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

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Abstract

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


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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 seven out of seventeen Sustainable Development Goals (SDGs) 2030. (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 fulfill 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).
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 (IIE, 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).

The past 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 (Ajlde, 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
Inflation levels are linked to slowed or halted ED. Levels are associated with faster ED, while high negative effects on ED. Low or moderate inflation can have both positive and negative effects on ED. 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. Kavya (2020) found no clear-cut relationship between IIE and ED. Therefore, we hypothesise that:

H3: There is a positive association between gross capital formation 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) reported no clear-cut relationship between IIE and ED. Therefore, we hypothesise that:

H4: There is a positive association between human development 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 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:

H5: There is a negative association between inflation 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:

H6: A positive association exists between population growth 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:

H7: A positive association exists between imports 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 (Ilediòra 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 economics: 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

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

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 various 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 different 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, and using the following equation:

\[ d_i = w_i A_{i,k,t} - m_{i} M_t - m_{i} \]  

(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 \( M_t \) (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 \((O = 0, 0, 0, 0)\) as well as an ideal situation \((W = w_1, w_2, w_3)\).

\[ X_1 = \sqrt{(d_1^2 + d_2^2 + \cdots + d_n^2)} \]  

(2)

\[ X_2 = \sqrt{(w_1 - d_1)^2 + (w_2 - d_2)^2 + \cdots + (w_n - d_n)^2} \]  

(3)

\[ CFII = \frac{1}{2} (X_1 + X_2) \]  

(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., $0.5 \leq \text{CFII} \leq 1$ indicates a “high” FI in the country, $0.3 \leq \text{CFII} \leq 0.5$ shows a “medium” FI in the country and $0 \leq \text{CFII} \leq 0.3$ indicates “low” FI in the country.

Table 2. Variable descriptions and data source

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

Source: Authors’ elaboration.

3.5. Econometric models

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

$$\text{LnGDP}_t = \alpha + \text{LnCFII}_t + \beta_1 \text{IIE}_t + \beta_2 \text{GCF}_t + \beta_3 \text{PGR}_t + \beta_4 \text{Export}_t + \beta_5 \text{Import}_t + \epsilon_t \quad (5)$$

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

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. dev.</th>
<th>Min</th>
<th>Max</th>
<th>Coefficient of variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita</td>
<td>2218.43</td>
<td>2454.00</td>
<td>1118.5</td>
<td>2216.66</td>
<td>1.11</td>
</tr>
<tr>
<td>CFII</td>
<td>0.57</td>
<td>0.24</td>
<td>0.99</td>
<td>0.03</td>
<td>0.43</td>
</tr>
<tr>
<td>IIE</td>
<td>25.39</td>
<td>17.32</td>
<td>48.9</td>
<td>0.00</td>
<td>0.38</td>
</tr>
<tr>
<td>GCF</td>
<td>29.79</td>
<td>17.32</td>
<td>48.9</td>
<td>0.00</td>
<td>0.26</td>
</tr>
<tr>
<td>HDI</td>
<td>7.01</td>
<td>4.98</td>
<td>27.85</td>
<td>-2.19</td>
<td>0.71</td>
</tr>
<tr>
<td>Inflation</td>
<td>2.67</td>
<td>1.03</td>
<td>4.42</td>
<td>0.00</td>
<td>0.62</td>
</tr>
<tr>
<td>PGR</td>
<td>18.34</td>
<td>18.31</td>
<td>91.29</td>
<td>0.00</td>
<td>0.99</td>
</tr>
<tr>
<td>Export</td>
<td>25.88</td>
<td>21.73</td>
<td>83.71</td>
<td>0.00</td>
<td>0.81</td>
</tr>
</tbody>
</table>

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 ($0.50 \leq \text{CFII} < 1$), based on Sarma’s (2008) classification.
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 Nouira 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; Nouira & 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 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 (8) is the dependent variable) and the empirical findings of Kalaitzi and Chamberlain (2020) and Nouira and Saafi (2022). 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)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients</th>
<th>Z</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.4261</td>
<td>10.0</td>
<td>0.000**</td>
</tr>
<tr>
<td>LnGDP</td>
<td>0.2637</td>
<td>5.2</td>
<td>0.000**</td>
</tr>
<tr>
<td>LnFI</td>
<td>0.1236</td>
<td>3.1</td>
<td>0.002**</td>
</tr>
<tr>
<td>IIE</td>
<td>0.1034</td>
<td>2.9</td>
<td>0.004**</td>
</tr>
<tr>
<td>PGR</td>
<td>0.0746</td>
<td>2.4</td>
<td>0.016**</td>
</tr>
<tr>
<td>Export % (GDP)</td>
<td>0.0264</td>
<td>1.9</td>
<td>0.053</td>
</tr>
<tr>
<td>Import % (GDP)</td>
<td>0.0005</td>
<td>0.1</td>
<td>0.905</td>
</tr>
<tr>
<td>No. of observations</td>
<td>144</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AR1*</td>
<td>0.435</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AR2F</td>
<td>0.619</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sargan test</td>
<td>0.014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wald chi-square (8)</td>
<td>262.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-square</td>
<td>Within 0.3250</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Between 0.8774</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>0.6600</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: * and ** indicate significance at 1% and 5% levels, respectively. A. Arellano-Bond first-order autocorrelation test (H2: no autocorrelation). B. Arellano-Bond second-order autocorrelation test (H2: no autocorrelation). C. Test for over-identifying restrictions in GMM dynamic model estimation.

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


