A greater distance between *X* and *O* indicates a higher FI, while a smaller distance between *X* and *W* enhances FI. The *CFII* value ranges from 0 to 1 and is monotonically increasing. Thus, a higher index value

implies an advanced level of FI, and vice versa (Sarma, 2012). According to Sarma (2008), the countries are classified based on computed *CFII* into three categories: i.e., $0.5 \leq CFII \leq 1$ indicates a “high” FI in the country, $0.3 \leq CFII \leq 0.5$ shows a “medium” FI in the country and $0 \leq CFII \leq 0.3$ indicates “low” FI in the country.

Table 2. Variable descriptions and data source

Variables	Description	Type	Source
<i>LnGDP</i>	Log value of GDP per capita at constant 2010 US\$	Dependent	WDI
<i>LnCFII</i>	The log of <i>CFII</i> calculated value	Independent	Sarma (2008)
<i>IIE</i>	Gini coefficient as a measure of income inequality	Independent	SWIID
<i>GCF</i>	Gross capital formation	Independent	WDI
<i>HDI</i>	Human Development Index	Independent	UNDP
<i>Inflation</i>	Inflation, consumer prices (annual %)	Independent	WDI
<i>PGR</i>	Population growth over time (annual %)	Independent	WDI
<i>Export</i>	Exports of the country to the rest of the world (% of GDP)	Independent	WDI
<i>Import</i>	Imports of the country from the rest of the world (% of GDP)	Independent	WDI

Source: Authors' elaboration.

3.5. Econometric models

To evaluate the association between FI and ED in SACs, we have employed the following regression equation:

$$LnGDP_i = \alpha + LnGDP(-1) + \beta_1 LnCFII_i + \beta_2 IIE_i + \beta_3 GCF_i + \beta_4 HDI_i + \beta_5 Inflation_i + \beta_6 PGR_i + \beta_7 Export_i + \beta_8 Import_i + \varepsilon_i \quad (5)$$

This study employs panel regression analysis to test the hypothesis in light of the existing literature on the nexus between FI and ED (Sharma, 2016; Omar & Inaba, 2020). The study considers a random-effect estimation model instead of a fixed-effect model, as supported by the Hausman test hypothesis (accepted null hypothesis at 5% level). The choice of dependent and independent variables of the present study has been imitated from existing literature (Sarma & Pais, 2011; Sharma, 2016; Omar & Inaba, 2020).

4. RESULTS AND DISCUSSION

Table 3 demonstrates the descriptive statistics that investigate the distribution of the variables being analysed, including *GDP*, *CFII*, *IIE*, *GCF*, *HDI*, *Inflation*

(annual %), *PGR* (annual %), *Export* (% of GDP), and *Import* (% of GDP). The countries in South Asia exhibit a modest level of FI, with an average *CFII* value of 0.57 and a standard deviation of 0.24 during the study period. This indicates that the region has a robust and inclusive financial system, which is essential for economic growth and development. However, the selected countries in South Asia also face challenges in terms of inflation rates, with an average value of 7.01% and a standard deviation of 4.98%. This highlights the need for effective policies to control inflation and ensure regional economic stability.

Moreover, *GDP per capita* has an average value of 2218.43, with a standard deviation of 2454, indicating high variations in ED among SACs over the study period. This emphasises the need for policies that promote inclusive economic growth and development across the region. Overall, the descriptive statistics of other exploratory variables, such as *IIE*, *GCF*, *HDI*, *Inflation*, *PGR*, *Export*, and *Import*, demonstrate high variations over the study period among sample countries. This underlines the significance of effective policies and strategies in addressing the challenges of the region and promoting sustainable and inclusive ED.

