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## Determinants of financial inclusion in South Asia: The moderating and mediating roles of internal conflict settlement

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### ABSTRACT

Financial inclusion is recognized as a key enabler of the 2030 Sustainable Development Goals agenda of the United Nations. Hence, this study investigates the impacts of internal conflicts, economic growth, information and communications technology, institutional quality, and remittance inflows on financial inclusion in selected South Asian countries. Notably, both the independent and moderating/mediating effects of internal conflict settlement on financial inclusion are explored for the countries of concern. Overall, the results from the econometric analysis reveal that internal conflict resolution, higher mobile subscriptions, and lower levels of corruption improve financial inclusivity while higher economic growth inhibits financial inclusion in South Asia. Further, resolving internal conflicts is found to indirectly boost financial inclusion by moderating the economic growth-financial inclusion nexus and mediating the remittance inflows-financial inclusion relationship. In line with these key findings, several financial inclusion-related policies are recommended to help promote financial inclusivity across South Asia.

### 1. Introduction

In the modern era, financial inclusion has established itself as one of the critically important enablers of sustainable development, both at the micro and macro levels. It is often hypothesized that enhancing financial inclusivity is pertinent for achieving sustainable economic progress (Fakher et al., 2021; Mani, 2016). Besides, the role of financial inclusion in promoting socially-inclusive growth by reducing income inequality has been recognized in the extant literature (Demirgüç-Kunt and Singer, 2017; Neaime and Gaysset, 2018). Furthermore, financial inclusion is deemed crucial for responding to and recovering from worldwide states of economic crises

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(UNSGSA, 2021). However, the favorable outcomes accompanying financial inclusion are not limited to economic dimensions; rather, financial inclusion is regarded necessary for achieving different social development objectives such as promoting poverty alleviation (Inoue, 2019), women empowerment (Pal et al., 2021), financial stability (Ozili, 2018), human development (Sarma and Pais 2011), and gender equality (Vong and Song, 2015). In addition, financial inclusion has been associated with environmental development, especially in respect of atmospheric pollution abatement (Murshed et al., 2022; Khan et al., 2022). Considering these potential socio-economic and environmental development impacts, it can be assumed that financial inclusion could be a major driver of the 2030 Sustainable Development Goals (SDG) agenda of the United Nations (UNSGSA, 2021).

Financial inclusion has particularly evolved towards the end of the twentieth century with the preconceived idea that development should not be considered solely in terms of a rise in the national income level given that it is a multidimensional issue. In 2010, the Global Partnership for Financial Inclusion (GPFI) was established in response to the global financial crisis with the underlying aim of boosting financial inclusion across the Group of Twenty (G20) and other non-G20 nations worldwide (GPFI, 2020). In particular, the GPFI released guidelines for stimulating innovative financial inclusion through the development of financial literacy, the establishment of an institutional environment with transparent lines of accountability, and efficient coordination of the governments (Eldomiaty et al., 2020). Following the establishment of the GPFI, there have been attempts to enhance credit access for impoverished people, stimulate savings, facilitate financial payments, and provide insurance through formal financial institutions (Alhassan et al., 2021; GPFI, 2020).

World leaders and major international organizations have also tried increasing financial inclusivity worldwide (Lyons and Kass-Hanna, 2021). In this regard, global economic organizations, such as the Organisation for Economic Cooperation and Development (OECD), the International Monetary Fund (IMF), and the World Bank, host annual international conferences on financial inclusion to assess the financial systems across various global regions and countries. The core focus of these conferences is devoted to identifying the channels through which financial inclusion can be enhanced globally. Furthermore, along with national governments, these international groups support projects to improve financial inclusion, especially by emphasizing the significance of improving the quality of financial inclusion in developing countries across Asia, Sub-Saharan Africa, and Latin America (Ngo, 2019; Datta and Singh, 2019).

However, despite these local and international initiatives, the overall state of financial inclusion in the developing nations, in particular, is not too impressive (Kuada, 2019). This is evident from the fact that a significant proportion of the global population is still to be brought under the coverage of modern financial services (Ghosh and Vinod, 2017). In addition, existing data portrays considerable differences in the level of financial inclusion worldwide, leaving huge segments of the developing nations' populations deprived of the benefits of financial inclusion (Lyons and Kass-Hanna, 2021). Therefore, it is of utmost importance to identify the possible barriers that are upholding the growth in financial inclusion across the developing world. It is also important to discover the factors that can relieve the existing constraints and speed up the overall process of enhancing financial inclusivity within developing countries.

Among the various possible means, resolving internal conflict is assumed to be conducive to promoting financial inclusion. According to the International Country Risk Guide (ICRG), internal conflict is a relevant indicator of political instability or violence within an economy. Accordingly, the internal conflict settlement-financial inclusion relationship can be explained through the political economy theory of financial inclusion which, in a nutshell, postulates that internal conflicts-induced political instability impedes the potential of enhancing financial inclusivity. As a result, it has been widely acknowledged in the literature that political instability, in several forms, adversely impacts the prospects of enhancing the degree of financial inclusion. For instance, it is argued that an unstable political environment results in anti-government demonstrations whereby economic growth gets substantially eroded; consequently, national savings rates decline (Gyimah-Brempong and Traynor, 1996), access to loans for the general public reduces (Dang et al., 2018), and investments drop (Ouedraogo et al., 2020). Hence, other studies have emphasized the relevance of ensuring political stability for pursuing financial inclusion-related objectives (Allen et al., 2016; Bozkurt et al., 2018).

Although the effect of political instability on financial inclusion has been assessed using several indicators, none of the existing studies have considered using data on internal conflicts as a proxy for political instability. Against this backdrop, we evaluate the effect of resolving internal conflicts on financial inclusion in four lower-middle-income South Asian nations (India, Bangladesh, Pakistan, and Sri Lanka) over the 2004–2018 period. The decision to focus on these South Asian nations is motivated by the fact that financial inclusion has been a major concern across this region. It is believed that the use of financial services is particularly low in South Asia; notably, more than half of the adult population of South Asia is denied access to formal financial services (Cull et al., 2014). Since the majority of South Asian nations have high rates of poverty, this macroeconomic concern has largely impeded the prospects of enhancing financial inclusion within this region (Mani, 2016). Although South Asian countries have made modest progress in terms of improving the overall degree of financial inclusion, there are opportunities to improve the financial inclusivity levels further. Moreover, despite being recognized as one of the faster-growing global regions, South Asian nations are largely poverty-stricken (World Bank 2021). Hence, reducing the level of financial exclusion may assist in alleviating poverty incidences within this region.

Political instability, especially in the form of internal conflict, has also been another major concern of South Asian governments. For instance, Bangladesh has faced post-election political conflicts over a long period of time (Human Rights Watch, 2020). On the other hand, Pakistan has endured a great deal of terrorism-related political instabilities (Bano et al., 2019). Besides, ethnic conflicts within the Indian economy have been a long-lasting issue (Kohli, 2019). Lastly, religious sentiment-related extremism and civil war have played major roles in politically destabilizing the Sri Lankan economy (Morrison, 2020). Hence, it can be assumed that such multi-faceted modes of internal conflicts across South Asia, alongside the intra-regional conflict among the concerned nations, have largely disrupted the process of enhancing financial inclusivity within this region.

For assessing the effect of internal conflict settlement on financial inclusion in the selected South Asian countries, we consider a

composite index of financial inclusivity based on five financial inclusion indicators: the number of ATMs per 100,000 adults, the number of institutions of commercial banks, the number of branches of commercial banks, outstanding deposits with commercial banks, and outstanding loans from commercial banks. Besides, we also consider the level of internal conflict as a composite index that takes into account the degree of political violence, including the levels of civil war/coup threat, terrorism, and civil disorder, within the South Asian countries of concern. Our statistical findings show that resolving internal conflicts not only promotes financial inclusivity directly but also boosts financial inclusion indirectly by moderating the negative impact of economic growth on financial inclusion and mediating the relationship between financial inclusion and foreign remittance influx. Further, whilst both mobile phones accessibility and actions to mitigate corruption are found to promote financial inclusion, no evidence of greater internet accessibility promoting financial inclusion could be established. These results are robust when an index for measuring political instability is used instead of internal conflict for analysis purposes.

