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Article

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Borsa İstanbul Review

Provided in Cooperation with:

Borsa İstanbul Anonim Şirketi, İstanbul

Suggested Citation: Aich, Bithe Rani; Tareque, Mohammad; Ahmed, Tasfia Tasneem; Rahman, Md. Mominur (2025) : Unveiling the nexus of financial inclusion and political stability for capital market participation in South Asian regions, Borsa İstanbul Review, ISSN 2214-8469, Elsevier, Amsterdam, Vol. 25, Iss. 6, pp. 1101-1115,
<https://doi.org/10.1016/j.bir.2025.06.008>

This Version is available at:

<https://hdl.handle.net/10419/340626>

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Unveiling the nexus of financial inclusion and political stability for capital market participation in South Asian regions

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ARTICLE INFO

Keywords:

Financial inclusion
Political stability
Capital market
ARDL
South Asian Countries

ABSTRACT

Frequent political uncertainty, governance challenges, financial inaccessibility, and inconsistent policy environments in South Asian countries undermine investor confidence and obstruct the development of capital markets. Thus, this study is motivated to investigate the long-term and short-term consequences of financial inclusion and political stability on capital market participation in South Asian countries. We used a panel ARDL model as the estimates demonstrated no cross-sectional dependence, considerable cointegration, and variables with mixed-level stationarity. The results highlighted financial inclusion, literacy, and savings as the most significant determinants influencing capital market participation in South Asian economies. Interestingly, while political stability did not show a direct long-term effect, its indirect influence through variables such as investor confidence and institutional trust warrants further exploration. The findings suggest that policymakers should prioritize expanding financial inclusion initiatives, improving financial and general literacy rates, and adopting policies that encourage a balanced-saving-investment behavior among citizens to strengthen capital markets.

1. Introduction

Capital markets play a crucial role in mobilizing savings, transforming them into productive assets, and fostering economic growth. In recent decades, capital markets in South Asia, which include varied economies such as India, Bangladesh, Pakistan, Sri Lanka, Nepal, Bhutan, and the Maldives, remain a significant but understudied component of financial systems, frequently overshadowed by the dominance of banking sectors (Lim, 2015). Despite the potential for growth, capital market participation rates in South Asian countries remain much lower than global standards, highlighting the need to understand the underlying factors that drive investor behavior and capital market dynamics (Gu et al., 2023). This study aims to investigate the relationship between financial inclusion, political stability, and capital market participation with a balanced panel of South Asian countries. Understanding the factors that drive capital market involvement is especially essential in South Asia, where there are significant inequalities in financial inclusion and political stability, both of which have a direct impact on how individuals and institutions interact with capital markets (Lim, 2015).

Financial inclusion and political stability have emerged as two key drivers of economic progress, with significant implications for capital

market participation. Financial inclusion, or the accessibility and availability of financial services to all segments of society, is crucial for increasing savings, lowering income inequality, and boosting economic empowerment (Demirgüç-Kunt et al., 2020). Political stability, on the other hand, fosters long-term economic activity by maintaining investor trust and lowering market volatility-related risks (Alesina et al., 1996). We considered these two variables as key independent variables to examine their impact on capital market participation, which is our dependent variable. We believe market capitalization, equity turnover, and stock traded as proxies for capital market participation. Because market capitalization indicates the total value of all listed shares in a stock market, expressed as a percentage of GDP, higher ratios indicate a more developed and integrated capital market (Levine & Zervos, 1998). The equity turnover ratio measures the liquidity of the stock market, and a higher turnover ratio reflects frequent trading and better market efficiency (Beck & Levine, 2004). The proxy stock traded measures market value, expressed as a percentage of GDP, indicating how actively investors are participating in stock transactions relative to the economy's output (Demirgüç-Kunt & Levine, 1996). These three indicators—market capitalization, equity turnover, and stocks traded—offer a comprehensive view of capital market participation by capturing market size, liquidity, and activity. To enhance the robustness of our model and

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<https://doi.org/10.1016/j.bir.2025.06.008>

Received 23 April 2025; Received in revised form 22 June 2025; Accepted 24 June 2025

Available online 25 June 2025

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address potential omitted variable bias, we include control variables: inflation, growth rate,¹ literacy rate and saving rate are used to account for additional factors that may influence the dependent variable, thereby ensuring a more accurate and reliable interpretation of the relationship between the key independent variables.

The macroeconomic stability and capital market growth theory posits that financial market development and investor involvement are contingent upon macroeconomic stability, as economic instability discourages investment and erodes market trust (Demirgüç-Kunt & Levine, 1996). Furthermore, the financial market development theory emphasizes the significance of well-functioning financial markets in fostering economic growth by efficiently mobilizing savings, mitigating risk, and promoting trade and investment (Levine, 1997). Finally, the study incorporates ideas from the behavioral economics model, which emphasizes the importance of financial literacy and access to financial services in influencing financial decision-making and capital market involvement (Lusardi & Mitchell, 2014). These theoretical views provide a solid foundation for studying the factors that influence capital market involvement in South Asia.

Fig. 1 illustrates the trends and distribution patterns of our study's key variables across countries, providing a comprehensive visualization of cross-country variation in key financial and socioeconomic metrics. By presenting these variables side by side for each country, the figure facilitates a rapid assessment of how financial market activity, macroeconomic conditions, and development indices vary across different settings. Notably, the data shows significant variations in capital market development measures, with some countries showing very high values while others remain relatively low. Similarly, financial and socioeconomic indicators, such as financial inclusion, literacy rates, and savings rates, vary significantly among countries.

Qamruzzaman and Wei (2019) found a strong asymmetric relationship between financial inclusion and stock market development, as well as foreign capital flows, in 58 developing countries. The study by Babarinde et al. (2022) found that while deposit, bank, and credit penetration have a positive impact on stock market turnover, they are not significant determinants of liquidity. A study in Nepal reveals that financial literacy has a significant influence on individuals' investment in the stock market, indicating that increased access to financial services encourages this behavior (Shrestha & Rana, 2024). A study focusing on Pakistan found that political instability negatively impacts MSCI index values, with the effect being more pronounced in developed countries (Mai et al., 2023). Research in numerous countries has found that political stability is associated with more stable stock market returns and lower volatility, highlighting its relevance in financial markets (Alim et al., 2024). By considering existing pieces of literature and the theories mentioned earlier, we aim to examine the relationship between financial inclusion and capital market participation in South Asian countries, while also analyzing the impact of political stability on capital market engagement. As the interrelation among these variables is further influenced by some other macroeconomic factors (Usman & Adejare, 2013) we have also tried to identify the impacts of other macroeconomic variables: inflation, growth rate, literacy rate, and saving rate as controls.

There are a few significant gaps in the existing literature regarding the relationship between financial inclusion, political stability, and capital market participation, particularly in the South Asian region. While some studies have examined related topics, they are often limited by regional scope. For instance, Akpene Akakpo et al. (2022) investigated the impact of financial literacy and financial inclusion on stock market participation; however, their study focused solely on Ghana. Qamruzzaman and Wei (2019) investigated the effect of financial inclusion and stock market development on foreign capital flows in developing countries, while Foguesatto et al. (2024) explored the

relationship between market risk and financial inclusion. However, no study has specifically analyzed the impact of financial inclusion on capital market participation in the South Asian region, which is a critical area of inquiry given the region's persistent lack of accessible financial services and limited market participation from rural and low-income populations.

Similarly, while research has addressed the connection between political stability and stock market participation, it remains geographically limited. Asteriou (2016) assessed the relationship between stock market development, political instability, and economic growth in Greece; Chau et al. (2014) focused on political uncertainty and stock market volatility in the MENA region; and Mai et al. (2023) analyzed the impact of political instability on stock market performance in Pakistan only. However, no study has explored how political stability influences capital market participation across the broader South Asian region, which is essential because frequent political uncertainty, governance challenges, and inconsistent policy environments in these countries undermine investor confidence and obstruct the development of capital markets. This disparity highlights the need for a more comprehensive understanding of how these factors impact capital market participation in South Asia. For this purpose, this study aims to explore two key research questions. First, what is the relationship between financial inclusion and capital market participation in South Asian countries? Second, how does political stability influence capital market participation in South Asia?

To achieve the study's primary purpose, the study finds that the panel ARDL method is the most suitable estimation method for analyzing the impact of financial inclusion and political stability on capital market participation in South Asian economies, as the data used are stationary, cross-sectional, independent, and heterogeneous. After using the Panel ARDL model, we find that financial inclusion is a key determinant of capital market participation. On the other hand, Political Stability did not show a direct long-term influence on capital market participation. We then chose to use Pooled OLS, Fixed Effects, and Random Effects models to validate our findings, which yield nearly identical results. Finally, we have used MMQR to check the Robustness of our model.

