



## Revisiting the Finance-Inequality Nexus: New Insights from South Asian Economies

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### ARTICLE INFO

#### Article History:

Received: February 22, 2026

Revised: March 28, 2026

Accepted: March 29, 2026

Available Online: March 30, 2026

#### Keywords:

Financial Development

Income Inequality

Panel Quantile Regression (PQR)

Instrumental Variable Two-Stage

Least Squares (IV-2SLS)

#### Funding:

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

### ABSTRACT

The present study examines the impact of financial development on income inequality in South Asian countries using panel data for the period 2003 to 2025. The study uses Panel Quantile Regression (PQR) technique as a primary estimation strategy and for robustness purpose the Instrumental Variable Two-Stage Least Squares (IV-2SLS) econometric technique has been used. This study investigates whether the impact of Financial Development (FD) on income inequality is heterogeneous across the income distribution. The empirical results revealed that FD exerts positive and statistically significant effect on income inequality, highlighting that profound and more inclusive financial system are associated with the increase in income dispersion. This result remains robust across all quantiles of the income inequality distribution. Furthermore, it appears consistent through IV-2SLS estimation addressing potential endogeneity concerns. Beyond FD, this analysis identifies that globalization is also significant determinant of income inequality which help in reducing income inequality. The consumer price index varies across the estimation. While infrastructure development increase income inequality. The results of the study carry important policy implications, underscoring the critical role of financial sector development as a tool for promoting equitable and inclusive economic growth. The study recommends that the policymakers of South Asia should prioritize financial deepening, broaden access to financial services, and strengthen political frameworks for mitigating income disparities and foster sustainable socioeconomic development.

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## 1. Introduction

The problem of income inequality has become one of the most burning and persistent issues facing both the developed and developing economies in modern world. It has emerged due to unequal allocation of income among individuals, households, and countries with extensive implications of social cohesion, political stability, and economic prosperity in the long-run. Besides its economic aspects, income inequality weakens accumulation of human capital, limits intergenerational mobility, and compromises those institutional trusts that are required for sustained development. The reduction in inequality is one of the key goals that have been entrenched in the 2030 Agenda of Sustainable Development by the United Nations, namely Sustainable Development Goal 10 (United

Nations Development Programme, 2024). In spite of this international agreement, in recent decades income inequality has recorded an impressive comeback in much of the world, triggering new scholarly and policy discussions on its structural causes and possible solutions (Bittencourt et al., 2019; Owyang, 2016; Thompson & Leight, 2012). The reasons behind income inequality are complex and highly controversial. One of the strands of thought ascribes income inequalities to variations in individual productivity, effort, human capital endowments and consider inequality as a market economy natural and even incentive-compatible result (Becker & Toms, 1979, 1986). Still others argue that inequality is essentially a failure of systems - institutional biases, labor market inflexibility, and market concentration - that stifle the economic mobility of the less well-off and the multi-generational disadvantage of the less well-off (Bivens et al., 2014; Levy, 2011). To reconcile these views, it is important to look at the structural and institutional processes by which economic forces are converted into distributional outcomes.

FD holds a prominent and theoretically interesting place among the structural factors that have drawn the growing researcher's interest. It refers to the extent, effectiveness and availability of a financial system, the extent of credit market, the quality of financial intermediary and extent of financial services to households and firms (Demirgüç-Kunt & Levine, 2009). Theoretically speaking, proper functioning of financial systems can act as a strong equalizing mechanism by alleviating credit constraints, which place a greater burden on low-income economies. The easy and cheap access to credit can make the poor to invest in education, health and productive businesses that are otherwise blocked by the imperfections of capital markets like moral hazard and asymmetric information (Aghion & Bolton, 1997; Beck, Demirgüç-Kunt, & Levine, 2007; Galor & Moav, 2004). Furthermore, FD can in principle reduce the income inequalities by allowing until now marginalized individuals to engage in the formal economy and expand the economic opportunity base. The theoretical literature further identifies two mechanisms in which finance has an impact on the distribution of income. The wide margin involves bringing the previously unbanked or financially marginalized population, mainly the low-income end of the income distribution, into the formal financial sector, thus increasing access to credit, insurance, and savings products (Becker & Toms, 1979, 1986; Greenwood & Jovanovic, 1990). It is argued that this channel has an equalizing impact on the income distribution in society by allowing low-income households to accumulate human capital, smooth consumption, risk management, and access to investment opportunities that hitherto were accessible only to the rich. Intensive margin, on the other hand, is the enhancement of the quality, diversity, and complexity of already existing financial products and services, which is more likely to benefit the already wealthy and thus would be more likely to increase inequality (Demirgüç-Kunt & Levine, 2009). The distributional outcome of FD, therefore, depends crucially on the prevailing margin which is an ultimately empirical question.