The rest of the article is structured as follows. The literature review is presented in the next section. [Section 3](#) describes the research method, covering the empirical model specifications, data, and econometric methods considered in this study. [Section 4](#) reports and discusses the findings while the last section provides the concluding remarks.

## 2. Literature review

A review of the existing literature reveals that researchers have concentrated their efforts on three core areas: (a) the quantification of financial inclusion; (b) the drivers of financial inclusion; and (c) the impacts of financial inclusion on different macro and micro aggregates.

### 2.1. The literature on the measurement of financial inclusion

Regarding the first stream of research, the preceding studies highlight that there is no standard yardstick for measuring financial inclusivity. Besides, there is also limited agreement on how financial inclusion should be defined and quantified ([Park and Mercado, 2015](#); [Kabakova and Plaksenkov, 2018](#); [Sarma, 2008](#)). The majority of preceding studies define financial inclusion in terms of accessibility, affordability, and availability of financial services for the population ([Nkoa and Song, 2020](#); [Lyons and Kass-Hanna, 2021](#)). On the other hand, the World Bank defines financial inclusion as individuals and businesses having access to valuable and affordable financial products and services that fulfill their financial needs and are delivered responsibly and sustainably ([World Bank, 2018](#)). Consequently, given these miscellaneous definitions, the existing studies have quantified financial inclusion using different proxy variables. For instance, [Honohan \(2008\)](#) captured the degree of financial inclusivity in terms of the proportion of the total adult population within an economy that has access to formal financial intermediaries. [Kim et al. \(2018\)](#), in the context of the members of the Organization for Islamic Cooperation (OIC), proxied financial inclusion by the numbers of Automated Teller Machines (ATM) and bank branches per 100,000 adults, deposit accounts held at commercial banks per 1000 adults, borrowers from commercial banks per 1000 adults, and value of life insurance to GDP ratio.

Many studies have estimated a financial inclusion index to provide a more comprehensive indicator of financial inclusivity. Among these, [Park and Mercado \(2021\)](#) used the Principal Component Analysis (PCA) technique to construct a financial inclusion index utilizing data from nine modes of accessibility, availability, and usage of financial services. Similarly, [Malik et al. \(2021\)](#) used the financial indicators variables considered by [Kim et al. \(2018\)](#) and employed the PCA method to derive a composite index of financial inclusion. Furthermore, others have proxied financial inclusion using data from the Global Findex database of the World Bank which provides financial inclusion-related data by analyzing the saving, borrowing, payment-making, and risk-managing behaviors of adults across the globe ([Asuming et al., 2019a,b](#); [Lyons and Kass-Hanna, 2021](#); [Demircuc-Kunt et al., 2018](#)).

### 2.2. The literature on financial inclusion determinants

Previous research works have shown that micro-level factors such as age, gender, educational qualification, and income level of individuals and households are vital determinants of financial inclusion ([Zhang and Posso, 2019](#); [Koomson and Danquah, 2021](#)). In contrast, a limited number of studies have focused on assessing the role of macro-level factors in influencing financial inclusion. Among these, political stability has been recognized as one of the main drivers of financial inclusion across the globe. In this regard, although prior studies have considered different proxies for measuring political stability, not many have used internal conflict data for quantifying the extent of political instability within an economy. Accordingly, the few studies that have shed light on the internal conflict-financial inclusion nexus have mostly indicated that such conflicts hamper the development of the financial sector, whereby reducing the degree of financial exclusivity becomes difficult. Specifically, in the context of South Asia, [Kapoor \(2014\)](#) claimed that ethnic conflicts, alongside other forms of political instabilities and insurgencies, are the main barriers hindering financial inclusion and economic growth in India. Similarly, [Lyons and Kass-Hanna \(2021\)](#) concluded that chronic conflicts resulting in social and political instabilities are detrimental to stimulating financial inclusion in the Middle East and North Africa (MENA). [Lee et al. \(2022\)](#) highlighted that financial inclusion is higher in countries with low risk-related uncertainties and terrorism threats. Basically, these studies tried to portray that people need to have trust in both political and financial institutions in order to be more financially involved within the financial sector. Hence, in the context of Central and West African nations, [Soumare et al. \(2016\)](#) emphasized that trustworthy financial institutions are pre-requisites for having a financially inclusive financial sector.

[Alhassan et al. \(2021\)](#) utilized the political instability index data from World Bank's Worldwide Governance Indicators database and concluded that political instability lowers the probability of increasing financial inclusivity within selected countries from the

MENA. This particular measure of political instability focuses on the perceptions of people regarding the possibility of experiencing politically-motivated violence, including terrorism threats. Using this political instability index for the global economies, [Eldomyaty et al. \(2020\)](#) showed that reducing political instability can drive financial inclusion by increasing the shares of the total adult population borrowing from financial institutions, saving funds at a financial institution, and owning debit and credit cards. The adverse effects of political instability on financial inclusion across Africa were also highlighted in the study by [Nkoa and Song \(2020\)](#). For selected African nations, [Kwenda and Chinoda \(2019\)](#) emphasized the role of a good democratic environment in stimulating greater inclusiveness within the financial sector. Since good governance is closely linked with political stability, the findings in that study supported the hypothesis that stabilizing the political environment, through the settlement of internal conflicts, can effectively foster financial inclusion.

Apart from political instability, financial inclusion is believed to be determined by a plethora of other macroeconomic factors. Referring to institutional quality, [Ravallion and Chen \(2003\)](#) showed that strong institutions help in the development of financial markets which, in turn, can play key roles in promoting economic growth and alleviating poverty. [Aracil et al. \(2022\)](#) employed data from 75 developed and emerging economies, over the period from 2004 to 2017, and found that higher quality of institutions is conducive to enhancing financial inclusivity which, in turn, can be expected to alleviate poverty, as well. Moreover, these impacts were claimed to be more distinctive in the context of relatively wealthier countries. In a study featuring 73 underdeveloped countries, [Zequiraj et al. \(2022\)](#) argued that improving institutional quality enhances both accessibility and use of financial services. Similarly, using dynamic panel data on 51 African countries, [Nkoa and Song \(2020\)](#) also supported the idea that good institutional quality positively influences financial inclusion within this region. [Ahamed and Malik \(2019\)](#) also remarked that improving the overall quality of institutions can be effective in reducing the credit charged against loans for encouraging borrowings while promoting greater savings, in tandem. Moreover, [Anthony-Orji et al. \(2019\)](#) emphasized that the positive correlations between good quality institutions and financial inclusion exist both in the short and long run in Nigeria. In the context of Southeast Asian nations, [Saydaliyev et al. \(2020\)](#), and [Ali et al. \(2021\)](#) also verified this complementary relationship between good institutional quality and more financial inclusivity. Measuring institutional quality in respect of corruption, [Song et al. \(2021\)](#) remarked that corruption adversely affects financial inclusion in emerging economies characterized by low institutional quality levels. Similarly, a significant number of studies have also documented evidence of good governance being a promoter of financial inclusion. Among these, [Alhassan et al. \(2021\)](#) concluded that controlling corruption is essential in reducing financial exclusivity within the MENA region. Similar studies have tried to highlight that corruption increases the costs of availing financial services whereby the demand for financial services is likely be pinned down. Likewise, [Oshora et al. \(2021\)](#) concluded that corruption deteriorates the quality of institutions and amplifies the costs of borrowing to restrict private investments and, therefore, hampers financial inclusion. On the other hand, [Asuming et al. \(2019\)](#) argued that ensuring good business conditions can stimulate greater financial inclusion in emerging economies across Sub-Saharan Africa.

Modern financial services like mobile and internet banking have been recognized as potential means of promoting financial inclusion in the contemporary era, with several studies linking Information and Communications Technology (ICT) penetration with more financial inclusion. It is believed that the application of ICT within the financial sector reduces the transaction costs of availing financial services and, therefore, can be considered a vital determinant of financial inclusion ([Chatterjee, 2020](#)). In the context of the South Asian economy of Bangladesh, [Hazra and Priyo \(2021\)](#) show that greater access to mobile financial services helps to boost financial inclusion. [Evans \(2018\)](#) remarked that high degrees of internet and mobile penetration increase financial inclusivity across Africa. Similarly, [Rastogi and Ragabiruntha \(2018\)](#) stated that online banking is a central driver of financial inclusion within the Tamil Nadu state in India. [Mushtaq and Bruneau \(2019\)](#) stated that extending ICT services can reduce poverty and income inequality worldwide via the channel of financial inclusion. [Demir et al. \(2022\)](#) also found that new financial technologies (FinTech) are key determinants of financial inclusion in 140 global countries. Likewise, [Morgan \(2022\)](#) claimed that FinTech potentially drives financial inclusion in the Association of Southeast Asian Nations (ASEAN) member countries and India.