Table 3. Descriptive statistics

Variables	Mean	Std. dev.	Min	Max	Coefficient of variance
<i>GDP per capita</i>	2218.43	2454	1118.5	221.66	1.11
<i>CFII</i>	0.57	0.24	0.99	0.03	0.43
<i>IIE</i>	29.79	17.32	48.9	0.00	0.58
<i>GCF</i>	25.39	17.39	69.47	0.00	0.68
<i>HDI</i>	29.79	17.32	48.9	0.00	0.26
<i>Inflation</i> (annual %)	7.01	4.98	27.85	-2.19	0.71
<i>PGR</i> (annual %)	1.67	1.03	4.42	0.18	0.62
<i>Export</i> (% of GDP)	18.34	18.31	91.29	0.00	0.99
<i>Import</i> (% of GDP)	26.88	21.73	83.71	0.00	0.81

Source: Authors' elaboration.

Based on the computed *CFII*, Table 4 shows the classification of sample countries. The table indicates that during the study period, Afghanistan and Pakistan had low and medium levels of FI, respectively. The remaining sample countries had high FI economies, although Bangladesh and Nepal had slightly higher FI levels than the threshold level.

Therefore, it suggests that most countries in sub-Saharan Africa fall within the highly financially included category ($0.50 \leq CFII < 1$), based on Sarma's (2008) classification.

Table 4. CFII for the selected countries

Country	CFII	Rank based on CFII	Level of FI
Afghanistan	0.1307	8	Low
Bangladesh	0.5818	5	High
Bhutan	0.7743	4	High
India	0.8240	2	High
Maldives	0.8138	3	High
Nepal	0.5581	6	High
Pakistan	0.4328	7	Medium
Sri Lanka	0.8354	1	High

Source: Authors' elaboration.

The result of the LLC test is presented in Table 5. The unit test results rejected H_0 (panels contain unit roots) for all the variables under consideration, which signifies that the panels are stationary. Thus, it is confirmed that there is no long-run affiliation among the variables, and therefore, a co-integration test is not required.

Table 5. LLC unit-root test results

Variables	Statistic	p-value
CFII	-7.759	0.0000*
IIE	-7.4548	0.0000*
GCF	-9.6743	0.0000*
HDI	-13.3658	0.0000*
Inflation (annual %)	-12.9484	0.0000*
PGR (annual %)	-8.5379	0.0000*
Export (% of GDP)	-11.3297	0.0000*
Import (% of GDP)	-5.5768	0.0000*

Note: * Significant at 1% level.

Source: Authors' elaboration.

Table 6 presents the outcomes of the panel data regression on balanced panel data employing the system GMM dynamic estimator. The Sargan test confirms that the instruments were unrelated to the residuals, thereby validating the overidentifying restrictions. The insignificance of AR(1) and AR(2) implies an absence of first and second-order autocorrelation, respectively. The Wald chi-square (262.06), accompanied by the statistically significant p-value of the test model, demonstrates their estimating power. The prerequisite assumptions of the system GMM model have been satisfied, thus confirming the validity of the results.

The result of the lag value of the dependent variable, i.e., $LnGDP$ ($Z = 1.12$; $p\text{-value} = 0.261$), signifies that there is no lag effect on the ED in SACs. The observed result indicates that FI measured by the log value of $CFII$ has a highly substantial affirmative influence on ED, thus supporting $H1$. To put it differently, an increase (decrease) in the FI in the country will promote (discourage) the level of ED. This finding is consistent with previous studies from different country contexts (Makina & Walle, 2019; Ugwuanyi et al., 2022; Sharma, 2016, Sharma, 2020; Lenka, 2021). Similarly, the HDI exhibits a significant positive impact on ED, consistent with the existing findings of Sakyi-Nyarko et al. (2022) from Africa and Abdelghaffar et al. (2023) from 38 countries of different economic setups. The study also reported a positive impact of GCF on ED in line with expectations of present literature from different economies like Bal et al. (2016) from the Indian economic context, Pasara and Garidzirai (2020) from Africa and Bwana (2023) from Tanzania. Thus, this extends support towards notions that ED of SACs can be accelerated by making more investments in capital goods and