The empirical data regarding the relationship between FD and income inequality is, nevertheless, not exhaustive. An expanding literature has shown that FD contributes to the increase in inequality, especially in those economies where financial sector growth has been mainly driven by the needs of well-connected elites and has not resulted in the meaningful extension of credit to the poorest members of society (Sethi, 2021). On the other hand, the empirical literature has shown that financial deepening is linked to the significant decrease in both income inequality and poverty, especially in economies where institutional structures are developed and more inclusive of financial systems (Dorn, Fuest, & Potrafke, 2022; Hailemariam, Sakutukwa, & Dzhumashev, 2021). The role of political stability and political system is highly important to strengthen the financial institutions as both trade and political stability have a positive impact on income inequality (Xu et al., 2021). Urbanization is closely related to development of an economy as it affects income distribution, which increases income inequality in a society in short term as wages are higher for urban jobs than rural work. However, in the long-term urbanization decreases income inequality due to developed financial system (Ha, Le, & Trung-Kien, 2019). Globalization highly expands the income disparity as it has fast rotation in monetary circulation, exchange matters, and gives power of work at worldwide level that puts forward cooperation among the nations and makes them strengthen with each other (Zahra, Hasan, & Nazir, 2022; Zhu & Treffer, 2005). This study contributes to the literature in three different ways. Firstly, it offers a narrow empirical analysis of the finance-inequality nexus in South Asian economies and therefore provides context-specific insights that are lost in a wider cross-

country study. Secondly, the use of Panel Quantile Regression (PQR) estimation framework enables it to analyze whether the impact of FD on income inequality depends on the whole conditional distribution of inequality itself - which makes it to observe heterogeneities that are ignored by traditional mean-based estimators. Thirdly, it supplements the PQR analysis with Feasible Generalized Least Squares (FGLS) estimation as a robustness test. In addition to FD, the study analyzes the contribution of urbanization, political stability, and globalization as structural co-determinants of income inequality, which adds greater policy implications to the study. The rest of this paper follows the following structure. Section 2 addresses the pertinent theoretical and empirical literature. Section 3 explains the variables included in the model, data and econometric techniques. The empirical results are provided and discussed in Section 4. Section 5 presents check of robustness. Section 6 ends with a conclusion of the findings and policy recommendations.

## 2. Literature Review

The present research available in literature on income inequality reveal that income inequality is a big concern in the field of growth of an economy. The first significant articulation of the nexus between FD and income inequality is attributed to (Greenwood & Jovanovic, 1990). They analyzed financial intermediation and noticed that its expansion to cover the whole population reduce inequality. This prediction has been widely documented in varying degrees of sophistication. In another study, Galor and Zeira (1993) posited that credit market imperfections explain the persistence of intergenerational inequality. They argued that in underdeveloped capital markets, initial wealth disparities lead to irreversibly inequitable distribution because the underprivileged do not have access to loans to support their human capital development. They viewed that financially better developing economies have low inequality because of the absence of credit barriers. In their study, Clarke, Xu and Zou (2003) analyzed several economies simultaneously and found that within a given time period, the ratio of private credit to gross domestic product was inversely proportional to income inequality over time. Beck, Demirgüç-Kunt and Levine (2007), found that development of financial intermediaries positively influences the income of the poorest in society. However, Law, Azman-Saini and Tan (2014) findings were different in that they found non-linear, excessive financialization, effects inequality.

The implementation of flexible econometrics in later studies has yielded different results. Bolarinwa, Vo and Olufolahan (2021) discovered that the positive effects of FD in reducing inequality was only occurred at higher quantiles for some African economies using quantile regression. Nguyen et al. (2021) describe the same findings regarding the inverted U-shaped relationship between FD and income inequality for 21 emerging economies for the years 1961–2017. The most recent example is Khatatbeh et al. (2022) who reported the financial Kuznets curve for Jordan for the years 1993–2017. The effect of FD on income inequality is contradictory and this varies according to the dimension and the category considered. The study found that financially underdeveloped countries tend to reduce inequality by improving access and efficiency of financial services. Political stability has direct link to income inequality outcomes. Some regimes might remain politically stable while maintaining structure that entrenched inequality (Lee, 2019). Nor and Raheem (2025) argued that political stability facilitates opportunities and financial systems in Somalia to reduce income inequality. Zakari et al. (2022) pointed out that in high income and Belt Road initiative nations the political stability enhanced income inequality and economic growth reduced it. This study aims to fill the gap which has emerged after the review of literature as it gives a way to think about the linkages between financial development, political stability, globalization, human capital and income inequality in South Asian countries. The present study will provide a inclusive analysis with some policy suggestions that can be useful for the policy makers to formulate policies to reduce income disparity and unequal distribution.