Among the other key determinants of financial inclusion, [Barnabe \(2021\)](#) found evidence of higher influx of migrant remittances into Africa impeding financial inclusion in the short run; however, in the long run, this adverse financial inclusion-restraining effect gets reversed. International remittance can be considered a crucial influencer of financial inclusion from the understanding that the remitted funds received by the family members of a migrant worker, irrespective of the fund being transferred through formal or informal channels, stimulate the demand for financial services. In line with this notion, [Ajefu and Ogebe \(2019\)](#) opined that inward foreign remittances increase the probability of utilizing several forms of formal financial services, including deposit accounts and mobile and internet banking accounts in Nigeria. In another study on El Salvador, [Anzoategui et al. \(2014\)](#) found that remittance receipts stimulate financial inclusion by boosting the demand for deposit accounts; however, international remittances were not found to significantly influence the demand for formal credit from financial institutions. Thus, the authors claimed that the impacts of remittance on financial inclusion in El Salvador can be ambiguous. In the context of South Asia, [Mani \(2016\)](#) concluded that international remittances flow into the South Asian economies via various electronic money transfer initiatives; consequently, remittances were asserted to be conducive to enhancing the degree of financial inclusivity within this region. However, international remittances may not be efficient in triggering financial inclusion in South Asia since foreign migrants often prefer informal and unregistered channels to transfer funds to the families left behind ([Ozaki, 2012](#)).

### 2.3. The literature on the impacts of financial inclusion

Financial inclusion is featured in eight of the SDG<sup>1</sup> (UNSGSA, 2021; Mahadi et al., 2021). In respect of SDG1 which aims at eradicating poverty, several studies have concluded that financial inclusion helps to reduce poverty (Mushtaq and Bruneau, 2019; Aracil et al., 2022). In the South Asian context, it has been seen that use of rural banking services helps minimizing rural poverty incidences in India (Burgess and Pande, 2005). Regarding SDG2, which focuses on ending hunger, financial inclusion has been thought of as a means of enhancing agricultural productivity and ensuring food security in Nigeria (Fowowe, 2020). Referring to the goal of improving health and well-being under SDG3, financial inclusivity has been admitted to be efficient in boosting out-of-pocket health expenditure levels in Ghana (Koomson et al., 2021). This is particularly important for South Asian nations as out-of-pocket health expenses account for more than half of the total healthcare expenditure in Bangladesh and India (Asadullah et al., 2014; Tian and Kling, 2021).

In respect of reducing gender inequality and promoting economic empowerment of women under SDG 5, offering easy-to-access financial services has been acknowledged to foster asset accumulation among women across Nepal (Prina, 2015). Financial inclusion also plays a key role in contributing to the creation of decent job opportunities (SDG8) (Honohan 2012). Notably, enhancing access to credit helps to attain SDG targets by financing research and development for industrial innovation and infrastructural development (Mahadi et al., 2021). Regarding the role of financial inclusion in reducing all form of inequalities (SDG10), several studies have highlighted the importance of increasing financial inclusivity to curb income and gender inequality (Omar and Inaba, 2020). Similarly, financial inclusion has been argued to exhibit a key role in reducing income inequality and enhancing financial stability in the MENA region (Neaime and Gaysset, 2018). Financial inclusivity is also linked with the attainment of SDG17 (Joia and Cordeiro, 2021) and is deemed necessary for environmental development (SDG13), especially through the channel of climate financing (Le et al., 2020; Liu et al., 2022; Shahbaz et al., 2022). Lastly, linking microcredit access to cleaner energy affordability, financial inclusion is also acknowledged as a potential means of attaining the energy sustainability agenda of SDG7 (Manko and Watkins, 2021). Therefore, it is apparent that financial inclusion a critically important enabler of the SDG agenda of the United Nations.

### 3. Research methodology

In this section, the empirical models considered in this study, the data set used, and the estimation strategies are described.

#### 3.1. Empirical model specification

Based on the objective of identifying the macroeconomic determinants of financial inclusion in selected South Asian nations, the following empirical model is considered in this study:

$$FII_{it} = \delta_0 + \delta_1 INTC_{it} + \delta_2 YPC_{it} + \delta_3 MOB_{it} + \delta_4 INT_{it} + \delta_5 COR_{it} + \delta_6 REM_{it} + \varepsilon_{it} \quad (1)$$

where the subscript  $i$  refers to the cross-sectional units (i.e., the South Asian countries) and  $t$  stands for the period of analysis (2004–2018). The dependent variable FII is the financial inclusion index constructed utilizing the PCA technique using five financial inclusion indicators.<sup>2</sup> It ranges from 0 (lowest level of financial inclusion) to 100 (highest level of financial inclusion). On the other hand, the explanatory variables are as follows:

- INTC stands for internal conflict which is an index that measures the degree of political violence within an economy and can therefore be used as a proxy for political instability. This index takes into account the situations of civil war/coup threat, terrorism, and civil disorder within the country of concern and ranges from 0 (highest degree of internal conflict) to 12 (lowest degree of internal conflict). Hence, an increase (decrease) in the value of this index can be interpreted as a reduction (rise) in the level of internal conflict. Since political instability has been acknowledged to be detrimental to financial inclusion (Alhassan et al., 2021), the associated coefficient is hypothesized to be positive (i.e.,  $\frac{\partial FII}{\partial INTC} = \delta_1 > 0$ ).
- YPC abbreviates for the per capita national income level of the South Asian nations which proxies for their economic growth levels. The inclusion of this variable is motivated by the assertions made in the literature that it is relatively easier for richer economies to increase financial inclusivity (Aracil et al., 2022). As a result, the sign of the associated coefficient is positive (i.e.,  $\frac{\partial FII}{\partial YPC} = \delta_2 > 0$ ).
- MOB stands for mobile accessibility, proxied by the number of mobile cellular subscriptions per 100 people in the respective population of the concerned South Asian countries. We control for this variable based on the assumption that the application of ICT for providing modern financial services like mobile banking can reduce the associated transaction costs and facilitate financial inclusion (Evans, 2018; Chatterjee, 2020). Hence, the sign of the associated coefficient is expected to be positive (i.e.,  $\frac{\partial FII}{\partial MOB} = \delta_3 > 0$ ).
- INT stands for internet accessibility, proxied as the number of fixed broadband subscriptions per 100 people in the respective population of the concerned South Asian countries, which is the second indicator of ICT penetration considered in this study. It is believed that modern financial services involve the use of the internet whereby greater internet penetration facilitates financial

<sup>1</sup> These include SDG1, SDG2, SDG3, SDG5, SDG8, SDG9, SDG10, and SDG17.

<sup>2</sup> The principal component analysis outcomes are presented in Section 3.2.

inclusion (Rastogi and Ragabiruntha, 2018). Therefore, the sign of the associated coefficient is expected to be positive (i.e.,  $\frac{\partial FII}{\partial INT} = \partial_4 > 0$ ).

- COR abbreviates for the control of corruption index which is used as a proxy for institutional quality. This index ranges from -2.5 (low control of corruption or poor institutional quality) to 2.5 (high control of corruption or good institutional quality). Previous studies have identified poor institutional quality as a major factor inhibiting financial inclusion (Anthony-Orji et al., 2019). As a result, the sign of the associated coefficient is also expected to be positive (i.e.,  $\frac{\partial FII}{\partial COR} = \partial_5 > 0$ ).
- REM stands for the share of personal foreign remittances received in the total value-added of the concerned South Asian countries. Since remittance inflows have been recognized to have a positive influence on the demand for financial services by the remittance-receiving households (Anzoategui et al., 2014), it is assumed to be one of the major drivers of financial inclusion. It is particularly important in the context of South Asia since foreign remittances are vital income sources for all South Asian economies (Mercer-Blackman and Li, 2021). Therefore, the sign of the associated coefficient is anticipated to be positive, as well (signi.e.,  $\frac{\partial FII}{\partial REM} = \partial_6 > 0$ ).