making efforts towards the overall development of humans, i.e., increasing income and education and improving health conditions. The annual inflation rate also positively impacts ED, although the result is not statistically significant (previous research shows negative results, e.g., de Carvalho et al., 2018). Therefore, the results support $H3$ and $H4$ and reject $H5$. Likewise, the regression result also reveals a significant positive impact of PGR on ED and supports the existing findings of Kalaitzi and Chamberlain (2020) and Noura and Saafi (2022). Thus, this result favours the notion that a growing population increases the size of the labour force, the demand for goods, and the potential for innovation and technological advancements and supports $H6$. As per theoretical expectations, $Export$ also shows a positive association with ED (Kalaitzi & Chamberlain, 2020; Noura & Saafi, 2022) and advocates in favour of more exports bring foreign currencies and strengthen the economic conditions of the exporting country by increasing further production and employment opportunity. Thus, the result is in favour of the relevant hypothesis $H7$. However, $Import$ demonstrates a negative impact on ED in SACs during the study period and supports $H8$ and the empirical findings of Wani and Mir (2021). The IIE measured by the Gini coefficient does not significantly impact ED and rejects $H2$.

Table 6. Random-effects generalized least squares regression ($LnGDP$ is the dependent variable)

Variables	Coefficients	Z	p-value
Constant	5.541988	18.54	0.000*
$LnGDP(-1)$	0.2768953	1.12	0.261
$LnCFII$	0.2840769	6.29	0.000*
IIE	-0.0003849	0.12	0.908
GCF	0.0146177	2.02	0.043**
HDI	2.85431	7.43	0.000*
Inflation (annual %)	0.003764	0.39	0.697
PGR (annual %)	0.234722	2.23	0.026**
Export (% of GDP)	0.496180	2.77	0.006*
Import (% of GDP)	-0.475723	2.67	0.008*
No. of observations		144	
No. of groups		8	
AR(1) ^a		0.435	
AR(2) ^b		0.619	
Sargan test ^c		117.781	
Wald chi-square (8)		262.06*	
R-square	Within		0.3250
	Between		0.8774
	Overall		0.6600

Note: * and ** indicate significance at 1%, and 5% levels, respectively. ^a Arellano-Bond first-order autocorrelation test (H_0 : no autocorrelation). ^b Arellano-Bond second-order autocorrelation test (H_0 : no autocorrelation). ^c Test for over-identifying restrictions in GMM dynamic model estimation.

Source: Authors' elaboration.

5. CONCLUSION

Although there have been a sufficient number of studies investigating the effect of FI on ED, there is evidence that existing findings have reported mixed results and are confined to a single country. This study aims to evaluate the impact of foreign investment on ED in emerging SACs between 2004 and 2022. We chose to focus on SACs since their financial systems are mainly based on financial institutions for the channelisation of funds. Therefore, FI, in terms of accessibility and usage of banking services and banking penetration in society, is essential to achieve the nation's overall ED.

In the panel dataset, we used multiple regression to demonstrate the impact of FI on ED. The dynamic system GMM regression analysis results reveal that FI significantly impacts ED (measured by GDP per capita). Likewise, macroeconomic variables such as *GCF*, *HDI*, *PGR*, and *Export* positively impact ED. However, the findings report that *Import* significantly negatively impacts ED. The negative result is consistent with existing results. However, *IIE* and *Inflation* show no significant impact on ED.

This study offers valuable policy recommendations for developing countries, particularly in South Asia. The research suggests that governments take decisive action to improve the availability and accessibility of financial services, initiate financial education programs, address the misallocation of financial resources, strengthen financial trust, and reduce the digital divide. These measures will undoubtedly contribute to the region's overall economic growth while ensuring that individuals

and communities have access to the financial services they require to succeed. It should be noted that this study is limited to financial services offered by banking institutions and does not include self-help groups and microfinance institutions. However, including these institutions may lead to better findings since they have a higher penetration in rural regions and play a significant role in society (Kandpal, 2022; Islam, 2021). Future research may cross-check the findings in light of the roles of microfinance institutions and self-help groups.