This study makes several significant contributions to the existing literature by combining the understanding of the impact of financial inclusion and political stability on capital market participation in South Asia. Unlike earlier studies, which treated these elements separately, this study provides a comprehensive understanding of how financial inclusion and political stability interact to promote capital market participation. Firstly, we explore the relationship between financial inclusion and capital market participation in South Asian contexts. Secondly, we analyze how political stability influences capital market participation in South Asian economies. Thirdly, we have included other macroeconomic variables, such as inflation, GDP, literacy rate, and saving rate, as controls and have suggested valuable policy insights for governments and regulators in South Asia, guiding them in designing integrated strategies that expand access to financial services and promote capital market participation. Lastly, we adopt a robust methodological approach, utilizing Pooled OLS, Fixed Effects, Random Effects, and Method of Moments Quantile Regression (MMQR). These multi-method methodologies provide a thorough analysis of the intricate relationships between financial inclusion, political stability, and capital market participation. Thus, these contributions provide valuable insights for policymakers, investors, and stakeholders by offering evidence-based methods for enhancing capital market performance.

The remainder of the paper comprises existing study reviews in Section 2, the methodology of the study in Section 3, research findings in Section 4, a discussion of the results and their consistency with existing studies in Section 5, policy implications in Section 6, and a conclusion in Section 7.

¹ Growth rate is substituted for GDP growth rate.



Fig. 1. Data Representation. Note: MC refers to Market Capitalization, FIN is Financial Inclusion. PS refers to Political Stability, INF refers to Inflation, GR refers to Growth Rate, LR refers to Literacy Rate, and SR refers to Savings Rate.

2. Literature review

The relationship between financial inclusion, political stability, and capital market participation has received more attention in recent years, particularly in developing countries. This section examines relevant literature to provide a theoretical and empirical foundation for understanding how these variables interact to shape capital market participation in South Asian nations.

2.1. Capital market participation

Wang et al. (2005) investigated the return and volatility spillovers from the US and Japanese stock markets to three South Asian stock markets: Bombay, Karachi, and Colombo. Using a univariate EGARCH spillover model, their findings indicate that regional factors primarily influenced these markets before the Asian financial crisis, whereas global factors became dominant post-crisis. Lamba (2005) analyzed the relationships between South Asian and developed markets, focusing on India, Pakistan, and Sri Lanka from 1997 to 2003 using vector error-correction (VEC) models. The study found that the Indian stock market maintained strong links with the US, UK, and Japanese markets, while Pakistan and Sri Lanka remained relatively isolated. The results highlight the slow integration of South Asian equity markets with global markets. While earlier studies like Lamba (2005) and Wang et al. (2005) highlighted the slow integration of South Asian markets with global markets, recent research focuses more on individual markets, necessitating an investigation into the region's evolving dynamics in response to increased financial liberalization over the last decade.

Gunasekarage et al. (2004) found that macroeconomic variables have a strong influence on stock market prices in Sri Lanka, with the treasury bill rate having the most significant impact. Khan et al. (2015) expanded on this, identifying local (economic activities, real interest rates, trade balance), regional (inter-regional trade), and global (world financial asset returns) factors as key determinants of South Asian stock returns, concluding that these markets are inefficient because both local and regional variables explain market movements. Cooray and Wickremasinghe (2007) examined the efficiency of emerging stock markets in India, Sri Lanka, and Bangladesh, discovering weak-form but not strong-form efficiency in Bangladesh. Meanwhile, cointegration and Granger causality tests revealed connections among these markets. Mohsin et al. (2021) employed ARDL models to investigate the relationship between external debt and economic growth in South Asia, finding that while external debt has a negative impact on growth, the stock of external debt, gross capital formation, and trade openness all have a positive impact. Finally, Munir et al. (2022) investigated the Adaptive Market Hypothesis in South Asian emerging markets, finding significant time-varying contrarian impacts, particularly during economic downturns and crises, with return opportunities altering with time.

Ruan et al. (2025) and Qasem (2025) have emphasized the relevance of governance, transparency, and local monitoring mechanisms in improving capital market development. Ruan et al. (2025) demonstrated how factors such as Environmental, social, and governance (ESG) rating adjustments can undermine capital market pricing efficiency, whereas Qasem (2025) highlighted the role of institutional investors and political connections in influencing audit report timeliness, and found

an indirect impact on market credibility and investor confidence. These studies focus on capital market efficiency and corporate governance rather than investigating how broader systemic factors, such as financial inclusion and political stability, influence capital market participation.

2.2. Financial inclusion and capital market

Financial inclusion ensures access to affordable financial services for all individuals, particularly the disadvantaged and low-income groups, through traditional financial institutions, emphasizing physical accessibility, product availability, and affordability (Demirguc-Kunt et al., 2018). On the other hand, Digital financial inclusion refers to utilizing digital technologies like mobile money, digital banking apps, online financial services, and fintech platforms to provide financial services (World Bank, 2014). That means FI focuses on accessibility and cost, regardless of the delivery method. In contrast, DFI presupposes digital readiness and technological availability, which might lead to additional exclusion risks for digitally marginalized communities. Therefore, we have chosen to use the term ‘financial inclusion’ in a broader sense, rather than focusing solely on digital financial inclusion. While digital financial services have significantly increased access to financial systems in recent years, relying entirely on digital services may overlook significant structural and socioeconomic constraints in South Asia. Digital financial inclusion is primarily concerned with the use of digital platforms such as mobile banking, online transactions, and fintech solutions; however, many people in the region continue to face challenges such as digital illiteracy, limited internet access, poor technological infrastructure, and trust issues with digital platforms (Ozili, 2018). Moreover, women, the elderly, rural dwellers, and low-income groups frequently lack the digital skills or expertise required to benefit from DFI, resulting in exclusion rather than inclusion (Demirguc-Kunt et al., 2018).

By considering the definition of financial inclusion, this study encompasses both traditional access to financial services and digital solutions, enabling a more comprehensive and realistic assessment of how access to financial systems influences capital market participation. This approach is especially applicable in South Asian countries, where financial systems are frequently a mix of official, informal, and digital penetration varies by demographic and location. Thus, we believe that the larger concept of financial inclusion offers a more realistic approach to examining its impact on capital market participation. Qamruzzaman and Wei (2019) employed a GMM dynamic panel model to investigate the impact of financial inclusion on stock market development and foreign capital flows in 58 developing countries, finding a strong asymmetric relationship in both the short- and long-run. Then, Babarinde et al. (2022) used a Vector Autoregression (VAR) model to investigate financial inclusion’s impact on Nigerian capital market liquidity, finding that while deposit, bank, and credit penetration positively influence stock market turnover, they are not significant determinants of stock market liquidity, suggesting the need to restructure financial inclusion measures for high-volume and value capital market transactions. While studies by Qamruzzaman and Wei (2019) and Babarinde et al. (2022) examine financial inclusion’s impact on stock market development and liquidity, the findings on its role in improving capital market liquidity, especially in emerging economies, remain inconclusive, necessitating further research to assess its role in fostering liquidity and stability across different financial markets.

According to Oanh (2023), financial inclusion enhances stability and reduces inflation in low- and middle-income countries (LFDs), but it can raise inflation and financial instability in high-income countries. H. N. Quoc et al. (2025) found a non-linear relationship in which digital financial inclusion reduces crises in low-financial-development countries while increasing risks in high-financial-development ones. Le Quoc et al. (2025) found that digital financial inclusion promotes economic growth and minimizes downturns, but that if unregulated, it may increase the danger of a banking crisis. Le Quoc (2025) discovered that while digital financial inclusion and economic complexity each reduce

income disparity, their relationship may enhance it. However, these studies primarily focus on macro-financial development such as financial inclusion, economic growth, inflation, financial crises, and income distribution, without addressing how financial inclusion affects individuals’ participation in capital markets.

Akakpo et al. (2022) found that financial literacy enhances financial inclusion in Ghana, with savings accounts contributing to increased stock market participation. Ratnawati (2020) showed in Indonesia that financial inclusion improves MSMEs’ performance by increasing market share, workforce, sales, and profit through improved financial intermediation and capital access. Uddin et al. (2017) found significant bank-specific and macroeconomic factors influencing financial inclusion in Bangladesh, indicating favorable benefits from bank size, efficiency, and interest rates. Conversely, lower literacy rates and higher age dependency ratios have a negative impact on inclusion. Foguesatto et al. (2024) found a substantial link between financial inclusion measures and market risk, particularly in developing countries, implying that financial inclusion projects must include risk mitigation strategies. Meanwhile, Apostu et al. (2023) investigated the impact of FinTech on financial inclusion in Balkan countries, discovering that adoption rates vary depending on factors such as EU membership, digital literacy, and government policy. This finding urges further research into how digital financial services reshape investment behaviors in regions like South Asia.

2.3. Political stability, political risk, and capital market

Saeed, (2017) analyzed the effects of political stability, government effectiveness, and corruption on stock market performance in South Asia using a panel VECM model. The study found a positive correlation between anti-corruption measures, governance quality, and stock market performance. Similarly, Alim et al. (2024) investigated the relationship between political stability and stock market returns in Pakistan using GARCH models. Their findings indicate that political stability enhances stock market returns, whereas adverse political shocks increase volatility. Mai et al. (2023) focused on the relationship between political instability and stock market performance in Pakistan using the MSCI index. Their results support the notion that political stability promotes investor confidence, whereas instability hinders economic activities and reduces foreign investment. While research by Saeed, (2017), Alim et al. (2024), and Mai et al. (2023) offers valuable insights into political stability and stock market volatility, most studies focus on isolated cases, highlighting the need for a comparative, multi-region analysis to explore the global implications of political stability on stock markets.