In order to predict the elasticities of financial inclusion in response to marginal positive changes in the levels of internal conflict, economic growth, ICT penetration, institutional quality, and remittance inflows, we log transform all relevant variables presented in Eq. 1 to generate our baseline model (Model 1) which is shown in Eq. 2:

**Model 1**

$$FII_{it} = \partial_0 + \partial_1 INTC_{it} + \partial_2 \ln YPC_{it} + \partial_3 \ln MOB_{it} + \partial_4 \ln INT_{it} + \partial_5 COR_{it} + \partial_6 REM_{it} + \varepsilon_{it} \tag{2}$$

where the variables lnYPC, lnMOB, and lnINT refer to the natural logarithm levels of per capita national income, number of mobile subscriptions per 100 people, and number of fixed broadband subscriptions per 100 people. The rest of the variables are not log-transformed because these variables are either indices or ratios.

To further evaluate the mediating roles of internal conflict settlement in respect of facilitating financial inclusion across South Asia, we introduce interaction terms in our baseline models which can be shown as follows:

**Model 2:**

$$FII_{it} = \partial_0 + \partial_1 INTC_{it} + \partial_2 \ln YPC_{it} + \beta_1 (INTC * \ln YPC)_{it} + \partial_3 \ln MOB_{it} + \partial_4 \ln INT_{it} + \partial_5 COR_{it} + \partial_6 REM_{it} + \varepsilon_{it} \tag{3}$$

**Model 3:**

$$FII_{it} = \partial_0 + \partial_1 INTC_{it} + \partial_2 \ln YPC_{it} + \partial_3 \ln MOB_{it} + \partial_4 \ln INT_{it} + \partial_5 COR_{it} + \partial_6 REM_{it} + \beta_2 (INTC * REM)_{it} + \varepsilon_{it} \tag{4}$$

where the variable INTC\*lnYPC is the interaction term between internal conflict settlement and economic growth and the sign of the corresponding coefficient parameter ( $\beta_1$ ) provides an account of whether internal conflict settlement influences the relationship between economic growth and financial inclusion. The variable INTC\*REM is the interaction term between internal conflict settlement and international remittance inflow and the sign of the corresponding coefficient parameter ( $\beta_2$ ) indicates whether internal conflict settlement influences the relationship between remittance inflow and financial inclusion.

For robustness checks, we re-estimate all three empirical models using an political instability index (PINST) instead of the internal conflict index. The political instability index is provided by the World Bank’s Worldwide Governance Indicators database. This index ranges from -2.5 (highest degree of political instability) to 2.5 (lowest degree of political instability).

**Table 1**  
Principal component analysis (PCA) index of financial inclusion.

| Principal Component                     | Proportion Explained | Cumulative | Eigenvalue |             |             |
|---|----------------------|------------|------------|-------------|-------------|
| 1                                       | 0.890                | 0.890      | 2.750      |             |             |
| 2                                       | 0.087                | 0.977      | 2.175      |             |             |
| 3                                       | 0.010                | 0.987      | 1.850      |             |             |
| 4                                       | 0.006                | 0.996      | 0.658      |             |             |
| 5                                       | 0.004                | 1.000      | 0.222      |             |             |
| <b>Financial inclusion indicators</b>   |                      |            |            | <b>ATM</b>  | <b>ICB</b>  |
| Factor loadings (Principal Component 1) |                      | 0.592      | 0.725      | 0.961       | 0.982       |
| Factor loadings (Principal Component 2) |                      | 0.610      | 0.722      | 0.970       | 0.985       |
| Factor loadings (Principal Component 3) |                      | 0.625      | 0.755      | 0.973       | 0.950       |
| Factor loadings (Principal Component 4) |                      | 0.683      | 0.695      | 0.920       | 0.972       |
| Factor loadings (Principal Component 5) |                      | 0.739      | 0.548      | -0.776      | 0.290       |
| Kaiser-Meyer-Olkin (KMO)                |                      | 0.830      | 0.755      | 0.821       | 0.740       |
| Correlation with FII                    |                      | 0.884      | 0.777      | 0.890       | 0.900       |
|   |                      |            |            | <b>DEPO</b> | <b>LOAN</b> |

Note: ATM=number of ATMs per 100,000 adults, ICB= number of institutions of commercial banks, BCB= number of branches of commercial banks, DEPO= outstanding deposits with commercial banks, LOAN= outstanding loans from commercial banks, and FFI=financial inclusion index.

### 3.2. Data

We utilize annual data from four lower-middle-income South Asian nations (India, Bangladesh, Pakistan, and Sri Lanka) for the period between 2004 and 2018. The selection of the South Asian nations and the duration of the study period was determined by data availability. The financial inclusion index, constructed using the PCA technique, included data on five indicators of financial inclusion: (a) number of ATMs per 100,000 adults, (b) number of institutions of commercial banks, (c) number of branches of commercial banks, (d) outstanding deposits with commercial banks, and (e) outstanding loans from commercial banks. These variables have been widely used in the literature to construct composite indices of financial inclusion (Kim et al., 2018; Park and Mercado, 2021). Higher values of all these five financial inclusion indicators imply greater penetration of financial institutions, higher propensities of savings and borrowings, and greater degrees of account ownership among the adult population. The financial inclusion index ranges from 0 to 100 in ascending order of the level of financial inclusivity.

Table 1 presents the outputs from the rotated PCA. The statistical figures denote that the first three principal components explain almost 99% of the total variation in the estimated financial inclusion index. Moreover, as the corresponding eigenvalues of these three principal components are over 1, their significance is affirmed. Given that the fact that the predicting powers of the last two principal components are low and the corresponding eigenvalues are below 1, we decided to exclude them from the index construction process. Furthermore, high degrees of correlation can be witnessed between all five financial inclusion indicators and the constructed financial inclusion index.

Table 2 presents the measurement scale and corresponding data sources of the variables included in the empirical models. The descriptive statistics, correlation matrix, and variance inflation factor (VIF) analysis outputs are reported in Table 3. It is observed that the mean value of the financial inclusion index is only 43.34 which indicates that the overall level of financial inclusion in South Asian countries is quite poor. Besides, another important observation is that the control of corruption index ranges from  $-1.497$  to  $-0.145$ . Since the value of this index does not turn positive, it can be said that South Asian countries have not done too well in controlling corruption within their respective economy. Moreover, it is evident that all variables follow a platykurtic distribution. Further, the correlation matrix reflects a strong positive correlation between the outcome (FII) and explanatory variables (INTC, YPC, MOB, INT, COR, and REM).

### 3.3. Estimation strategy

The estimation strategy follows three steps. First, a set of pre-estimation tests are performed to check whether there are issues of cross-sectional dependency (CD) and slope heterogeneity (SH) in the data. These two panel data problems have been recognized to compromise the unbiased and consistency properties of unit root, cointegration, and regression outcomes (Sohag et al., 2017).

It is always important to check for the CD problem when using panel data sets of regional countries which are socioeconomically, geographically, and culturally connected. As a result, a particular macroeconomic shock can be simultaneously weathered by a couple of the countries included in the panel data. Under this notion, the connections among the South Asian nations can also be assumed to contribute to CD concerns within the data set being used in this study. To test this assumption, the Pesaran (2004) method is employed. Table 4 reveals that there are CD issues since the predicted test statistics are statistically significant, thus, rejecting the null hypothesis of cross-sectional independence. This finding is expected given the socioeconomic, geographic, and cultural connections amid the South Asian nations and also due to these nations being classified as lower-middle-income nations.

To test for SH, the Pesaran and Yamagata (2008) test of slope homogeneity is employed and the corresponding results are reported in Table 5. The test statistics are statistically significant implying that there are SH issues in the data. This is quite expected since the South Asian economies, despite being lower-middle-income nations, differ in terms of the year in which they graduated to this income group category. For instance, Bangladesh has recently enlisted itself into the lower-middle-income classification, whereas India achieved this feat much earlier. On the other hand, the source of SH could also be due to the fact that Pakistan is the only South Asian nation that does not trade much with its regional neighbors due to the political tensions within South Asia. Since both CD and SH problems have been identified, econometric techniques that address these issues are employed in this study.