## 3. Framework

This study examines whether financial development leads to imbalance distribution of income among the peoples of rural and urban areas. Inequality narrowing theory developed by Galor and Zeira (1993), highlights that as financial services improve and economic sector become mature then income inequality in the economy decreases. It hypothesizes that development in financial services access, such as loan and credits, allows investment in education and small businesses will narrow the gap between poor and rich. This theory suggests that development actually helps poor

households by creating more opportunities for them. More specifically, expanding access to financial services and easing credit constraints provides greater benefits to poor than to the rich.

#### 4. Data and Methodology

The present study uses annual data of seven South Asian countries including Pakistan, India, Bangladesh, Sri Lanka, Nepal, Bhutan, and Maldives for the period 2003 -2025. The Gini coefficient obtained from the Standardized World Income Inequality Databases (SWIID) has been used as a proxy for income inequality (Clarke, Xu, & Zou, 2006; Kavya & Shijin, 2020; Solt, 2016; Vo et al., 2023).

**Table 1: Description of variables**

| Variables            | Measures                                                                                                     | Sources | Sign |
|----------------------|--------------------------------------------------------------------------------------------------------------|---------|------|
| Dependent variable   |                                                                                                              |         |      |
| INIQ                 | Income inequality measures the Gini coefficient of the disposable income                                     | SWIID   |      |
| Independent variable |                                                                                                              |         |      |
| FD                   | Financial development based on the depth, access, and efficiency of their financial institutions and markets | IMF     | +/-  |
| GLOB                 | Globalization KOF index measured by the social, political, and economic dimensions. (0-100)                  | KOF     | +/-  |
| CPI                  | Consumer price index                                                                                         | WDI     | +/-  |
| INFD                 | Infrastructure development index                                                                             | WDI     | -/+  |

Following Bittencourt et al. (2019) and Bampinas, Konstantinou and Panagiotidis (2017), The model presented below is used to investigate the effect of FD on income inequality in South Asian countries:

$$INIQ_{it} = \alpha_0 + \alpha_1 FD_{it} + \alpha_2 LNGLOB_{it} + \alpha_3 LNCPI_{it} + \alpha_4 LNINFD_{it} + \varepsilon_{it} \quad (1)$$

Where the subscripts *i* & *t* refers the country and time, respectively. The intercept term of the model is shown by  $\alpha_0$ , while  $\alpha_1$  to  $\alpha_4$  are the partial slope coefficient of the independent variables and  $\varepsilon_{it}$  represents the error term. The variables are used in natural logarithms.

##### 4.1. Estimation Method

For estimation purpose, Panel Quantile Regression (PQR) method is used which is considered better than other traditional mean regression approaches pooled OLS, random effect or fixed effect model due to the following reasons. Firstly, the coefficient estimates from PQR are robust to outliers. (Chen & Lei, 2018; Hübler, 2017). Secondly, different traditional mean regression models, as denoted out by Cade and Noon (2003), the quantile regression method collect the heterogeneous effect of independent variables on the dependent variable by measuring their association across different quantiles of the dependent variable. However, the PQR model produce more robust findings and gives more appropriate results with deeper insights into the link among dependent and independent variables. Thirdly, the PQR estimation technique gives robust results at every quantile when the data is not normally distributed (Xu & Lin, 2020; Yan et al., 2019). For the robustness of the results the present study uses Instrumental Variables 2-Stage Least Squares (IV-2SLS) approach (Stock, 2020). The FD is considered the potentially endogenous variable using their lagged values. Instrument validity and strength are verified via standard diagnostic tests, including the Kleibergen–Paap, Hansen J, and endogeneity tests.

##### 4.2. Preliminary analysis

###### 4.2.1. The Cross Sectional Dependence (CSD) and Slope Heterogeneity tests

First of all, CSD is check of the model. This test is appropriate for balanced panel and of a sum pairwise correlation between panel units (Pesaran, 2007). The results are presented in table 2. The rejection of null hypothesis of CSD for all variables reveal that the residuals are autocorrelated. The results confirm the slope heterogeneity and cross-sectional dependency.