Minovic and Eric (2016) employed an ARMAGARCH model to investigate the impact of political risk on Serbia’s frontier capital market, revealing a substantial link between stock prices and local political events, except during the global financial crisis. Chau et al. (2014) investigated the influence of political instability, notably during the Arab Spring, on stock market volatility in the MENA area, discovering that Islamic indices saw greater volatility while conventional markets remained relatively unaffected. Asteriou and Siriopoulos (2000) investigated the influence of political instability on stock market development and economic growth in Greece, concluding that uncertain socio-political situations have a nehrtrket indices and impede economic progress. Asteriou (2016) expanded this analysis to include OECD nations, revealing both direct and indirect effects of political instability on stock market returns, particularly in the banking sector. These studies demonstrate that political risk and instability have a substantial impact on stock market behavior, frequently lowering investor confidence and market integration.

2.4. Macroeconomic factors and capital market

Binanga and Seftarita (2024) examined the role of capital market accumulation and public savings in Indonesia from 2016 to 2022,

finding that these factors significantly stimulate economic growth. Similarly, Tachiwou (2010) analyzed the West African Monetary Union and reported that stock market size and liquidity positively impact economic growth in both the short and long run. Rahman and Salahuddin (2009) investigated Pakistan's stock market from 1971 to 2006, concluding that an efficient stock market positively correlates with economic growth, while Nowbutsing and Odit (2009) found that stock market development plays a crucial role in both short-term and long-term growth in Mauritius. In Bangladesh, Das (2019) emphasized the role of financial literacy in enhancing investment decisions within the capital market, aligning with Mishra's (2018) findings that individuals with higher financial literacy and investment awareness are more likely to participate in stock markets, with financial education programs further increasing financial awareness. Nicolescu (2020) compared Romania and Hungary, concluding that macroeconomic factors have a more substantial impact on Romania's stock exchange than Hungary's. In Nigeria, Usman and Adejare (2013) identified a weak negative relationship between inflation and capital market performance, except for market volume, which showed a positive correlation. Finally, Choi et al. (1996) explored inflation's effect on stock market returns globally, reporting mixed results, with negative coefficients in most cases but positive correlations in Brazil, Indonesia, Japan, Mexico, Spain, and Türkiye. The literature emphasizes the importance of stock market development, financial literacy, and macroeconomic factors in driving economic growth; however, several gaps remain, including a lack of comparative analysis across diverse emerging economies, limited research on the mechanisms by which these factors interact, and a lack of focus on other factors such as political stability and financial education programs.

2.5. Theoretical background

This study synthesizes various theoretical viewpoints by examining the impact of financial inclusion and political stability on capital market participation. Fundamentally, it is based on the Macroeconomic Stability and Capital Market Growth Theory, which holds that macroeconomic stability is necessary for the development of financial markets and encourages investor participation (Demirgüç-Kunt & Levine, 1996). Furthermore, the study relies on Levine's Financial Market Development Theory, which posits that well-functioning financial markets are crucial drivers of economic growth. These markets serve critical functions, including mobilizing savings, allocating funds efficiently, mitigating financial risks, and promoting trade and investment (Levine, 1997). Furthermore, the study focuses on the Behavioral Economics Model, which emphasizes the role of financial literacy and access to financial services in determining people's financial decisions, including their participation in capital markets. This model implies that even when financial markets are open, participation rates remain low in the absence of basic financial literacy and favorable macroeconomic conditions (Lusardi & Mitchell, 2014). Based on relevant literature, theoretical evidence, and study requirements, the following hypotheses need to be tested.

- H1: Financial inclusion positively affects capital market participation in South Asian countries.
- H2: Political stability positively affects capital market participation in South Asian countries.

2.6. Conceptual framework

From the theoretical perspectives mentioned above, this study examines the factors influencing capital market involvement across countries, with a focus on financial, economic, and sociopolitical aspects. The conceptual framework defines Capital Market Participation as the dependent variable, signifying the level of participation and activity in the capital market. Financial inclusion is the primary explanatory

variable, capturing the population's access to and use of formal financial services. Greater financial inclusion is believed to have a favorable impact on capital market participation by expanding the investor pool and making investment opportunities more accessible. Political stability is also considered a major independent variable, given its potential to foster a stable and predictable environment for financial activity. A stable political environment is designed to enhance investor confidence and foster capital market development. The framework also includes several control variables to account for macroeconomic and socio-demographic circumstances that may influence capital market participation, including inflation, growth, literacy, and savings rate. These variables provide a structured method for studying the various factors that influence capital market participation in different country contexts, as shown in Fig. 2.

3. Methodology

This study mainly identifies the impact of Financial Inclusion and Political Stability on capital Market Participation in South Asian Countries² (Bangladesh, India, Pakistan, and Sri Lanka) based on panel macroeconomic data from 2000 to 2023. We have chosen South Asian countries because they exhibit a wide variation in market development, financial inclusion, literacy rates, inflation control, and GDP growth, despite sharing similar geopolitical and cultural characteristics (World Bank, 2022). The Asian Development Bank (2021) and World Bank (2022) both highlight South Asia as a key region for poverty reduction, financial deepening, and market reforms. According to the Global Findex Database, about 32 % of adults in South Asia remained unbanked in 2021, though recent policy interventions have significantly increased access to basic financial services (World Bank, 2022).

3.1. Variables description

The data for this study are sourced from reliable international entities, mainly the World Bank (WB) and the Global Financial Development Database (GFDD). The independent variable, Financial Inclusion³ and Political Stability is based on GFDD. The data on Capital Market Participation, Market Capitalization, Equity Turnover, and Stock Traded

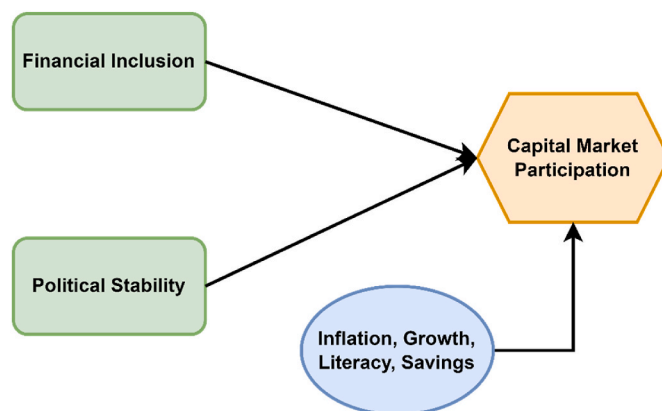


Fig. 2. Conceptual framework.

² We have exempted Nepal, Bhutan and the Maldives due to unavailability of data.

³ The Financial Inclusion Index (FIN) is a composite measure developed by the authors through Principal Component Analysis. This index includes numerous significant variables, such as the number of ATMs per population, the number of bank branches per capita, the amount of outstanding deposits, and domestic loans to the private sector.

have been collected from the World Bank Database. Additionally, the study controls the impact of Inflation, Growth Rate, Literacy rate, and the Savings Rate for capital market participation in the targeted group, which are sourced from the World Bank Database. Any missing data are imputed using interpolation (ipolate) and extrapolation (epolate) methods to guarantee data consistency and completeness. Table 1 represents an overview of the examined variables. We consider these variables in light of three major theories: the Macroeconomic Stability and Capital Market Growth Theory, Levine's Financial Market Development Theory, and the Behavioral Economics Model. Financial inclusion is justified by Levine's theory, which emphasizes how increasing access to formal financial services enhances resource allocation and facilitates greater participation in capital markets by lowering entry barriers. Political stability is consistent with the Macroeconomic Stability Theory because it minimizes investment risk and policy uncertainty, both of which are necessary to encourage prolonged investor participation in capital markets. We include inflation as a control because high and fluctuating inflation can reduce real returns and discourage long-term investments. Furthermore, strong economic growth often indicates lucrative opportunities and stimulates equity investment, which aligns with both macroeconomic and financial development perspectives. More savings can lead to increased capital market participation if proper financial channels exist, which is why we include the savings rate. Finally, the Behavioral Economics Model emphasizes the importance of literacy rates because they influence individual decision-making, risk assessment, and the desire to spend. As these factors can help reflect the institutional, economic, and behavioral components that influence capital market participation, especially in South Asia's various socioeconomic and political circumstances.

Following Ndzigat Mouteyica and Ngepah (2024), we used PCA to construct the financial variables to create a robust and composite measure of institutions. The scree plot from Principal Component Analysis (PCA) illustrates the amount of variance each principal component explains within the dataset. Since direct, standardized indicators of financial inclusion are not consistently available across all years and countries, we constructed a composite financial inclusion index using widely recognized proxy indicators: the number of ATMs per 100,000 adults, commercial bank branches per 100,000 adults, bank deposits as a percentage of GDP, and domestic credit to the private sector as a percentage of GDP. To compose them, we apply PCA individually for each country, rather than jointly across the four countries, to capture country-specific heterogeneity in the financial system. As these variables are commonly used in the financial inclusion literature (Demirguc-Kunt et al., 2018) as they reflect the accessibility, availability, and usage dimensions of financial services. As Fig. 3 demonstrates, one component has eigenvalues greater than 1, so we can use financial inclusion from the analysis by retaining the first three principal components for further interpretation and analysis.