Next, the panel unit root analysis is conducted to test whether the variables considered in this study are stationary. The outcomes from the unit root analysis reveal the integrating order among the variables which is needed to design the appropriate panel regression technique and is further imperative to avoid spurious regression findings (Dauda et al., 2021). Since there is CD in the data, the cross-sectionally adjusted Im-Pesaran-Shin (CIPS) method is employed (Pesaran, 2007). Then the panel cointegration analysis is performed to check whether there are long-run relationships between the outcome and explanatory variables included in the model.

**Table 2**  
Units and sources of data.

| Symbol | Variable  | Unit   | Data source          |
|--------|---|--|----------------------|
| FII    | Financial inclusion index                           | Index  | Authors' calculation |
| INTC   | Internal Conflict                                   | Index  | ICRG (2021)          |
| YPC    | per capita national income level                    | Constant 2010 US\$                           | World Bank (2021a)   |
| MOB    | Mobile accessibility                                | Subscriptions per 100 people                 | World Bank (2021a)   |
| INT    | Internet accessibility                              | Fixed broadband subscriptions per 100 people | World Bank (2021a)   |
| COR    | Control of corruption index                         | Index  | World Bank (2021b)   |
| REM    | Share of net foreign remittance receipts in the GDP | Percentage                                   | World Bank (2021a)   |

**Table 3**  
Descriptive statistics and correlation matrix.

| Panel A: Descriptive statistics |         |          |          |          |          |          |       |
|---------------------------------|---------|----------|----------|----------|----------|----------|-------|
| Variable                        | Min     | Max      | Mean     | St. Dev. | Skewness | Kurtosis | Obs.  |
| FII                             | 0.100   | 100.000  | 43.340   | 28.701   | 0.257    | 1.745    | 60    |
| INTC                            | 5.500   | 9.350    | 6.989    | 1.084    | 0.637    | 2.481    | 60    |
| YPC                             | 588.332 | 3944.880 | 1586.481 | 938.667  | 1.129    | 2.208    | 60    |
| MOB                             | 2.030   | 142.650  | 59.701   | 34.122   | 0.095    | 2.448    | 60    |
| INT                             | 0.010   | 7.270    | 1.222    | 1.558    | 2.032    | 1.145    | 60    |
| COR                             | -1.497  | -0.145   | -0.665   | 0.359    | -0.327   | 2.027    | 60    |
| REM                             | 2.601   | 10.587   | 6.203    | 2.335    | -0.067   | 1.718    | 60    |
| Panel B: Correlation matrix     |         |          |          |          |          |          |       |
|                                 | FII     | INTC     | YPC      | MOB      | INT      | COR      | REM   |
| FII                             | 1.000   |          |          |          |          |          |       |
| INTC                            | 0.789   | 1.000    |          |          |          |          |       |
| YPC                             | 0.627   | 0.749    | 1.000    |          |          |          |       |
| MOB                             | 0.846   | 0.448    | 0.250    | 1.000    |          |          |       |
| INT                             | 0.684   | 0.487    | 0.266    | 0.214    | 1.000    |          |       |
| COR                             | 0.762   | 0.557    | 0.306    | 0.326    | 0.223    | 1.000    |       |
| REM                             | 0.997   | 0.331    | 0.272    | 0.284    | 0.203    | -0.161   | 1.000 |

Note: FFI=financial inclusion index, INTC=internal conflict, YPC=national income per capita; MOB=mobile accessibility; INT=internet accessibility, COR=control of corruption index, and REM=share of foreign remittance in the GDP.

**Table 4**  
Pesaran (2004) CD test.

| Null Hypothesis: No cross-sectional dependence |          |           |         |          |          |         |          |
|--|----------|-----------|---------|----------|----------|---------|----------|
| Variables                                      | FII      | INTC      | lnYPC   | lnMOB    | lnINT    | COR     | REM      |
| <b>Pesaran CD Stat.</b>                        | 3.721*** | 5.1150*** | -1.828* | 5.942*** | -2.111** | -1.715* | 4.113*** |

Note: \*\*\*, \*\*, & \* denotes statistical significance at 1%, 5%, & 10% level, respectively; CD=cross-sectional dependency; FFI=financial inclusion index, INTC=internal conflict, YPC=national income per capita; MOB=mobile accessibility; INT=internet accessibility, COR=control of corruption index, and REM=share of foreign remittance in the GDP. ln stands for the natural logarithm of the respective variable.

**Table 5**  
Pesaran and Yamagata (2008) slope homogeneity test.

| Test Statistic                      | Model 1  | Model 2  | Model 3  |
|-------------------------------------|----------|----------|----------|
| <b>Δ-tilde stat.</b>                | 1.899**  | 3.101*** | 2.780*** |
| <b>Δ<sub>adj.</sub>-tilde stat.</b> | 2.340*** | 3.350*** | 3.121*** |

Note: \*\*\* and \*\* denote statistical significance at 1% and 5% levels, respectively

We employ the Westerlund (2007) technique to evaluate the possible long-run associations amid the variables, controlling for both CD and SH (Boukhelkhal, 2021).

Then, we utilize a second-generation panel regression method that is robust to handling both CD and SH issues in the data since failure to address these two issues simultaneously leads to biased regression estimates (Le and Sarkodie, 2020). Therefore, the common correlated effects mean group (CCEMG) panel data regression technique of Pesaran (2006) is used, which is efficient in handling cross-sectionally dependent heterogeneous panel data sets (Kapetanios et al., 2011). An additional benefit of this technique is its ability to handle endogeneity issues in the data (Damette and Marques, 2019). Related to the baseline model considered in this study (i.e., Model 1), the CCEMG model can be specified as follows:

$$FII_{it} = \vartheta_i + \varnothing_i X_{it} + \mu_i f_i + \rho_i \widehat{FII}_{it} + \tau_i \widehat{X}_{it} + e_{it} \tag{3}$$

where  $FII_{it}$  is a vector of the dependent variable (financial inclusion index),  $X_{it}$  is a vector of independent variables (internal conflict, economic growth, mobile and internet access rates, corruption control, and remittance inflows),  $\vartheta_i$  is the intercept,  $\varnothing_i$  are the slope coefficients for the respective cross-sections (i.e., the individual South Asian countries),  $f_i$  refers to the unobserved common properties with the non-homogeneous variations, and  $e_{it}$  refers to the error-term. From this equation, the CCEMG estimator is predicted as the mean of the slope coefficients of the respective cross-section for each of the individual regression analyses:

$$\gamma_{CCEMG} = N^{-1} \sum_{i=1}^N \widehat{\varnothing}_i \tag{4}$$

Additionally, for checking the robustness of the findings across alternative regression techniques, the augment mean group (AMG)



estimator, proposed by Eberhardt and Bond (2009), is also utilized in this study. This technique is also recognized for efficiently handling CD and SH concerns in the data.

#### 4. Results and discussions

In this section, we report and analyze the stationary properties of the variables included in the models. Table 6 shows that none of the variables are stationary at the level which is confirmed by the statistical insignificance of the corresponding predicted CIPS test statistics. However, the first-order difference of all these variables is stationary; notably, the corresponding CIPS test statistics are found to be statistically significant at the first difference. In line with these findings, we claim that all variables considered in this study have a common integration order of I(1). The affirmation of the stationarity of the variables nullifies the possibility of predicting spurious and inconsistent regression outcomes. Next, the possible long-run cointegration relationships among the variables are evaluated.

The results concerning the Westerlund (2007) panel cointegration analysis, reported in Table 7, certify that there is the existence of cointegrating equations in each of the three models because the some of the predicted test statistics are statistically significant. Hence, it can be claimed that financial inclusion within the selected South Asian nations has long-run associations with internal conflict settlement, economic growth, ICT penetration, institutional quality, and international remittance inflows. The cointegration analysis is followed by the panel regression analysis.