Additionally, since this study is focused on SACs, the results are limited to this region. To gain a comprehensive understanding of these findings and their global implications, it is recommended that future research should emphasize the comparisons among different economic regions. This approach would provide invaluable insights into the applicability of these findings in varying contexts, enabling better decision-making and improved outcomes.

REFERENCES

- Abdelghaffar, R. A., Emam, H. A., & Samak, N. A. (2023). Financial inclusion and human development: Is there a nexus? *Journal of Humanities and Applied Social Sciences*, 5(3), 163-177. <https://doi.org/10.1108/JHASS-11-2021-0178>
- Agrawal, P. (2015). The role of exports in India's economic growth. *The Journal of International Trade & Economic Development*, 24(6), 835-859. <https://doi.org/10.1080/09638199.2014.968192>
- Ajide, F. M. (2020). Financial inclusion in Africa: Does it promote entrepreneurship? *Journal of Financial Economic Policy*, 12(4), 687-706. <https://doi.org/10.1108/JFEP-08-2019-0159>
- Akileng, G., Lawino, G. M., & Nzibonera, E. (2018). Evaluation of determinants of financial inclusion in Uganda. *Journal of Applied Finance & Banking*, 8(4), 47-66. https://www.scienpress.com/Upload/JAFB%2FVol%208_4_4.pdf
- Amidžić, G., Massara, A., & Mialou, A. (2014). *Assessing countries' financial inclusion standing — A new composite index* (IMF Working Paper No. 14/36). International Monetary Fund (IMF). <https://doi.org/10.5089/9781475569681.001>
- Arellano, M. (2002). Sargan's instrumental variables estimation and the generalised method of moments. *Journal of Business & Economic Statistics*, 20(4), 450-459. <https://doi.org/10.1198/073500102288618595>
- Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, 58(2), 277-297. <https://doi.org/10.2307/2297968>
- Arshad, A. (2022). Impact of financial inclusion on food security: Evidence from developing countries. *International Journal of Social Economics*, 49(3), 336-355. <https://doi.org/10.1108/IJSE-08-2021-0462>
- Arshad, A. (2023). Nexus between financial inclusion and women empowerment: Evidence from developing countries. *Gender in Management*, 38(4), 561-580. <https://doi.org/10.1108/GM-04-2022-0125>
- Aslan, A., & Altinoz, B. (2021). The impact of natural resources and gross capital formation on economic growth in the context of globalisation: Evidence from developing countries on the continent of Europe, Asia, Africa, and America. *Environmental Science and Pollution Research*, 28, 33794-33805. <https://doi.org/10.1007/s11356-021-12979-7>
- Bal, D. P., Dash, D. P., & Subhasish, B. (2016). The effects of capital formation on economic growth in India: Evidence from ARDL-bound testing approach. *Global Business Review*, 17(6), 1388-1400. <https://doi.org/10.1177/0972150916660403>
- Barboni, G., Cassar, A., & Demont, T. (2017). Financial exclusion in developed countries: A field experiment among migrants and low-income people in Italy. *Journal of Behavioral Economics for Policy*, 1(2), 39-49. <https://sabeconomics.org/journal/RePEc/beh/JBEPv1/articles/JBEP-1-2-6.pdf>
- Batayneh, K., Al Salamat, W., & Momani, M. Q. M. (2021). The impact of inflation on the financial sector development: Empirical evidence from Jordan. *Cogent Economics & Finance*, 9(1), Article 1970869. <https://doi.org/10.1080/23322039.2021.1970869>
- Bernheim, B. D., Ray, D., & Yeltekin, Ş. (2015). Poverty and self-control. *Econometrica*, 83(5), 1877-1911. <https://doi.org/10.3982/ECTA11374>
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115-143. [https://doi.org/10.1016/S0304-4076\(98\)00009-8](https://doi.org/10.1016/S0304-4076(98)00009-8)
- Bond, S. R. (2002). Dynamic panel data models: A guide to micro data methods and practice. *Portuguese Economic Journal*, 1, 141-162. <https://doi.org/10.1007/s10258-002-0009-9>
- Bwana, K. M. (2023). Expenditure on education, capital formation and economic growth in Tanzania. In C. Aigbavboa, J. N. Mojekwu, W. D. Thwala, L. Atepor, E. Adinyira, G. Nani, & E. Bamfo-Agyei (Eds.), *Sustainable education and development — Sustainable industrialization and innovation: Proceedings of the Applied Research Conference in Africa (ARCA), 2022* (pp. 636-649). Springer. https://doi.org/10.1007/978-3-031-25998-2_49
- Camara, N., Peña, X., & Tuesta, D. (2014). *Factors that matter for financial inclusion: Evidence from Peru* (BBVA Research Working Paper No. 14/09). Banco Bilbao Vizcaya Argentaria (BBVA). https://www.bbva-research.com/wp-content/uploads/mult/WP_1409_tcm348-426338.pdf