3.2. Model specification

To achieve the study's primary purpose, the panel data estimation approach, specifically the panel ARDL method, is employed after reviewing the literature. The ARDL technique analyzes a string of mixed order, $I(0)$, and $I(1)$ processes and generates accurate and useful estimates. The study favors it over competing techniques (Nkoro & Uko, 2016). Nonetheless, it is crucial to understand that the ARDL bound test requires stationarity rank in order to calculate degrees of lower and higher orders (Ozturk & Acaravci, 2010).

We employ the panel ARDL model due to its key advantages over other econometric techniques. As ARDL is well-suited for datasets with variables of mixed integration, it avoids the limitations of techniques that require all variables to be integrated of order 1. It is also effective in small sample contexts, which is particularly relevant for our limited panel of four South Asian countries. Furthermore, ARDL distinguishes between short-run and long-run dynamics, allowing for a profound

understanding of how financial inclusion and political stability affect capital market participation over time. These strengths make ARDL an appropriate and robust choice for our research objectives.

To confirm this model, there should be no cross-sectional dependencies in the data. Additionally, the Panel ARDL requires stationarity in the data at the first difference for the dependent variable and at the level, first difference, or mixed for the independent and control variables to be effective. There are a few steps involved in using the panel ARDL approach. The first stage involves summarizing the study's data using descriptive statistics. The second step is to calculate the Pearson correlation. The third stage involves estimating the cross-sectional dependency and the slope heterogeneity test. Similarly, the fourth stage involves estimating the panel unit root testing. The fifth phase involves estimating the ideal lag time for South Asian economies. Furthermore, the sixth step necessitates evaluating the panel cointegration. The final stage involves estimating the panel ARDL using mean group, pooled mean group, and dynamic fixed effects methods, with the Hausman specification test employed to select the most suitable approach. The panel ARDL estimation approach involves assessing the impact of independent variables on the dependent variable, both in the long and short run.

A single equation serves as the foundation for the ARDL specification, which looks at long-term relationships and starts with developing a baseline model as shown in equation (1):

$$MC_{it} = \alpha + \beta_1 FIN_{it} + \beta_2 PS_{it} + \mu_{it} + \epsilon_{it}, \quad (1)$$

Here, MC_{it} is the dependent variable represents Market Capitalization for country i in year t , α is Intercept/constant term, FIN_{it} is the independent variable refers to Financial Inclusion for i in year t , PS_{it} is the Political Stability for i in year t , μ_{it} is the country-specific or time-specific effects that are not captured by other variables but influence MC , ϵ_{it} is the error term affecting MC and β is the coefficient.

The panel ARDL model employs three estimation approaches: mean group, pooled mean group, and dynamic fixed effects. According to (Pesaran et al., 1999), panel ARDL estimations can be performed by taking into account mixed-order stationarity for independent variables and first-order stationarity for the dependent variables. The parameterized panel ARDL model is shown in equation (2).

$$\begin{aligned} \Delta MC_{it} = & \varphi_0 + \sum_{i=0}^n \varphi_{1i} \Delta \ln FIN_{t-1} + \sum_{i=0}^n \varphi_{2i} \Delta PS_{t-1} + \sum_{i=0}^n \varphi_{3i} \Delta INF_{t-1} \\ & + \sum_{i=0}^n \varphi_{4i} \Delta GR_{t-1} + \sum_{i=0}^n \varphi_{5i} \Delta LR_{t-1} + \sum_{i=0}^n \varphi_{6i} \Delta SR_{t-1} + \beta_1 MC_{t-1} \\ & + \beta_2 FIN_{t-1} + \beta_3 PS_{t-1} + \beta_4 INF_{t-1} + \beta_5 GR_{t-1} + \beta_6 LR_{t-1} + \beta_7 SR_{t-1} \\ & + \mu_t, \end{aligned} \quad (2)$$

Here, t is the time trend; the Δ is the first difference operator; μ_t is a white noise; the φ s are the short-run parameters, while β s denote the long-run multipliers.

4. Results

4.1. Descriptive statistics and correlation matrix

Table 2 presents the descriptive statistics, which reveal considerable variation across the variables, indicating diverse economic and social conditions within the sample. Market capitalization (MC) and stock traded (ST) show significant variability, with standard deviations of 31.95 and 29.14, respectively. In contrast, equity turnover (ET) exhibits high volatility with a very high standard deviation (82.86) compared to the mean (59.24), and inflation is reaching peaks of nearly 50 %, suggesting periods of hyperinflation in some instances. However, the inflation rate appears reasonable on average. Financial inclusion appears standardized, as it has a mean of 0 and a standard deviation of 1,

Table 1
Variables specification and description.

Variable	Sign	Description	Definition	Sources
Market capitalization	MC	Market capitalization of listed domestic companies (% of GDP)	Market capitalization is the total monetary value of a publicly listed company's outstanding shares on the stock market. It measures a company's entire value as assessed by the stock market and is computed by multiplying the current market price of one share by the total number of shares issued.	WB
Equity turnover	ET	Stocks traded, turnover ratio of domestic shares (%)	Equity turnover is a financial ratio that measures how effectively a company utilizes its shareholders' equity to generate income. It illustrates the relationship between a company's total sales (or revenue) and its average shareholders' equity over a specified period.	WB
Stock traded	ST	Stocks traded, total value (% of GDP)	Stock traded refers to the total number or value of shares of a company's stock purchased and sold on a stock exchange over a given period, such as a day, week, month, or year. It measures the level of activity, liquidity, and investor interest in a company's stock on the stock market.	WB
Financial inclusion	FIN	Financial inclusion is a composite index of ATM, BR, BD, and DC.	Financial inclusion is the process of ensuring that individuals and businesses, particularly those from disadvantaged and low-income backgrounds, have access to financial goods and services that are accessible, helpful, and appropriate.	Author's Calculation
	ATM	ATMs per 100,000 adults		GFDD
	BR	Bank branches per 100,000 adults		GFDD
	BD	Bank deposits to GDP (%)		GFDD
	DC	Domestic credit to private sector (% of GDP)		GFDD
Political stability	PS	Political stability and absence of Violence/Terrorism	Political stability refers to a government's ability to maintain control over its territory, uphold the rule of law, and function in the absence of significant disturbances, such as civil unrest, armed conflict, or frequent leadership changes.	WB
Inflation	INF	Inflation, GDP deflator (annual%)	Inflation is defined as a sustained increase in the overall price level of goods and services in an economy over time. It is calculated by comparing price indices, such as the consumer price index (CPI) and the producer price index (PPI), over time.	WB
Growth rate	GR	GDP growth (annual%)	In economics, the growth rate is the percentage increase in a country's gross domestic product (GDP) during a given period, typically measured quarterly or annually. It measures the rate at which a country's economy expands by comparing the total value of goods and services produced in one period to the total value produced in the preceding period.	WB
Literacy rate	LR	Literacy rate, adult total (% of people ages 15 and above)	Literacy rate is the percentage of people in a given population who are 15 years or older who can read and write a short, simple statement about their daily lives.	WB
Savings rate	SR	Gross domestic savings (% of GDP)	The savings rate is the percentage of income that individuals, households, or countries set aside and do not spend on consumption over a given period. It refers to the portion of discretionary income that is preserved, whether in banks, investment plans, or cash reserves, rather than being spent immediately.	WB



Fig. 3. Scree plot of eigenvalues after PCA.

which makes it ideal for regression or index analysis. Political stability exhibits a moderate average stability, with a mean value of 14.37, but a wide range from 0.47 to 50.48, indicating varied levels of stability. The positive **mean GDP growth rate is 5.03**, but the **negative minimum of -7.35** suggests **economic contraction**. **High literacy on average (68.52)**, with **relatively low variation**, with a **standard deviation of 16.19**. The savings rate (SR) exhibits greater consistency, with a mean of 27.30 and a standard deviation of 8.79. Thus, the data highlight

substantial differences, indicating varying levels of economic growth, political stability, and financial inclusion among the countries studied.