Table 8 presents the results from the CCEMG and AMG analysis for all three models. Firstly, for the baseline model (Model 1), it can be observed that resolving internal conflicts, synonymous with reducing political instability, promotes financial inclusion within the selected South Asian nations. The positive sign of the corresponding predicted elasticity parameter affirms this claim. Hence, reducing internal conflicts by lowering terrorism threats, the government gaining the confidence of the public to reduce anti-government demonstrations, curbing civil war threats, and minimizing other forms of political violence, can be the platform required for enhancing the demand for modern financial services. That is, internal conflict settlement can be deemed effective in minimizing the difficulty of doing business and allowing the private sector to borrow more funds for investment purposes. On the other hand, internal conflict settlement-induced political stability can also be a means for boosting private savings since under unstable political environments people may be apprehensive and not confident enough to save their money in formal financial institutions. Furthermore, since political instability can enforce frequent policy changes, it can unsettle the business environment whereby investment in foreign countries, both through formal and informal channels, can be thought of as a safer investment decision compared with domestic investment. Under such circumstances, a more stable political system would ensure the implementation of long-term policies to guarantee good returns on domestic investments making the local financial system more inclusive. Similarly, Davies (2010) argued that reducing political risks can reduce capital flight whereby more utilization of funds domestically can be effective in promoting financial inclusion. Likewise, Kapoor (2014) highlighted that decreasing ethnic conflict can drive greater financial inclusion in the emerging economy of India. Several studies have also statistically verified that political instability results in lower degrees of financial inclusion (Nkoa and Song, 2020; Alhassan et al., 2021).

The outcomes related to Model 1 also show that economic growth is detrimental to financial inclusion within South Asia. The negative sign of the statistically significant elasticity estimate indicates that as the national income per capita increases the value of the financial inclusion index declines. A possible explanation for this finding could be that the robust growth of the South Asian nations in the last decade or so has accompanied the worsening of the level of income inequality across this region (SAAPE, 2019). Therefore, it can be assumed that such economic growth-led income inequality, alongside high levels of income poverty, could have resulted in a large proportion of the South Asian adult population remaining financially excluded. The high degree of income inequality suggests that relatively fewer people would be demanding financial services compared with a scenario in which the national income distribution is more equitable. On the other hand, it has also been acknowledged in the literature that if economic growth cannot simultaneously ensure the implementation of transparent government policies, especially within the financial sector, it can lead to financial irregularities whereby the financial system may collapse (Trans et al., 2022). Consequently, under such circumstances, the growth of the national economy may not guarantee greater financial inclusivity. The finding of the negative correlation between economic

**Table 6**  
CIPS panel unit root analysis.

| Null Hypothesis: The series is non-stationary |                |                |                |
|---|----------------|----------------|----------------|
| Variable                                      | Test Statistic | Variable       | Test Statistic |
| FII   | -2.190         | $\Delta$ FII   | -3.231***      |
| INTC  | -1.876         | $\Delta$ INTC  | -2.719***      |
| lnYPC   | -1.636         | $\Delta$ lnYPC | -2.887***      |
| lnMOB   | -1.434         | $\Delta$ lnMOB | -2.355***      |
| lnINT   | -1.712         | $\Delta$ lnINT | -2.885***      |
| COR   | -2.072         | $\Delta$ COR   | -4.018***      |
| REM   | -1.347         | $\Delta$ REM   | -3.383***      |

Note:  $\Delta$  indicates first difference; the optimal number of lags is determined by the Bayesian Information Criterion (BIC); \* \*\* denotes statistical significance at 1% level; FFI=financial inclusion index, INTC=internal conflict, YPC=national income per capita; MOB=mobile accessibility; INT=internet accessibility, COR=control of corruption index, and REM=share of foreign remittance in the GDP. ln stands for the natural logarithm of the respective variable.

**Table 7**  
Westerlund (2007) panel cointegration analysis.

| Null Hypothesis: No cointegrating relationship |           |            |           |          |                      |
|--|-----------|------------|-----------|----------|----------------------|
| Model  | Ga        | Gt         | Pa        | Pt       | Decision             |
| (1)  | -3.350*** | -4.262     | -6.100**  | -4.010*  | Cointegration exists |
| (2)  | -3.315*** | -4.700     | -7.990*** | -6.120** | Cointegration exists |
| (2)  | -3.250*** | -10.130*** | -19.340** | -7.760** | Cointegration exists |

Note: The optimal lags section is based on BIC; \*\*\*, \*\*, and \* denote statistical significance at 1%, 5%, and 10% significance levels, respectively; the test statistics (Ga, Gt, Pa, and Pt) are estimated using 6000 bootstrapped replications.

**Table 8**  
CCEMG and AMG panel regression analysis.

| Dependent variable: FII |                         |                         |                        |                         |                        |                         |
|-------------------------|-------------------------|-------------------------|------------------------|-------------------------|------------------------|-------------------------|
| Estimator               | Model 1                 |                         | Model 2                |                         | Model 3                |                         |
|                         | CCEMG                   | AMG                     | CCEMG                  | AMG                     | CCEMG                  | AMG                     |
| <b>Regressors</b>       |                         |                         |                        |                         |                        |                         |
| INTC                    | 1.204**<br>(0.561)      | 1.020**<br>(0.501)      | 1.340**<br>(0.450)     | 1.329***<br>(0.448)     | 1.828***<br>(0.624)    | 1.915***<br>(0.758)     |
| lnYPC                   | -120.309***<br>(39.729) | -200.180***<br>(42.860) | -173.722**<br>(68.672) | -260.820***<br>(61.935) | -107.711**<br>(53.733) | -203.512***<br>(42.452) |
| lnMOB                   | 2.172**<br>(0.876)      | 2.155**<br>(1.005)      | 2.416***<br>(0.613)    | 2.792***<br>(0.761)     | 2.376**<br>(1.173)     | 2.279**<br>(1.036)      |
| lnINT                   | 1.286<br>(1.659)        | 1.638<br>(1.619)        | 1.502<br>(1.143)       | 1.420<br>(1.136)        | 1.826<br>(1.532)       | 1.810<br>(1.366)        |
| COR                     | 1.968***<br>(0.359)     | 1.628***<br>(0.369)     | 1.077**<br>(0.506)     | 1.618**<br>(0.795)      | 1.450***<br>(0.412)    | 1.484***<br>(0.535)     |
| REM                     | 0.401<br>(0.336)        | 0.323<br>(0.396)        | 0.262<br>(0.308)       | 0.264<br>(0.260)        | 0.373<br>(0.295)       | 0.323<br>(0.299)        |
| (INTC*lnYPC)            |                         |                         | 6.924***<br>(1.381)    | 6.579***<br>(1.266)     |                        |                         |
| (INTC*REM)              |                         |                         |                        |                         | 0.913***<br>(0.298)    | 0.856***<br>(0.214)     |
| Constant                | -48.300***<br>(17.101)  | -45.122***<br>(17.216)  | -51.212***<br>(16.305) | -52.305***<br>(16.215)  | -51.341***<br>(17.555) | -54.880***<br>(17.890)  |
| RMSE                    | 0.021                   | 0.035                   | 0.032                  | 0.034                   | 0.055                  | 0.058                   |
| Wald Stat.              | 42.160                  | 41.423                  | 42.423                 | 45.134                  | 43.223                 | 43.216                  |
| Observations            | 60                      | 60                      | 60                     | 60                      | 60                     | 60                      |

Note: \*\*\* and \*\* denote statistical significance at 1% and 5% levels, respectively; the standard errors are reported within the (); RMSE refers to the root mean square error which indicates the residual size of the respective model; FFI=financial inclusion index, INTC=internal conflict, lnYPC=national income per capita; MOB=mobile accessibility; INT=internet accessibility, COR=control of corruption index, REM=share of foreign remittance in the GDP, INTC\*lnYPC=interaction term between INTC and lnYPC, INTC\*REM=interaction term between INTC and REM, CCEMG=common correlated effects mean group, and AMG=augmented mean group. ln stands for the natural logarithm of the respective variable.

growth and financial inclusion contradicts the conclusion of [Aracil et al. \(2022\)](#) that relatively wealthier developing nations have a higher possibility of improving the level of financial inclusion.