- Carrasco, C. A., & Tovar-García, E. D. (2021). Trade and growth in developing countries: The role of export composition, import composition and export diversification. *Economic Change Restructuring*, 54, 919–941. <https://doi.org/10.1007/s10644-020-09291-8>
- de Carvalho, A. R., Ribeiro, R. S. M., & Marques, A. M. (2018). Economic development and inflation: A theoretical and empirical analysis. *International Review of Applied Economics*, 32(4), 546–565. <https://doi.org/10.1080/02692171.2017.1351531>
- Ghosh, M. M., & Ghosh, A. (2014). Financial inclusion strategies of banks: Study of Indian states. *International Journal of Applied Financial Management Perspectives*, 3(2), 990–996. <https://www.researchgate.net/publication/268852965>
- Global Findex. (2021). *The Global Findex Database 2021: Executive summary visualization*. World Bank Group <https://www.worldbank.org/en/publication/globalfindex/interactive-executive-summary-visualization>
- Gujarati, D. N., & Porter, D. C. (2010). *Essentials of econometrics* (4th ed.). McGraw-Hill/Irwin.
- Hwang, J., & Sun, Y. (2018). Should we go one step further? An accurate comparison of one-step and two-step procedures in a generalized method of moments framework. *Journal of Econometrics*, 207(2), 381–405. <https://doi.org/10.1016/j.jeconom.2018.07.006>
- Ifediora, C., Offor, K. O., Eze, E. F., Takon, S. M., Ageme, A. E., Ibe, G. I., & Onwumere, J. U. J. (2022). Financial inclusion and its impact on economic growth: Empirical Evidence from sub-Saharan Africa. *Cogent Economics & Finance*, 10(1), Article 2060551. <https://doi.org/10.1080/23322039.2022.2060551>
- Islam, M. S. (2021). Role of Islamic microfinance in women's empowerment: Evidence from rural development scheme of Islami Bank Bangladesh Limited. *ISRA International Journal of Islamic Finance*, 13(1), 26–45. <https://doi.org/10.1108/IJIF-11-2019-0174>
- Islam, T., Newhouse, D., & Yanez-Pagans, M. (2018). *International comparisons of poverty in South Asia* (World Bank's Policy Research Working Paper No. 8683). World Bank. <https://hdl.handle.net/10986/31085>
- Kalaitzi, A. S., & Chamberlain, T. W. (2020). Exports and economic growth: Some evidence from the GCC. *International Advances in Economic Research*, 26, 203–205. <https://doi.org/10.1007/s11294-020-09786-0>
- Kandpal, V. (2022). Socio-economic development through self-help groups in rural India — A qualitative study. *Qualitative Research in Financial Markets*, 14(5), 621–636. <https://doi.org/10.1108/QRFM-10-2021-0170>
- Kapingura, F. M. (2017). Financial sector development and income inequality in South Africa. *African Journal of Economic and Management Studies*, 8(4), 420–432. <https://doi.org/10.1108/AJEMS-11-2016-0177>
- Kavya, T. B., & Shijin, S. (2020). Economic development, financial development, and income inequality nexus. *Borsa Istanbul Review*, 20(1), 80–93. <https://doi.org/10.1016/j.bir.2019.12.002>
- Kelkar, V. (2010). Financial inclusion for inclusive growth. *ASCI Journal of Management*, 39(1), 55–68. <https://shorturl.at/5EOBJ>
- Klapper, L. (2016, September 15). Financial inclusion has a big role to play in reaching the SDGs. *World Bank Blog*. <https://blogs.worldbank.org/en/developmenttalk/financial-inclusion-has-big-role-play-reaching-sdgs>
- Kumar, G., & Batra, S. (2023). Interrelationship between human development, financial development and economic growth: Empirical evidences from Indian economy. *Indian Journal of Human Development*, 17(1), 60–81. <https://doi.org/10.1177/09737030221146022>