Table 3 presents the correlation matrix, which reveals numerous significant correlations between the variables. Financial inclusion has a moderate positive correlation with political stability ($r = 0.337$), suggesting that more inclusive financial systems are associated with higher political stability. A slight negative correlation (-0.050) exists between inflation and the growth rate, suggesting that higher inflation is

Table 2
Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
MC	96	34.587	31.947	−7.478	161.239
ET	96	59.241	82.857	2.416	467.95
ST	96	21.419	29.144	−1.922	109.489
FIN	96	0	1	−1.593	2.141
PS	96	14.369	10.659	0.474	50.476
INF	96	7.983	6.279	2.007	49.721
GR	96	5.034	3.04	−7.347	9.69
LR	96	68.522	16.186	34	93
SR	96	27.298	8.787	10.433	40.6

Table 3
Correlation matrix.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) FIN	1.000					
(2) PS	0.337	1.000				
(3) INF	−0.050	−0.209	1.000			
(4) GR	0.004	−0.123	−0.440	1.000		
(5) LR	0.234	0.603	0.152	−0.101	1.000	
(6) SR	0.631	0.452	−0.238	0.272	0.215	1.000

associated with slower economic growth. Literacy rates are positively correlated with political stability ($r = 0.603$), indicating that higher educational levels may contribute to more stable political settings. The savings rate exhibits a substantial positive correlation with financial inclusion ($r = 0.631$), suggesting that more inclusive financial systems are associated with higher savings rates. There are also moderate positive associations between the savings rate and political stability ($r = 0.452$) as well as the literacy rate ($r = 0.215$). These correlations suggest that factors such as financial inclusion, political stability, and education are interconnected, with inflation and the growth rate showing weaker or negative associations with other variables. Fig. 4 visualizes the correlation among the variables and displays the scatterplot matrix, which exhibits the pairwise relationships among the study's primary variables, allowing for a visual examination of their associations and potential correlation patterns.

The FIN variable reveals a mean of 0 and a standard deviation of 1, with minimum and maximum values of 1.593 and 2.141, respectively. This depicts that the FIN variable was standardized using a z-score⁴ normalization after being created using PCA. Standardization ensures that the variable is unit-free, centered, and scale-invariant, allowing for cross-country and time-series comparisons. The numbers range from negative to positive, representing relative departures from the mean level of financial inclusion across nations and years. This means that higher positive values indicate stronger financial inclusion, whereas negative values indicate worse inclusion relative to the mean.

4.2. Cross-sectional representation, heterogeneity, and stationarity test

The assumption of cross-sectional dependence in panel data is crucial for generating the panel unit root test (De Hoyos & Sarafidis, 2006). If the cross-sectional dependency is present, the second-generation Panel unit root is necessary; otherwise, first-generation unit root, such as LLU and IPS panel tests, are required (Sarafidis & Wansbeek, 2012). The LM test is essential when $T > N$, but not recommended when $T < N$ (Pesaran, 2021). Table 4 represents Pearson's Test has a test statistic of 0.897 and a p-value of 0.3696. Since the p-value is greater than the standard significance level of 0.05, we fail to reject the null hypothesis, which suggests that there is no cross-sectional dependence. Frees' Test yields a test statistic of 0.123 and a p-value of 0.1078, which is also greater than

0.05. This further supports the conclusion that there is no cross-sectional dependence in the data. In summary, both tests indicate that there is no significant cross-sectional dependence among the variables, meaning that the observations are not strongly influenced by one another across the cross-sections. This suggests that the assumption of independence between units holds for this dataset.

The slope heterogeneity test findings in Table 5 show that the associations between the independent and dependent variables differ considerably across cross-sectional units. The Pesaran and Yamagata Test and the Blomqvist and Westerlund Test have delta statistics of 3.166 and 6.216, respectively, and both exceed the p-value of 0.002, indicating statistical significance at the 1 % level. This results in the rejection of the null hypothesis of slope homogeneity, indicating that the effect of explanatory variables is not constant across all units in the panel; somewhat, the slopes vary significantly, implying heterogeneity in behavior or responses between entities.

Table 6 shows the findings of the unit root test. The unit root test results indicate that most of the variables, including Market Capitalization, Political Stability, Inflation, Growth Rate, Literacy Rate, and Savings Rate, exhibit stationarity at the level form, as evidenced by the majority of tests showing insignificant results or the presence of a unit root. However, after first differencing, all these variables become stationary, with significant results mostly at the 1 % level, confirming that they require differencing to remove the unit root. After the first differencing, all variables become stationary, meaning they are suitable for further regression or cointegration testing.

4.3. Lag selection

Table 7 presents the optimal lag lengths for various countries across different economic variables. The values indicate the number of lags chosen for each variable, which are selected based on criteria that aim to balance model complexity and the explanatory power of the lagged terms. For Bangladesh, all variables (MC, FIN, PS, INF, GR, LR, SR) have an optimal lag length of 2, suggesting that two lags are sufficient. India has a mix of lag lengths, with variables such as (FIN, INF, LR) requiring no lags, while others like (MC, PS, SR) use two lags. Pakistan generally uses two lags for most variables, except (GR, LR, SR), which use shorter lags. Sri Lanka presents a more varied picture, with certain variables (INF, SR) requiring no lags, and others like (MC, FIN) requiring two lags. The general mood or summary of optimal lag lengths suggests that two lags are typically preferred for most variables.

4.4. Cointegration tests

Table 8 presents the results of panel cointegration tests. The results from all three tests—the Pedroni Test, Westerlund Test, and Kao Test—show significant results, further supporting the existence of cointegration. This indicates that the variables in the panel data are cointegrated, implying a stable long-term relationship among them.

4.5. Panel ARDL estimations

Table 9 presents the results of Panel ARDL estimations using three approaches: Pooled Mean Group (PMG), Mean Group (MG), and Dynamic Fixed Effects (DFE), with a focus on the long-run and short-run relationships between market capitalization and key macroeconomic variables (Model 1). We have run the Hausman test to identify the best model from PMG, MG, and DFE, and the test indicates that the Fixed Effects model is the most appropriate. Financial Inclusion has a positive and statistically significant impact on market capitalization across all three models, confirming its long-term importance in financial development. Although political stability has no significant effect on market capitalization, it exhibits an adverse long-term effect and a positive short-term effect on market capitalization. Similarly, inflation, growth rate, literacy rate, and savings rate do not show significant long-run

⁴ The standard formula of z-score, $z = (x - \mu)/\sigma$.

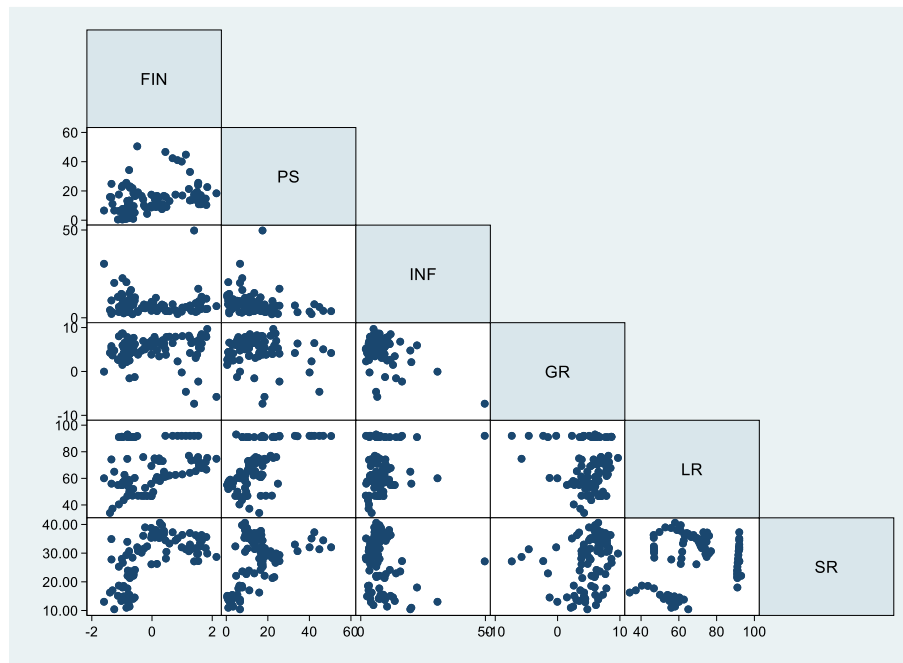


Fig. 4. Scatterplot matrix.

Table 4
Cross-sectional representation.

Test	Test Statistics	P-Value	Decision
Pearran's test	0.897	0.369	No cross-sectional dependence
Frees' test	0.123	0.107	No cross-sectional dependence

Table 5
Slope heterogeneity test.

Test	Delta	P-value	Decision
Pesaran & Yamagata test	3.166	0.002	Heterogenous
Blomquist, Westerlund test	6.216	0.000	Heterogenous

effects in the DFE model, suggesting their limited direct influence on market capitalization within the panel context.

In the short run, most variables remain insignificant, except for the error correction term, which is negative and highly significant in the DFE model, indicating that deviations from the long-run equilibrium are corrected over time at a moderate pace. The results emphasize the long-term importance of financial inclusion and macroeconomic stability in enhancing market capitalization, with limited short-term effects.

Table 6
Unit root test.

Variables	At Levels			At First Difference		
	LLC	IPS	CIPS	LLC	IPS	CIPS
MC	−0.652	−1.301*	−1.184	−4.661***	−4.833 ***	−3.216***
FIN	1.847	0.900	−0.724	−3.793***	−3.066***	−3.564***
PS	−0.583	−2.239**	−3.647	−4.930 ***	−4.779***	−4.873***
INF	0.365	−0.914	−4.211	−2.181 **	−5.165***	−4.598***
GR	−1.796**	−3.646***	−2.242	−5.833 ***	−6.242***	−5.235***
LR	1.037	−0.025	−3.538	−3.143***	−6.338***	−4.955***
SR	−1.833**	−1.001	−2.109	−2.734***	−4.110***	−3.350***

Note: *** represents significant at 1 %, ** represents significant at 5 %, *represents significant at 10 %. LLC = Levin–Lin–Chu, IPS= Im–Pesaran–Shin, CIPS= Cross-sectionally IPS.