**Table 2: CSD and Slope Heterogeneity**

| Variable                       | CD-Test          | P-Value                     |
|--------------------------------|------------------|-----------------------------|
| LNINE                          | 3.2754*          | 0.001                       |
| FD                             | 7.5956*          | 0.000                       |
| LNGLOB                         | 13.6167*         | 0.000                       |
| LNCPI                          | 23.4267*         | 0.000                       |
| LNINFD                         | 23.3266*         | 0.000                       |
| Slope Heterogeneity Statistics |                  |                             |
|                                | $\tilde{\Delta}$ | $\tilde{\Delta}_{Adjusted}$ |
|                                | -3.4250*         | -3.921*                     |

Notes: All variables are significant at a 1% level.

#### 4.2.2. Panel Unit Root Test

For stationarity, the 2<sup>nd</sup> generation unit root test is used (Pesaran, 2007). The results are presented in Table 3 which show that all the variables are of mixed order of integration.

**Table 3: Panel Unit Root Test**

| VARIABLE | CIPS (LEVEL) | CIPS (1ST DIFF.) | CADF (LEVEL) | CADF (1ST DIFF.) |
|----------|--------------|------------------|--------------|------------------|
| LNINE    | -1.521       | -4.556*          | -1.134       | -3.350*          |
| FD       | -1.739       | -4.505*          | -2.294       | -3.570*          |
| LNGLOB   | 1.025        | -2.250*          | 1.552        | -2.114**         |
| LNCPI    | -2.009*      | -4.349*          | -3.4338*     | -3.0941*         |
| LNINFD   | -4.0091      | -5.476*          | -4.989*      | -3.987*          |

Notes: variables are significant at 10%, 5%, and 1% shows \*\*, \*\*\*, \* respectively

#### 4.2.3. The Cointegration Test

The results of cointegration test are presented in Table 4 which reveal the existence of long run association between the variables.

**Table 4: Results of Kao and Westerlund Test**

| Test Type       | Test Statistic | P-value | Decision              | Conclusion           |
|-----------------|----------------|---------|-----------------------|----------------------|
| Kao (ADF)       | -3.4564        | 0.005   | Reject H <sub>0</sub> | Cointegration exists |
| Westerlund (VR) | 5.668          | 0.001   | Reject H <sub>0</sub> | Cointegration exists |

## 5. Results and Discussion

This study tries to observe the nature of the relationship between the variables in seven south Asian countries. Table 5 presents the results of Panel Quantile Regression at mean quantiles and its robustness is checked through Instrumental Variable Two-Stage Least Squares (IV-2SLS) estimation. The PQR estimates capture the direct association between the explanatory variables and the dependent variable, whereas the IV-2SLS technique is applied as a robustness check to overcome possible endogeneity problems, such as reverse causality, omitted variable bias, and measurement errors. The comparison of both approaches indicates that major relationships remain consistent after controlling for endogeneity.

**Table 5: Results of Panel Quantile Regression (PQR) and IV-2SLS**

| Variable              | PQR Results at Mean Quantiles | IV-2SLS Approach          |
|-----------------------|-------------------------------|---------------------------|
| FD                    | 0.6727*<br>(0.0615)           | 0.4839*<br>(0.0973)       |
| LNGLOB                | -0.1130*<br>(0.0161)          | -0.0237<br>(0.0504)       |
| LNCPI                 | -0.0626*<br>(0.0126)          | 0.1946**<br>(0.0802)      |
| LNINFD                | -0.0012<br>(0.0014)           | 0.0071***<br>(0.0036)     |
| Cons                  | 4.2305*<br>(0.0886)           | Hansen J statistic: 1.015 |
| Pseudo R <sup>2</sup> | 0.385                         | Chi-sq(1) P-val: 0.3136   |

Notes: Symbols \*\*\*, \*\*, \* denote significance at 1% ,5% and 10% levels

The PQR results show that FD has positive impact on income inequality indicating that 1% increase in FD increases income inequality 0.67% at 50<sup>th</sup> quantile (Bolarinwa, Vo, & Olufolahan, 2021; Khatatbeh et al., 2022; Nor & Raheem, 2025). It means that development of financial system leads towards increase income inequality in south Asian economies due to unequal access to financial resources across different income groups. In many South Asian countries, financial institutions tend to serve urban populations, large firms, and wealthier households more effectively than poor and rural communities. As a result, affluent individuals benefit disproportionately from easier access to credit, investment opportunities, and financial services, allowing them to accumulate more wealth and income. Furthermore, financial development often promotes capital-intensive investments and technological advancement, which increase returns to skilled labor and capital owners while providing limited benefits to low-skilled workers. Consequently, the gains from financial sector expansion are concentrated among higher-income groups, leading to a widening income gap and increased income inequality in the region. The robustness is checked through the IV-2SLS approach using the FD as the instruments. The Hansen J-statistic test and p-value explored that FD as instruments are valid and exogenous. It shows that it does not provide evidence of instrument over identification problems and IV is considered reliable. The coefficient of FD is statistically significant, indicating that one unit increase in FD leads to approximately 0.48 unit increase in the income inequality which is consistent with the findings of the PQR approach confirming the FD has robust results.