- Kumar, N. (2013). Financial inclusion and its determinants: Evidence from India. *Journal of Financial Economic Policy*, 5(1), 4–19. <https://doi.org/10.1108/17576381311317754>
- Lal, T. (2018). Impact of financial inclusion on poverty alleviation through cooperative banks. *International Journal of Social Economics*, 45(5), 808–828. <https://doi.org/10.1108/IJSE-05-2017-0194>
- Lal, T. (2021). Impact of financial inclusion on economic development of marginalized communities through the mediation of social and economic empowerment. *International Journal of Social Economics*, 48(12), 1768–1793. <https://doi.org/10.1108/IJSE-12-2020-0830>
- Lenka, S. K. (2021). Relationship between financial inclusion and financial development in India: Is there any link? *Journal of Public Affairs*, 22(S1), Article e2722. <https://doi.org/10.1002/pa.2722>
- Lenka, S. K., & Bairwa, A. K. (2016). Does financial inclusion affect monetary policy in SAARC countries? *Cogent Economics & Finance*, 4(1), Article 1127011. <https://doi.org/10.1080/23322039.2015.1127011>
- Lenka, S. K., & Barik, R. (2018). A discourse analysis of financial inclusion: Post-liberalization mapping in rural and urban India. *Journal of Financial Economic Policy*, 10(3), 406–425. <https://doi.org/10.1108/JFEP-11-2015-0065>
- Levin, A., Lin, C.-F., & Chu, C.-S. J. (2002). Unit root tests in panel data: Asymptotic and finite-sample properties. *Journal of Econometrics*, 108(1), 1–24. [https://doi.org/10.1016/S0304-4076\(01\)00098-7](https://doi.org/10.1016/S0304-4076(01)00098-7)
- MacDonald, M., & Xu, T. (2022). *Financial sector and economic growth in India* (IMF Working Paper No. 2022/137). International Monetary Fund (IMF). <https://doi.org/10.5089/9798400216404.001>
- Maity, S. (2023). Financial inclusion also leads to social inclusion — Myth or reality? Evidence from self-help groups led to microfinance in Assam. *Journal of Innovative Entrepreneurship*, 12, Article 42. <https://doi.org/10.1186/s13731-023-00307-x>
- Maity, S., & Sahu, T. N. (2022). Determinants of financial inclusion. In *Financial inclusion and the role of banking system* (pp. 105–149). Palgrave Macmillan. https://doi.org/10.1007/978-981-16-6085-6_4
- Maji, S. G., & Saha, R. (2021). Gender diversity and financial performance in an emerging economy: Empirical evidence from India. *Management Research Review*, 44(12), 1660–1683. <https://doi.org/10.1108/MRR-08-2020-0525>
- Makina, D., & Walle, Y. M. (2019). Financial inclusion and economic growth: Evidence from a panel of selected African countries. In D. Makina (Ed.), *Extending financial inclusion in Africa* (pp. 193–210). Academic Press. <https://doi.org/10.1016/B978-0-12-814164-9.00009-8>
- Malhotra, K. (2020, March 27). Role of financial inclusion in achieving sustainable development goals... *IILM Blog*. <https://blog.iilm.edu/role-financial-inclusion-achieving-sustainable-development-goals/>
- Mdingi, K., & Ho, S.-Y. (2021). Literature review on income inequality and economic growth. *MethodsX*, 8, Article 101402. <https://doi.org/10.1016/j.mex.2021.101402>
- Nanda, K., & Kaur, M. (2016). Financial inclusion and human development: A cross-country evidence. *Management and Labour Studies*, 41(2), 127–153. <https://doi.org/10.1177/0258042X16658734>
- Nguyen, T. A. N. (2022). Financial development, human resources, and economic growth in transition countries. *Economies*, 10(6), Article 138. <https://doi.org/10.3390/economies10060138>