As far as the impacts of ICT on financial inclusion are concerned, the results from Model 1 reveal that greater access to mobile services is effective in boosting financial inclusion, while higher internet accessibility is not associated with a change in the level of financial inclusion in South Asia. This is evident from the statistically significant positive elasticity parameter attached to the variable lnMOB while that attached to the variable lnINT is statistically insignificant. These contrasting findings reflect that people across South Asia, especially those living below the poverty line and residing in rural areas, prefer mobile banking over internet banking. This is because mobile banking services are relatively easier to access while internet banking involves a more complex process and requires greater financial literacy. Similarly, [Lenka and Barik \(2018\)](#) have concluded that the expansion of mobile services has spurred financial inclusion in South Asian economies. Besides, the finding of greater mobile penetration resulting in higher financial inclusivity corroborates the view presented by [Hazra and Priyo \(2021\)](#) that people in Bangladesh prefer using mobile financial services due to these services being easily accessible. [Evans \(2018\)](#) also found evidence of a higher degree of mobile penetration being responsible for greater financial inclusion in Africa. The finding that internet penetration does not influence financial inclusion in South Asia could be because in remote localities the internet services may not be of good quality whereby availing the modern financial services online can be a cumbersome task. The issue of low internet accessibility in rural neighborhoods in Mexico was also highlighted by [Martínez-Domínguez and Mora-Rivera \(2020\)](#). Hence, unless the level of internet penetration in these areas is not substantially enhanced, greater financial inclusion via the use of the internet may not be that prominent. Our finding contradicts the views presented by [Morgan \(2022\)](#) who claims that extending financial services using internet-based service deliveries can foster financial inclusion in Southeast Asian countries and India.

The results also show that improving institutional quality by controlling corruption can be effective in boosting financial inclusion in South Asia. This is evident from the positive sign of the statistically significant elasticity parameter attached to the variable COR. Poor institutional quality and corruption practices within the financial systems make it difficult for the private sector to consume the financial services that are on offer; thus, corruption is assumed to discourage investment (Mauro and Driscoll, 1997). For instance, rent-seeking activities can inflate the real costs of taking loans and, therefore dampen the number of loan applications. Similar conclusions were drawn in the study by Ahamed and Malik (2019) who claim that improving institutional quality enhances the affordability of using financial services which, in turn, helps promoting financial inclusivity. Accordingly, Ravallion and Chen (2003) argued that stronger institutions facilitate financial inclusion by developing the financial markets. Emphasizing the impact of corruption on financial sectors of emerging nations, Song et al. (2021) concluded that corruption is more of a threat for developing nations since it reduces inclusiveness within the financial sectors, while these impacts are not so prominent in the context of developed nations in which the corruption levels are already low.

Lastly, it is seen that the influx of foreign remittances does not influence financial inclusion in South Asia. This is evident from the statistical insignificance of the elasticity parameter attached to the variable REM. This surprising finding can be explained from two perspectives. First, since migrant workers from South Asia prefer to remit their earnings using informal channels (Ozaki, 2012), it may not be effective in boosting the demand for formal financial services within the remittance-receiving households; consequently, the overall impact of remittance inflows on financial inclusivity is not to be prominent. Moreover, unstable economic conditions can have a dampening effect on the flow of remittances into the native country of the migrant whereby it can discourage the migrants from remitting funds to the left-behind household members. As a result, low remittances may not have a sizeable effect on financial inclusion, as well. Second, although foreign remittances flowing into the South Asian economies have modestly increased over the period considered in this study, apart from Pakistan, the shares of net remittance inflow in the GDP of the other three South Asian countries have not made significant progress. Between 2004 and 2018, this share increased by merely 0.18, 0.27, and 0.39 percentage points in Bangladesh, India, and Sri Lanka, respectively. Therefore, it can be said that since the remittance inflow shares have not increased to a great extent, the incoming remitted funds could not exert a sizeable impact in boosting financial inclusion.

Looking into the key regression outcomes in the context of the augmented baseline models (i.e., Models 2 and 3), it is evident that internal conflict settlement moderates the nexus between economic growth and financial inclusion. The positive sign and the statistical significance of the elasticity parameter attached to the corresponding interaction term in Model 2 show that internal conflict resolution and economic growth jointly contribute to boosting financial inclusion in South Asia. It is to be noted that economic growth is earlier found to adversely impact financial inclusion; however, when interacting with internal conflict settlement, the adverse effects of economic growth are reduced to some extent. This mechanism can be explained by the fact that since economic growth accompanies income inequality in almost all South Asian countries, the demand for financial services is accounted for by a relatively lower

**Table 9**  
Robustness analysis using the political instability index.

| Dependent variable: FII |                         |                         |                         |                         |                        |                         |
|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|------------------------|-------------------------|
| Estimator               | Model 1                 |                         | Model 2                 |                         | Model 3                |                         |
|                         | CCEMG                   | AMG                     | CCEMG                   | AMG                     | CCEMG                  | AMG                     |
| <b>Regressors</b>       |                         |                         |                         |                         |                        |                         |
| <b>PINST</b>            | 2.265**<br>(1.100)      | 2.620***<br>(1.121)     | 2.550***<br>(1.050)     | 2.775***<br>(1.112)     | 2.898***<br>(1.215)    | 2.999***<br>(1.355)     |
| <b>lnYPC</b>            | -115.231***<br>(36.221) | -175.121***<br>(44.230) | -150.221***<br>(65.121) | -210.449***<br>(72.212) | -130.342**<br>(50.221) | -223.568***<br>(69.284) |
| <b>lnMOB</b>            | 2.332**<br>(0.990)      | 2.430**<br>(1.200)      | 2.010**<br>(0.983)      | 2.100**<br>(0.991)      | 2.112**<br>(1.001)     | 2.130**<br>(1.022)      |
| <b>lnINT</b>            | 1.350<br>(1.719)        | 1.650<br>(1.522)        | 1.763<br>(1.493)        | 1.700<br>(1.356)        | 1.925<br>(1.432)       | 1.980<br>(1.462)        |
| <b>COR</b>              | 2.212***<br>(0.559)     | 2.425***<br>(0.669)     | 1.750**<br>(0.524)      | 1.719***<br>(0.595)     | 1.750***<br>(0.552)    | 1.787***<br>(0.590)     |
| <b>REM</b>              | 0.345<br>(0.290)        | 0.345<br>(0.299)        | 0.288<br>(0.214)        | 0.290<br>(0.220)        | 0.355<br>(0.280)       | 0.372<br>(0.310)        |
| <b>(PINST*lnYPC)</b>    |                         |                         | 4.320**<br>(2.150)      | 4.650**<br>(2.266)      |                        |                         |
| <b>(PINST*REM)</b>      |                         |                         |                         |                         | 0.855***<br>(0.121)    | 0.896***<br>(0.150)     |
| <b>Constant</b>         | -55.175***<br>(16.502)  | -61.425***<br>(18.216)  | -61.333***<br>(15.290)  | -65.980***<br>(17.339)  | -45.490***<br>(15.235) | -48.500***<br>(15.130)  |
| <b>RMSE</b>             | 0.030                   | 0.041                   | 0.035                   | 0.032                   | 0.077                  | 0.078                   |
| <b>Wald Stat.</b>       | 46.120                  | 48.389                  | 41.785                  | 40.234                  | 49.150                 | 45.349                  |
| <b>Observations</b>     | 60                      | 60                      | 60                      | 60                      | 60                     | 60                      |

Note: \*\*\* and \*\* denote statistical significance at 1% and 5% levels, respectively; the standard errors are reported within the (); RMSE refers to the root mean square error which indicates the residual size of the respective model. FFI=financial inclusion index, PINST=political instability index, YPC=national income per capita; MOB=mobile accessibility; INT=internet accessibility, COR=control of corruption index, REM=share of foreign remittance in the GDP, PINST\*lnYPC=interaction term between PINST and lnYPC, PINST\*REM=interaction term between PINST and REM, CCEMG=common correlated effects mean group, and AMG=augmented mean group. ln stands for the natural logarithm of the respective variable.

proportion of the South Asian population. Under such circumstances, reducing internal conflicts can be a mechanism for the government to enact socially-inclusive economic growth policies that can make the national income distribution more even. Consequently, economic growth can be assumed to foster greater inclusivity within the financial sectors of South Asian nations. On the other hand, economic growth may not guarantee adequate capital accumulation and reinvestments, particularly if the political and other macroeconomic environments are not conducive to ensuring sufficient return on investments. Hence, mitigating internal conflicts for stabilizing the macroeconomic dynamics can be anticipated to ensure that economic growth is accompanied by greater financial inclusion in South Asia. In line with this finding, it can be asserted that along with the adoption of policies aimed at boosting economic growth, the associated governments of South Asian countries should emphasize the mitigation of internal conflicts for making economic growth socially inclusive and improving financial inclusivity, in tandem.