4.6. Robustness check using an alternative measure of capital market participation

Table 10 presents robustness checks using different proxies for market development: Equity Turnover (Model 2) and Stock Traded (Model 3) in place of Market Capitalization. The estimation is done using three-panel data models: PMG, MG, and DFE. It investigates the long-run and short-run impacts of independent and control variables. For Models 2 and 3, the Hausman test indicated that Fixed Effects (DFE) was the appropriate model, so we primarily focus on the results of DFE. Although Financial Inclusion, Political Stability, and other control variables do not show significant long-run effects on Equity Turnover or Stock Traded, some of them exhibit notable short-run impacts.

In particular, the positive relationship between Inflation and stock

Table 7
Optimal lag length.

Country	Variables						
	MC	FIN	PS	INF	GR	LR	SR
Bangladesh	2	2	2	2	2	2	2
India	2	0	2	0	0	0	2
Pakistan	2	2	2	2	1	1	1
Sri Lanka	2	2	1	0	1	2	0
Mood (optimal lag)	2	2	2	0	1	2	2

Table 8
Panel cointegration test.

Pedroni Test	Statistic	Westerlund Test	Statistic	Kao	Statistic
Modified phillips–Perron t	1.819***	Gt	−3.569**	Modified Dickey–Fuller t	−2.689***
Phillips–Perron t	−3.430***	Ga	−9.309	Dickey–Fuller t	−2.839***
Augmented Dickey–Fuller t	−4.106***	Pt	−6.885**	Augmented Dickey–Fuller t	−1.841***
		Pa	−10.712	Unadjusted modified Dickey–Fuller t	−5.748***
				Unadjusted Dickey–Fuller t	−3.781***

Note: *** represents significant at 1 %, ** represents significant at 5 %, *represents significant at 10 %.

Table 9
Panel ARDL estimations.

Type	Variable	PMG	MG	DFE
		Coefficient	Coefficient	Coefficient
Long run (D. MC)	FIN	38.520 (27.490)	22.037** (9.448)	16.268** (7.818)
	PS	1.511(1.796)	1.009(1.256)	−0.497(0.507)
	INF	7.360*(4.246)	−1.714* (0.987)	−0.758(0.724)
	GR	16.536* (8.435)	−2.625(2.103)	2.386(1.494)
	LR	8.600*(4.782)	3.711(3.849)	0.206(0.419)
	SR	−1.059 (2.590)	4.012(1.299)	0.095(1.064)
Short run	ECT	−0.071	−0.895***	−0.596***
	ΔFIN	32.634	−8.492**	4.588
	ΔPS	−0.312	−1.072	0.314
	ΔINF	−0.800	0.512	0.596
	ΔGR	−0.216	0.634	0.194
	ΔLR	−0.338	0.374	0.800
	ΔSR	4.625	0.337	1.624
	Constant	−43.828	−227.059*	10.422

Note: *** represents significant at 1 %, ** represents significant at 5 %, *represents significant at 10 %. According to the Hausman test, the DFE model is the best.

trading means that inflation may lead to short-term speculative trading in equities, boosting stock market turnover. The literacy rate demonstrates favorable and statistically significant short-run effects on both proxies, implying that improvements in literacy may stimulate market activity in the short term. The Savings Rate shows a negative and significant influence on Equity Turnover, suggesting that as individuals save more, they are less likely to engage in active stock trading, possibly due to risk-averse behavior. Importantly, the Error Correction Term is negative and highly significant across models, confirming that the system adjusts back to its long-run equilibrium. This indicates that the adjustment process would take approximately four years, reflecting a

Table 10
Robustness check using altering MC by ET and ST.

	Variable	Equity Turnover			Stock Traded		
		PMG	MG	DFE	PMG	MG	DFE
Long run	FIN	3.785 (5.744)	52.645 (54.797)	−22.303 (33.459)	−13.595 (27.591)	49.559* (26.617)	−2.401 (15.441)
	PS	0.123 (0.359)	1.418*** (0.524)	−1.270 (2.233)	0.641 (1.503)	0.583 (0.402)	−1.478 (1.117)
	INF	−0.110 (0.320)	1.686 (1.968)	−3.926 (3.093)	2.878 (3.455)	−3.270 (4.724)	−2.415 (1.609)
	GR	−0.250 (0.851)	3.783 (5.681)	−4.820 (6.467)	3.089 (3.941)	−0.431 (3.932)	−3.156 (3.324)
	LR	−3.601*** (1.325)	−6.838*** (3.849)	−0.510 (1.896)	4.475 (4.894)	−1.505 (0.984)	−0.355 (0.838)
	SR	−1.119* (0.618)	4.799 (6.114)	3.723 (4.572)	1.118 (2.614)	3.593 (1.70)	3.014 (2.253)
Short run	ECT	−0.483***	−0.847***	−0.278***	−0.053	−0.718***	−0.2328***
	ΔFIN	15.332	−56.187*	3.789	26.674	−10.576	9.351
	ΔPS	1.301**	−0.443	0.799	0.170*	−0.067	0.287
	ΔINF	2.446	1.158	0.956	0.361	0.159	0.503*
	ΔGR	1.451	−1.742	1.021	1.086	−0.664	0.842
	ΔLR	2.431	3.034	3.252**	1.475	0.734	1.385**
	ΔSR	0.044	−3.624	−3.670*	1.971	−0.402	−0.096
	Constant	164.075**	417.677**	10.422	−15.303	−9.997	2.265

Note: *** represents significant at 1 %, ** represents significant at 5 %, *represents significant at 10 %. For both models, the Hausman test indicated that the DFE model is the best-suited model.

relatively slow but stable convergence toward long-run equilibrium in market development.

4.7. Robustness check using alternative estimation methods

Table 11 presents a robustness check using alternative estimation methods—Pooled OLS, Fixed Effects, and Random Effects, to assess the consistency of relationships between various explanatory variables and three proxies of capital market development: Market Capitalization, Equity Turnover, and Stock Traded. The results show that Financial Inclusion has a consistently positive and statistically significant effect under POLS and RE across all proxies, indicating that greater access to financial services promotes capital market development. Political Stability has a positive and significant effect on Equity Turnover under POLS and RE, highlighting its short-term influence on trading activity while showing no significant impact on MC or ST. Inflation maintains a negative sign across all models but lacks statistical significance, indicating a weak or unstable relationship. The Growth Rate is positively and significantly associated with MC and ST under POLS and RE, supporting the idea that economic expansion fosters larger and deeper capital markets. Notably, the Literacy Rate (LR) shows unexpected adverse and significant effects on ET and ST, especially under FE, which may suggest that more literate populations prefer safer investments or are cautious in volatile markets. Similarly, the Savings Rate exhibits strong adverse and significant effects on all three proxies, reinforcing earlier findings that higher savings may reduce stock market participation. Finally, the robustness check confirms the importance of financial inclusion and economic growth while highlighting potential behavioral barriers related to literacy and savings that may weaken active participation in the capital market.

4.8. Robustness check using MMQR

Table 12 presents the results of a robustness check using the Method of Moments Quantile Regression (MMQR), which evaluates how the effects of explanatory variables vary across different points of the market

Table 11

Robustness check using alternative estimation methods.

	Market Capitalization			Equity Turnover			Stock Traded		
	POLS	FE	RE	POLS	FE	RE	POLS	FE	RE
FIN	30.307***	10.629***	30.307***	15.568*	−22.396	15.568*	22.602***	0.527	22.602***
PS	−0.185	−0.156	−0.185	2.556**	1.482	2.556**	0.237	0.066	0.237
INF	−0.278	−0.000	−0.278	−0.398	−0.161	−0.398	−0.258	−0.000	−0.258
GR	3.705***	2.098***	3.705***	3.901	0.678	3.901	2.802***	0.955	2.802***
LR	−0.027	0.225	−0.027	−3.018***	−3.657***	−3.018***	−0.552***	−0.556*	−0.552***
SR	−1.044***	0.76143	−1.044	−4.991***	1.95918	−4.991***	−1.711***	0.670	−1.711***
C	51.194***	−9.97783	51.194***	349.133***	232.9312**	349.133***	90.585***	35.492	90.585***

Note: *** represents significant at 1 %, ** represents significant at 5 %, *represents significant at 10 %.

development distribution. The findings reveal that Financial Inclusion has a strong, positive, and statistically significant effect across all quantiles, with the magnitude increasing from 25.55 at the 25 % quantile to 34.00 at the 90 % quantile. This consistent pattern suggests that financial inclusion plays a key role in promoting market development regardless of the market's initial condition. Political Stability shows no significant effect across quantiles; its role in capital market development is limited or inconsistent in this specification. Inflation also remains statistically insignificant at all quantiles, although it exhibits a negative trend in the lower and middle percentiles and turns slightly positive at the 90th percentile. This suggests that inflation may not be a strong or consistent determinant of market development when accounting for distributional effects. The Growth Rate becomes statistically significant at the 50th percentile, highlighting that economic growth contributes more meaningfully to capital market development. This aligns with the notion that stable and growing economies provide a conducive environment for capital market expansion. The literacy rate remains insignificant across all quantiles, suggesting that literacy alone may not have a direct or consistent impact on market development in the long term, despite its earlier observed short-term influence on trading activity. Notably, the Savings Rate (SR) maintains a negative and significant effect across all quantiles, with more substantial impacts observed in higher percentiles. This reinforces the earlier finding that higher savings are associated with lower market activity, especially in more developed market settings, where savings may be diverted into non-equity financial instruments.