- Nguyen, T. T. H. (2021). Measuring financial inclusion: A composite FI index for the developing countries. *Journal of Economics and Development*, 23(1), 77–99. <https://doi.org/10.1108/JED-03-2020-0027>
- Nouira, R., & Saafi, S. (2022). What drives the relationship between export upgrading and growth? The role of human capital, institutional quality, and economic development. *Journal of Knowledge Economy*, 13, 1944–1961. <https://doi.org/10.1007/s13132-021-00788-9>
- Omar, M. A., & Inaba, K. (2020). Does financial inclusion reduce poverty and income inequality in developing countries? A panel data analysis. *Economic Structures*, 9, Article 37. <https://doi.org/10.1186/s40008-020-00214-4>
- Ozili, P. K. (2018). Impact of digital finance on financial inclusion and stability. *Borsa Istanbul Review*, 18(4), 329–340. <https://doi.org/10.1016/j.bir.2017.12.003>
- Pal, M., Gupta, H., & Joshi, Y. C. (2022). Social and economic empowerment of women through financial inclusion: Empirical evidence from India. *Equality, Diversity and Inclusion*, 41(2), 294–305. <https://doi.org/10.1108/EDI-04-2021-0113>
- Pasara, M. T., & Garidzirai, R. (2020). Causality effects among gross capital formation, unemployment and economic growth in South Africa. *Economies*, 8(2), Article 26. <https://doi.org/10.3390/economies8020026>
- Pushp, A., Gautam, R. S., Tripathi, V., Kanoujiya, J., Rastogi, S., Bhimavarapu, V. M., & Parashar, N. (2023). Impact of financial inclusion on India's economic development under the moderating effect of internet subscribers. *Journal of Risk and Financial Management*, 16(5), Article 262; <https://doi.org/10.3390/jrfm16050262>
- Ramkumar, G. (2017). A study on benefits of financial inclusion and cashless economy for India. *EPRJ International Journal of Business and Economic Review*, 5(8), 182–186. <https://eprajournals.com/IJES/article/8313>
- Sahoo, S. (2013). *Financial structures and economic development in India: An empirical evaluation* (RBI Working Paper No. 02/2013). Reserve Bank of India (RBI). <https://shorturl.at/R9EYF>
- Sakya-Nyarko, C., Ahmad, A. H., & Green, C. J. (2022). The role of financial inclusion in improving household well-being. *Journal of International Development*, 34(8), 1606–1632. <https://doi.org/10.1002/jid.3661>
- Sarma, M. (2008). *Index of financial inclusion* (Working Paper No. 215). Indian Council for Research on International Economic Relations. https://www.icrier.org/pdf/Working_Paper_215.pdf
- Sarma, M. (2012). *Index of financial inclusion — A measure of financial sector inclusiveness* (Berlin Working Papers on Money, Finance, Trade and Development No. 07/2012). Competence Center “Money, Finance, Trade and Development”. <https://ury1.com/3HYhP>
- Sarma, M., & Pais, J. (2011). Financial inclusion and development. *Journal of International Development*, 23(5), 613–628. <https://doi.org/10.1002/jid.1698>