The globalization (LNGLOB) reflects negative and significant results at mean quantiles. Globalization continues to decline the income inequality over the entire distribution median quantiles group. The Heckscher-Ohlin and Stolper-Samuelson models are both expected to suggest that trade liberalization in labor-abundant developing economies lead to lower inequality, via an increase of unskilled wages. But decades of empirical research refute this prediction. Demand in trade and foreign investment towards comparatively skilled labor even in developing nations increases the skill premium. Feenstra and Hanson (1997) indicate that a country gains trade and foreign investment at the expense of the wage distribution. A general panel study by Jaumotte, Lall and Papageorgiou (2013) concludes that whereas trade globalization has a small disparities impact, financial globalization is a much more powerful contributor to increasing inequality. Furceri, Loungani and Ostry (2019) further affirm that capital account liberalization which is one of the aspects of globalization continues to increase income inequality in both the advanced and emerging economies. Additionally, the IV-2SLS approach presents the insignificant negatively impact on income inequality. The findings for consumer price index (LNCPI) show differences between the two estimation methods. The PQR results reveal a negative and significant coefficient ( $-0.0626$ ), suggesting that increases in consumer prices are associated with a decline in income inequality. However, the IV-2SLS results indicate a positive and significant relationship ( $0.1946$ ), implying that after addressing endogeneity, inflation increases income inequality in South Asian countries. This result is economically meaningful because inflation often affects lower-income households disproportionately due to their limited ability to protect purchasing power. Rising prices of essential goods, food, and energy increase the cost of living for poor households, while higher-income groups may have better access to financial assets and investment opportunities that protect them from inflationary pressures.

For infrastructure development (LNINF), the PQR estimation shows a negative but insignificant relationship ( $-0.0012$ ), indicating no strong evidence of its direct impact on income inequality. However, the IV-2SLS results show a positive and significant coefficient ( $0.0071$ ), suggesting that infrastructure development may increase inequality when endogeneity is controlled. In South Asian countries, infrastructure investments may initially generate unequal benefits because large-scale projects are often concentrated in urban and economically developed regions. Improved infrastructure can enhance productivity and income opportunities, but unequal access to infrastructure services, such as transportation, digital connectivity, and energy, may allow richer regions and households to gain more benefits than disadvantaged groups. The validity of the IV-2SLS estimation is confirmed through the Hansen J statistic, which has a value of 1.015 with a p-value of 0.3136. Since the p-value is statistically insignificant, the null hypothesis of instrument validity cannot be rejected, confirming that the selected instruments are appropriate and the IV-2SLS estimates are reliable. For details see (Abdullah et al., 2026).

## 6. Conclusion and Policy Implication

One of the major objectives of United Nation's SDGs is to reduce in income inequality globally. However, the South Asian countries progress in closing gap of income inequality is controversial. The past literature has shown mixed impact of FD on income inequality. The recent research work has given proper attention particularly to the combined effect of financial development, human capital, political stability, globalization, and urbanization on income inequality. Considering the importance of nexus between FD and income inequality, the present study tries to bring up the true picture of the relationship between the variables using recent econometric development for South Asian economies from 2003 to 2025. The study employs Panel Quantile Regression (PQR) as the baseline approach and applies the Instrumental Variable Two-Stage Least Squares (IV-2SLS) method as a robustness check to address potential endogeneity concerns. The findings reveal that financial development significantly increases income inequality in South Asian countries. The positive and significant coefficient of financial development in both PQR and IV-2SLS models suggests that the benefits of financial expansion have not been equally distributed. Although financial development enhances investment opportunities and economic activities, access to financial resources remains concentrated among higher-income groups, large firms, and urban populations. As a result, financial development may widen income disparities when inclusive financial mechanisms are limited.

In the light of empirical findings, the present study provides the following policy recommendations for reducing income inequality in South Asian economies. It provides a guideline to the policymakers to pay proper attention to the policies to improve the financial system and provides easy access to every person in both urban and rural areas. It calls for the need to create awareness among people about mobile banking, spreading financial system education and use of micro financing system. Furthermore, it is necessary to reduce the bureaucratic constraints on businesses and formulate measures to allow its positive growth to achieve inclusive economic growth. There is also the necessity of adopting social justice in urban planning that encompasses provision of housing and basic amenities, equipment and easy accessibility to job markets to eliminate inequality that comes with the increase in urbanization.

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