Fig. 5 illustrates the quantile regression plots for each variable's effect on capital market development across different quantiles (from the 25th to the 90th percentile), excluding OLS estimates. Here, Financial Inclusion trends upward across quantiles, confirming the strong and increasing positive effect of financial inclusion as market development rises. Political Stability is gently upward-sloping, though the interval indicates no statistically significant effect across most quantiles, reflecting uncertainty in its influence on capital market development. Inflation fluctuates near zero with a wide confidence band, again indicating no clear or significant effect across quantiles, though the direction becomes slightly more positive at higher quantiles. The growth rate exhibits a mild inverted U-shape, with the highest influence occurring around the 50th percentile, which aligns with earlier findings that economic growth is most impactful in moderately developed markets. In

Literacy Rate, the plot remains close to zero, with no significant movement or pattern across quantiles. The coefficient of Savings Rate is consistently negative, particularly at lower and upper quantiles, reinforcing its negative and significant influence on capital market development. This means that higher savings rates are generally associated with lower levels of market activity, possibly due to a preference for less risky financial instruments.

Fig. 6 presents quantile regression plots for the effect of each variable on capital market development across different quantiles (from the 25th to the 90th percentile), incorporating Ordinary Least Squares (OLS) estimates as a reference line across the distribution. As before, Financial Inclusion maintains a strongly positive and upward-sloping trend across quantiles, with the coefficients rising consistently from lower to higher quantiles. This reinforces its increasingly positive impact on capital market development in more advanced capital markets, with the OLS line remaining below the quantile-specific estimates at higher percentiles. Political Stability remains gently upward-sloping, with its quantile coefficients primarily within a wide confidence interval and intersecting the OLS line, implying no statistically significant effect at any point in the market development distribution. Inflation follows a fluctuating pattern, with quantile coefficients remaining close to zero and drifting slightly from the OLS estimate at higher quantiles. However, the broad confidence bands confirm a lack of significance across the majority of the distribution. The growth rate in this plot repeats the mild, inverted U-shaped pattern seen in the earlier figure, peaking around the median (50th percentile), where it temporarily exceeds the OLS estimate before tapering off at higher quantiles. This suggests that economic growth has the most decisive influence on capital market development in moderately developed markets, while having a diminished role at both the lower and upper ends. For Literacy Rate, the quantile regression lines stay close to zero throughout the distribution, moving nearly parallel to the flat OLS line and confirming no notable influence on market development. Finally, Savings Rate again demonstrates a consistently negative relationship with market development, particularly pronounced at both the lower and upper quantiles. The quantile estimates diverge notably from the OLS line at these extremes, underscoring that OLS fails to fully capture the adverse effect of higher savings rates in markets with either very low or very high levels of development.

5. Discussion

Our results offer several findings into the long-run and short-run dynamics between capital market participation and key macroeconomic variables, including financial inclusion, political stability, inflation, growth rate, literacy rate, and savings rate. The long-run results of our study reveal a statistically significant positive relationship between financial inclusion and market capitalization across all three model specifications, which strongly aligns with Levine's Financial Market Development Theory. As Financial Market Development Theory emphasizes the pivotal role of financial infrastructure and accessibility in facilitating capital market development, it means that the more individuals gain access to formal financial services, such as banking,

Table 12

Robustness check using MMQR.

Variables	25 %	50 %	75 %	90 %
FIN	25.554***	26.578***	33.577***	34.000***
PS	−0.287	0.011	0.220	0.290
INF	−0.216	−0.102	−0.349	0.242
GR	2.975	3.919**	2.570*	2.417***
LR	0.023	−0.123	0.070	0.054
SR	−0.966**	−0.823***	−1.269***	−1.112*
Constant	40.243***	44.452	62.324***	59.062***

Note: *** represents significant at 1 %, ** represents significant at 5 %, *represents significant at 10 %.

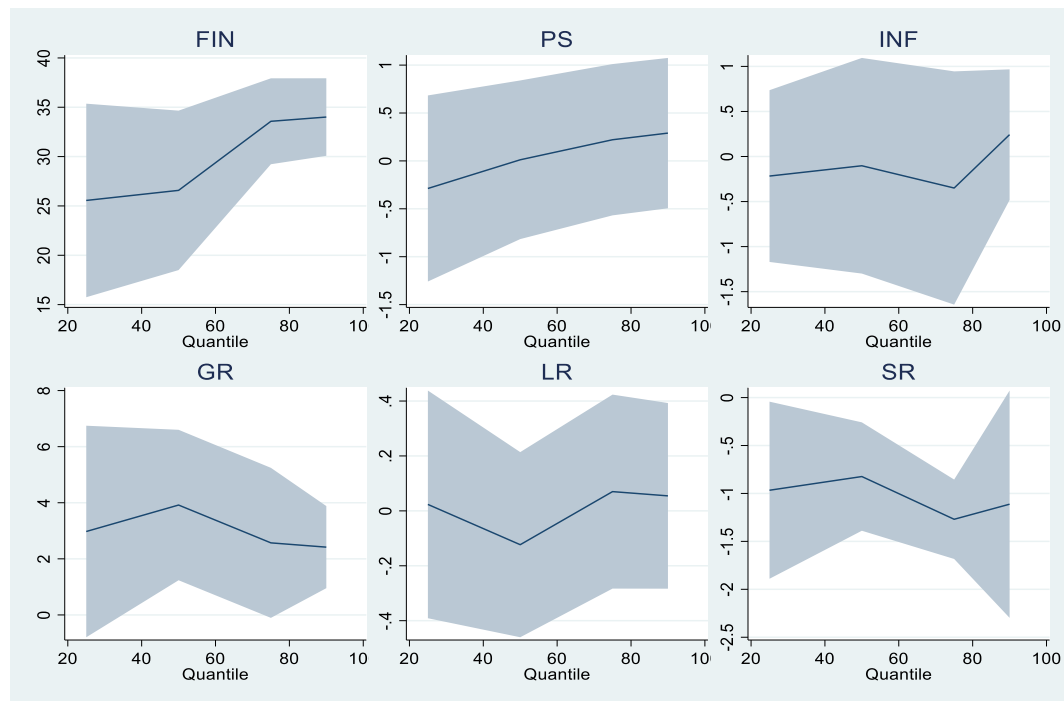


Fig. 5. Quantile plots of each variable without OLS.

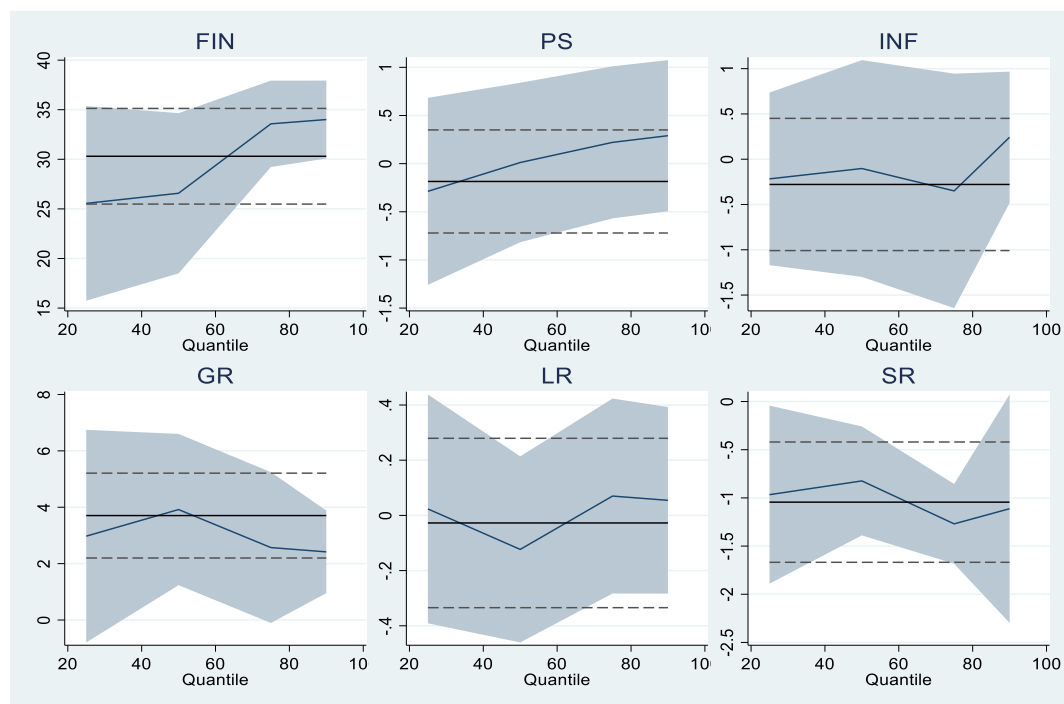


Fig. 6. Quantile plots of each variable with OLS.

credit, and savings mechanisms, the more effectively they participate in investment activities, thereby expanding market capitalization. In addition, this finding also supports the Behavioral Economics Model to some extent, as improved access to financial services can reduce behavioral barriers to investing, such as a lack of trust or information, thereby encouraging individuals to enter the formal capital market. Thus, improved access to financial services enables a broader investor base and facilitates greater public participation with capital markets, as also supported by empirical studies such as (Demirguc-Kunt et al.,

2018), (Oanh, 2023), (Babarinde et al., 2022). In contrast, Foguesatto et al. (2024) explained the adverse impact of financial inclusion on market development as financial inclusion, primarily through digital services like mobile money, is generally positively correlated with market risk. While it initially promotes stability by expanding access, in developed markets, it may introduce some vulnerabilities and increase market volatility once a certain threshold of inclusion is exceeded.