- Sarwar, A., Khan, M. A., Sarwar, Z., & Khan, W. (2021). Financial development, human capital and its impact on economic growth of emerging countries. *Asian Journal of Economics and Banking*, 5(1), 86–100. <https://doi.org/10.1108/AJEB-06-2020-0015>
- Saxena, A., & Panwar, V. (2022). Significance and impact of financial inclusion on Indian economy: An empirical study. *NMIMS Management Review*, 30(4), 90–103. <https://doi.org/10.53908/NMMR.300405>
- Sethi, D., & Acharya, D. (2018). Financial inclusion and economic growth linkage: Some cross country evidence. *Journal of Financial Economic Policy*, 10(3), 369–385. <https://doi.org/10.1108/JFEP-11-2016-0073>
- Sharma, D. (2016). Nexus between financial inclusion and economic growth: Evidence from the emerging Indian economy. *Journal of Financial Economic Policy*, 8(1), 13–36. <https://doi.org/10.1108/JFEP-01-2015-0004>
- Sharma, R. R. (2020). Financial inclusion and economic growth: Evidence-based research. *Vision*, 24(2). <https://doi.org/10.1177/0972262920933503>
- Shen, C., & Zhao, X. (2023). How does income inequality affect economic growth at different income levels? *Economic Research-Ekonomska Istraživanja*, 36(1), 864–884. <https://doi.org/10.1080/1331677X.2022.2080742>
- The World Bank. (2018, November 7). *Women's financial inclusion and the law* [Infographic]. <https://www.worldbank.org/en/news/infographic/2018/11/07/womens-financial-inclusion-and-the-law-infographic>
- Topuz, S. G. (2022). The relationship between income inequality and economic growth: Are transmission channels effective? *Social Indicators Research*, 162, 1177–1231. <https://doi.org/10.1007/s11205-022-02882-0>
- Ugwuanyi, U., Ugwuoke, R., Onyeonu, E., Eze, E. F., Prince, A. I., Anago, J., & Ibe, G. I. (2022). Financial inclusion — Economic growth nexus: Traditional finance versus digital finance in Sub-Saharan Africa. *Cogent Economics & Finance*, 10(1), Article 2133356. <https://doi.org/10.1080/23322039.2022.2133356>
- Uneze, E. (2013). The relation between capital formation and economic growth: evidence from sub-Saharan African countries. *Journal of Economic Policy Reform*, 16(3), 272–286. <https://doi.org/10.1080/17487870.2013.799916>
- Wani, S. H., & Mir, M. A. (2021). Globalisation and economic growth in India: An ARDL approach. *The Indian Economic Journal*, 69(1) 51–65. <https://doi.org/10.1177/00194662211015388>
- Wen, J., Mahmood, H., Khalid, S., & Zakaria, M. (2022). The impact of financial development on economic indicators: A dynamic panel data analysis. *Economic Research-Ekonomska Istraživanja*, 35(1), 2930–2942. <https://doi.org/10.1080/1331677X.2021.1985570>
- Westerlund, J. (2009). A note on the use of the LLC panel unit root test. *Empirical Economics*, 37, 517–531. <https://doi.org/10.1007/s00181-008-0244-8>
- Zeleny, M. (1974). A concept of compromise solutions and the method of the displaced ideal. *Computer & Operation Research*, 1(3–4), 479–496. [https://doi.org/10.1016/0305-0548\(74\)90064-1](https://doi.org/10.1016/0305-0548(74)90064-1)