Further, the findings show that internal conflict settlement acts as a mediator between remittance inflows and financial inclusion, evident from the positive sign of the statistically significant elasticity parameter attached to the interaction term in Model 3. This finding implies that although the inflow of international remittances independently has no impact on financial inclusion across South Asia, it interacts with internal conflict settlement to jointly boost financial inclusion. This could be because when internal conflicts are reduced, the foreign migrants tend to gain confidence in remitting funds using formal channels which may increase the demand for formal financial services among the left-behind family members of the expatriates. In addition, the remittances received can also be saved or invested using different financial services provided the political condition is stable and the uncertainties regarding the returns on investments are neutralized. Accordingly, the extent of financial inclusivity in South Asia can be expected to go up further. These moderating and mediating roles of internal conflict settlement in respect of stimulating financial inclusion has key policy implications both from the perspectives of political decision-making and conceptualization of strategies for future expansion of the financial sectors.

To test the robustness of the findings, the political instability index is used instead of the internal conflict index. Table 9 shows that reducing political instability also helps promote financial inclusivity in South Asia and influences the impacts of economic growth and remittance inflows on financial inclusion. The similarity of the findings may be explained by the fact that the political instability index covers a wide range of sources of political instability, including the intensities of both internal (ethnic and religious) and external (regional) conflicts (World Bank 2021). Therefore, our findings are considered robust across the two alternate proxies of political instability.

## 5. Conclusion and policy recommendations

In the quest for attaining the 2030 SDG of the United Nations, enhancing financial inclusivity has become an integral aspect of SDG policy-making across the globe. In particular, making the financial sector more inclusive is of utmost importance in the context of developing nations in which a significant segment of the population has limited access to modern financial services, especially due to largely being poverty-stricken and facing high incidences of income inequality. Similarly, the majority of South Asian nations have not been able to substantially capitalize on their remarkable growth performances in alleviating poverty and reducing income inequality; consequently, lack of financial inclusiveness has remained a major concern for the associated governments. Against this backdrop, this study aimed to assess the effects of internal conflicts, economic growth, ICT penetration, institutional quality, and remittance inflows on financial inclusion in a sample of four major South Asian nations. Moreover, this study made an interesting contribution to the financial inclusion-related literature by not only exploring the direct impacts of international conflict settlement on financial inclusion but also probing into the possible indirect channels through which it can influence the financial inclusivity levels in the selected South Asian countries. To achieve this objective, second-generation econometric estimation techniques have been utilized which can handle panel data concerns related to CD and SH.

The key findings from this study can be summarized as follows. It was evidenced that resolving internal conflicts, enhancing accessibility of mobile phones, and controlling corruption help to enhance financial inclusivity while higher economic growth inhibits financial inclusion in the South Asian countries of concern. Besides, greater internet accessibility and higher influx of foreign remittances are seen to be inefficient in influencing the financial inclusivity levels in these countries. Moreover, the results also revealed that internal conflict settlement exerts a moderating effect on the relationship between economic growth and financial inclusion while evidence regarding a mediating impact of internal conflict settlement on the nexus between foreign remittance influx and financial inclusion was also evidenced. Hence, these moderating and mediating impacts indicated that internal conflict settlement not only boosts financial inclusivity directly but also promotes financial inclusion indirectly by jointly improving financial inclusivity with economic growth and foreign remittance influx. Therefore, keeping into account these critically important findings, a set of policy recommendations is put forward which can enable the South Asian nations to enhance inclusiveness within their respective financial sectors.

Firstly, emphasizing the relevance of resolving internal conflicts, it is pertinent for the governments to reduce the political violence-related threats within the respective economies. Besides, controlling terrorism should also be considered a mechanism for reducing internal conflict in this region, especially in the context of Pakistan where multiple terrorist activities have been recorded in the past. On the other hand, in the context of all the selected South Asian countries, the government needs to reduce the distrust and dissatisfaction of the public with the political parties in power so that a harmonious public-private relationship can be established in these countries. Overall, it is necessary for the South Asian governments to promote political stability so that the adverse effects of political instability on financial inclusion can be minimized. Implementation of these suggested policies within South Asia can be expected to help the financial institutions in the associated countries to provide better financial services to the private sector and, therefore, enable them to achieve the SDG agenda within due course.

Apart from resolving internal conflicts, the South Asian governments should simultaneously aim at establishing socially inclusive

growth so that economic growth does not further aggravate the levels of poverty and income inequality and hamper the process of enhancing financial inclusivity. This is important since households living below the poverty line are likely to spend their entire income on food consumption purposes; consequently, the savings and investment levels within such households are likely to be extremely low. On the other hand, rising income inequality is also likely to reduce the demand for financial services among poor households, in particular. More importantly, addressing the poverty and income inequality issues, that may accompany economic growth, can also help in lessening the intensity of internal conflicts since poverty alleviation and equitable income distribution can be assumed to improve the private-public relationships further.

Referring to ICT penetration and its impact on the financial sector, it is necessary to reduce the financial transaction costs incurred by users for availing mobile banking services. For instance, since mobile banking service providers provide the opportunity to their clients for transferring or withdrawing funds, exempting fees associated with such transfers and withdrawals can be assumed to further stimulate financial inclusion through these channels. On the other hand, ensuring low-cost internet connectivity is also pertinent for influencing users in subscribing to online banking services. In addition, online banking processes need to be made simpler so that a great deal of financial literacy is not required to use these services. This is especially important for the relatively less-educated people in South Asia who prefer using mobile financial services over internet banking due to having inadequate internet banking literacy. Moreover, to enhance internet accessibility, it is pertinent to develop the infrastructure, especially across the remote areas. Advanced infrastructure is needed for providing greater internet access so that a larger portion of the South Asian population can be brought under internet coverage. This, in turn, can further facilitate the process of enhancing financial inclusion in South Asia through the channel of internet accessibility. Furthermore, it is also important to run financial literacy-building campaigns, especially for the poor and less-educated people who do not have formal banking accounts and are heavily reliant on informal credits facilities.

Regarding corruption control for promoting greater financial inclusivity, it is pertinent for the South Asian governments to make sure that corrupt officials, especially those designated for governing the financial sector, should be brought under the law and punished if found guilty. In addition, the severity of such penalties should be set at a high level since less-stringent penalties may not be effective in reducing rent-seeking activities within the financial sector. More importantly, the public sector in the respective South Asian nations should be made more transparent and accountable so that the corruption-free public institutions can set an example for the private financial institutions to refrain from seeking rents in exchange for extending financial services to the public. In this regard, the central banks of South Asian countries are expected to play a major role by closely monitoring the operational activities of private commercial banks and non-bank financial institutions. This could ensure that private financial services are delivered without being accompanied by any form of unethical practices that may enhance the transaction costs of availing financial services. Lastly, regarding foreign remittance inflows, it has become extremely important for governments across South Asia to incentivize the use of formal channels for remitting funds. In this regard, subsidizing the remittance transferal fees charged by banks and other financial agencies can be a credible means of boosting financial inclusivity via the channel of foreign remittances. In addition, these financial institutions can also arrange cash incentives for their clients for using formal financial services to collect the remitted funds.

The limitation of data unavailability could not allow the inclusion of other South Asian nations in our country sample. Hence, the findings could be subject to an exclusion bias in this regard. Moreover, as this current study solely focuses on South Asian nations, the findings may not be completely relevant to countries outside South Asia. However, the findings can be partially relevant for countries having similar levels of national income and other key macroeconomic characteristics. Therefore, to check the external validity of the outcomes derived from this study, a similar analysis can be conducted for countries belonging to other global regions. Besides, it may be interesting to assess whether reducing external conflicts can exert similar effects on financial inclusion in South Asia.

### CRedit authorship contribution statement

**Muntasir Murshed:** Conceptualization, Formal analysis, Validation, Methodology, Software, Investigation, Supervision, Visualization, Writing – original draft, Writing – review & editing. **Rizwan Ahmed:** Data curation, Writing – original draft, Writing – review & editing. **Raad Mahmoud Al-Tal:** Writing – review & editing, Investigation. **Chamaiporn Kumpamool:** Formal analysis, Methodology, Investigation, Writing – review & editing. **Witchulada Vetchagool:** Formal analysis, Investigation, Writing – review & editing. **Rafael Avarado:** Formal analysis.

### Data Availability

Data will be made available on request.

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