On the other hand, political stability exhibits mixed and statistically insignificant long-run effects on the capital market. Although the

Macroeconomic Stability and Capital Market Growth Theory suggests that stable political and macroeconomic environments should foster investment confidence and capital market development, our findings imply that political stability may not have a direct influence on market capitalization in the South Asian context. Instead, their effects may be indirect, mediated by other institutional or governance variables, such as regulatory quality or legal enforcement. In empirical studies, Aisen and Veiga (2013) found that political instability has a more detrimental impact in developing countries, where investor confidence is fragile and institutional strength is lacking. Whereas, Pástor and Veronesi (2013) explored a different scenario, developed countries with stable democratic processes often experience only short-term market reactions because developed markets price in political risk through adjustments of risk, rather than strong capital flight.

The growth rate, inflation rate, literacy rate, and savings rate do not show significant long-run effects on market capitalization in the DFE model. These findings suggest that, within the context of the panel data used in our study, the direct influence of these factors on market capitalization is relatively limited. However, the absence of significant long-term effects does not necessarily imply that these factors are not important for economic development. Instead, it highlights that their influence may be represented more indirectly.

In the short run, inflation is frequently associated with decreased investment due to diminishing purchasing power and uncertainty; its insignificant long-run influence here may reflect South Asia's relatively moderate inflation levels during the study period or adaptive investor behavior. However, the positive link between inflation and stock trading in the short run implies that inflationary pressures may drive speculative trading in equities; this behavior can temporarily boost capital market participation. In literature, Boyd et al. (2001) explained that savers become more interested to participate in capital markets in moderate inflationary conditions as well as Dibal et al. (2024) found that inflation mitigates the negative impact on market capitalization in both the short and long run whereas Fischer (1993), said that high volatility of inflation hinders investment planning and erodes investor trust. In addition, Judijanto et al. (2025) explained that maintaining moderate inflation is important for capital market development, implying that excessive inflation may be detrimental, while controlled inflation supports a stable investment environment.

Furthermore, the favorable and statistically significant short-run impact of the literacy rate on capital market participation indicates that improvements in literacy are likely to increase awareness, reduce information asymmetry, and enhance confidence in using financial instruments, thereby stimulating short-term market engagement. Our findings is consistent with Lusardi and Mitchell (2014), who demonstrated that financial literacy increases participation in stock markets and aligns with the hypothesis of the Behavioral Economics Model. In contrast, the savings rate has a negative relationship with equity turnover, showing that more savings may indicate more risk-averse behavior. When people choose to save rather than invest, capital is diverted away from volatile assets such as stocks. Whereas, Fischer (1993) highlighted that savings contribute to financial intermediation and facilitate the functioning of capital markets by increasing available investment capital. But Barro (1995) argues that higher savings in low-risk assets can divert capital from equity markets, reducing market activity. In addition, Şerban et al., (2025) suggested that while higher savings exist, they are not automatically channeled into the stock market, though this could change long-term through financial education and better investment options. Finally, the discussion explores that financial inclusion has a favorable and significant impact on capital market development in South Asia, consistent with recognized financial and behavioral theories. Other macroeconomic variables, such as political stability, inflation, growth, literacy, and savings, have diverse and frequently indirect effects.

6. Policy recommendations

Based on the findings from the Panel ARDL estimations and the discussion above, the following policy recommendations are made to enhance market development and promote long-term financial stability:

First, the positive impact of financial inclusion on capital market participation emphasizes the need for financial expansion. Therefore, policymakers should prioritize easier access to financial services, which includes enhancing traditional banking services in rural areas, promoting digital financial services, expanding microfinance programs, and investing in financial literacy initiatives. Second, given the statistically significant short-term impact of literacy on capital market participation, policymakers should focus on strengthening education and literacy initiatives, such as community-based programs, public awareness campaigns, and collaboration with financial institutions. A literate population supports an efficient financial system. Third, policymakers should prioritize initiatives to enhance political stability in financial markets, such as strengthening governance institutions, reducing corruption, ensuring policy consistency, strengthening the rule of law, and promoting good governance practices. Although the direct effect of political stability on capital market participation may be limited, these initiatives are crucial for maintaining financial stability. Fourth, policymakers should also focus on designing several financial policies and market instruments such as provide tax incentives for stock market investors, innovative savings-linked investment products, expanding retirement and pension fund systems etc. that encourage the transformation of savings into capital market investments, as our findings indicate a positive link between the savings rate and capital market participation, even in the short run. By implementing these policy measures, governments can enhance financial development, promote greater market capitalization, and foster a more stable macroeconomic environment that encourages active capital market participation.

7. Conclusion

The study examines the impact of Financial Inclusion and Political Stability on Capital Market Participation in South Asian countries from 2000 to 2023. Results show no cross-sectional dependence, cointegration, or stationarity in the variables, so we use panel ARDL estimation methods to analyze the relationship among financial inclusion, political stability, and capital market participation. We find that the key determinants of capital market participation are financial inclusion, including literacy rates and saving rates. Political stability indirectly influences capital market participation through investor confidence and institutional trust.

Firstly, we have addressed the first research question: “What is the relationship between financial inclusion and capital market participation in South Asian countries?” We have found that financial inclusion has a positive impact on capital market participation. The analysis provides evidence of the long-term value of financial inclusion in supporting capital market participation, particularly in terms of market capitalization. While certain macroeconomic variables, such as political stability and inflation, have mixed long-term consequences, others, including literacy and savings rates, have more pronounced short-term effects. The slow but steady transition to long-run equilibrium highlights the importance of maintaining a stable macroeconomic environment for sustained market development. Financial inclusion, which ensures that individuals and businesses have access to affordable and useful financial products and services, plays a critical role in promoting active capital market participation. Evidence suggests that broader financial inclusion has a positive and significant impact on market capitalization, as it brings more participants into the formal financial system, increasing investment activity and liquidity. Developing a supportive financial infrastructure, such as strengthening national payment systems, improving credit access, and ensuring adaptive regulatory frameworks, is crucial. These strategies can enhance market

capitalization, thereby increasing capital market participation.

Secondly, we have addressed the second research question: “How does political stability influence capital market participation in South Asia?” We have found that political stability does not significantly affect capital market participation. Although our evidence suggests that political stability has no statistically significant direct effect on long-term market development, its indirect influence via investor trust, institutional integrity, and economic predictability remains important. A stable political environment supports sound financial markets by minimizing uncertainty, discouraging capital flight, and encouraging both domestic and foreign investment.

In addition, a well-functioning financial market is dependent not only on infrastructure and administrative outlines, but also on the abilities and trust of its participants. According to our research, literacy rates have a considerable short-run impact on capital market participation, particularly on key indicators such as equity turnover and stock trading activity. Individuals with higher literacy rates can better grasp financial products, investment opportunities, and market dangers, resulting in increased participation and transaction volumes in capital markets. The found negative link between national savings rates and equity turnover suggests that as individuals and households prioritize saving, often in low-risk, traditional bank deposits, their active involvement in stock markets declines. This trend has the potential to impede capital market expansion, liquidity, and vitality by diverting low-yield funds away from productive investments. Ultimately, the study highlights the long-term importance of financial inclusion in capital market participation. It emphasizes the need for a stable macroeconomic environment, financial inclusion, and a supportive financial infrastructure. It also suggests that prioritizing saving may hinder capital market expansion and liquidity.

This study acknowledges the following limitations: Political stability does not directly impact capital market participation; however, its indirect effects, such as those on investor confidence, institutional quality, and policy predictability, should be prioritized. Existing research does not adequately address the socio-cultural, institutional, and psychological factors that influence savers’ reluctance to invest in capital markets. Future research may explore the relationship between governance improvements and policy transparency, as well as experimental studies on financial education and consumer behavior to understand the effectiveness of savings instruments and stock market participation.

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