

Inclusive Growth or Deepening Disparity? Assessing the Impact of FDI on Income Inequality in Pakistan

Fiaz Hussain¹, Naila Erum², Sumera Imtiaz³, Lubna Bibi⁴

¹Department of Public Administration Fatima Jinnah Women University, Rawalpindi, Pakistan

Email: fiazhussain@fjwu.edu.pk

²Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA (UiTM)

Email: naila@uitm.edu.my

³MPhil Scholar, Department of Public Policy and Administration, Hazara University, Mansehra

Email: sumeraimtiaz.si@gmail.com

⁴MPhil Scholar, Department of Public Policy and Administration, Hazara University, Mansehra

Email: lubnakhanbba@gmail.com

Abstract

Foreign direct investment (FDI) has emerged as a crucial driver of economic growth, particularly in developing countries like Pakistan. While FDI is generally considered beneficial for economic development, its impact on income inequality remains contentious. This study investigates the short-run and long-run effects of FDI on income inequality in Pakistan using the Auto Regressive Distributed Lag (ARDL) model. The findings reveal a complex relationship: FDI reduces inequality in the long term but exacerbates it in the short term, primarily because initial investments are capital-intensive. Additionally, socioeconomic variables such as secondary school education and urbanisation significantly mitigate inequality, while inflation widens the gap. The study underscores the importance of enhancing human capital and controlling inflation to optimise the social benefits of FDI. Policymakers should prioritise inclusive economic strategies to address transitional disparities arising from foreign investment.

Keywords: Foreign Direct Investment; Income Inequality; ARDL Model; Socio-Economic Disparities; Pakistan

Introduction

Foreign direct investment (FDI) has long been considered a key driver of economic growth, especially in developing nations. The empirical literature largely supports the notion that FDI fosters economic progress by injecting capital, technology, and knowledge into host economies (Joshua et al., 2020; Saidi et al., 2020; Dinh et al., 2019). However, concerns persist regarding the potential negative social consequences of FDI, particularly its impact on income inequality (Hekmatpour, 2024). While FDI can stimulate growth, it may also exacerbate disparities by disproportionately benefiting skilled workers and capital owners (Magombeyi & Odhiambo, 2017; Ucal et al., 2016). Previous research offers mixed findings: some studies indicate that FDI reduces inequality through job creation and human capital development (Wu & Hsu, 2012; Soto et al., 2024; Rezk et al., 2022), while others suggest it aggravates inequality by favouring capital-intensive industries (Figini & Görg, 2011; Lee et al., 2022; Le et al., 2021). This duality in outcomes highlights the complex and context-specific nature of FDI's impact on income distribution.

Received 08 April 2026; Revised 09 May 2026; Accepted 16 May 2026; Published (online) 21 May 2026



Attribution 4.0 International ([CC BY 4.0](https://creativecommons.org/licenses/by/4.0/))

Corresponding Author Email: fiazhussain@fjwu.edu.pk

DOI: <https://doi.org/10.69671/socialprism.3.3.2026.259>

The increasing globalisation, mainly due to capital account liberalisation, emphasises FDI as a crucial factor in technology spillovers, innovation, and productivity growth in the recipient country (Wang et al., 2023). However, such benefits are not evenly distributed. The technological advancement and economic growth stemming from FDI can exacerbate income inequality (Atalay et al., 2018). This theoretical ambiguity resulted in conflicting perspectives. Some models, such as North-South FDI, suggest that skill-biased FDI inflow can widen wage disparities, whereas multinational enterprise models posit that multinational companies increase local wages. According to the traditional Heckscher–Ohlin framework, foreign investment benefits abundant factors, reducing income inequality. The conflicting empirical evidence discussed above reflects this lack of theoretical consensus and emphasises the need for more context-dependent research.

In Pakistan, the relationship between FDI and income inequality remains underexplored, despite the growing reliance on FDI to stimulate economic development. As part of its strategy to boost economic growth, Pakistan has actively sought to attract foreign investment, particularly through mega projects such as the China-Pakistan Economic Corridor (CPEC) (Jahanzaib & Ahmed, 2024). However, the socioeconomic impacts of these investments have not been systematically analysed, especially regarding income inequality. With rising public concern over widening economic disparities, it becomes imperative to investigate whether FDI contributes to inclusive growth or exacerbates existing socioeconomic divides.

Addressing this gap is critical, as the United Nations Sustainable Development Goals (SDGs) emphasise reducing inequality as a fundamental target by 2030. Policymakers require empirical evidence to craft effective strategies that balance economic growth with social equity. Furthermore, existing literature often focuses on cross-country analyses or regional studies that may not capture Pakistan's unique socioeconomic dynamics. Hence, there is a pressing need for a dedicated study that explicitly examines how FDI influences income inequality in the Pakistani context. Such an investigation will contribute to the academic discourse and provide practical insights for policy formulation.

This study addresses several pertinent questions: What is the long-run impact of FDI on income inequality in Pakistan? How does FDI influence income inequality in the short run? What socioeconomic factors mediate the relationship between FDI and inequality? These questions are central to understanding the nuanced effects of foreign investment on socioeconomic disparities in the country.

The study employs the Auto Regressive Distributed Lag (ARDL) bounds testing approach to examine both the short-run and long-run impacts of FDI on income inequality in Pakistan. The model incorporates key variables such as GDP per capita, trade openness, domestic credit to the private sector, urbanisation, and inflation. Using robust econometric techniques, we analyse time-series data to determine whether FDI serves as a vehicle for reducing inequality or deepening socioeconomic divides. Our research bridges a gap in the literature and offers nuanced insights into the socioeconomic implications of foreign investment.

This paper contributes to the ongoing debate on the socioeconomic impacts of FDI by focusing on Pakistan's context. By exploring both short-term and long-term dynamics, the study provides

valuable policy recommendations to ensure that FDI-driven growth does not compromise social equity. Our findings highlight the need for inclusive economic strategies that mitigate the transitional disparities associated with capital inflows.

Theoretical Underpinning and Empirical Literature Review

Theoretical Literature

The relationship between FDI and income inequality is examined using modernisation theory, dependency theory, and world-system theory, which offer different perspectives on this relationship between FDI and income inequality¹. Reviewing multiple perspectives to understand the evolution of FDI and income inequality, as well as the underlying theoretical dynamics, is crucial.

Modernisation theory dates back to the 1950s and is based on neoclassical economics (Kuznet, 1955; Rostow, 1960). Theorists argue that FDI is an ideal conduit for the diffusion of capital, markets, and knowledge, thereby promoting economic development in newly independent economies (Varadi & King, 2002). As a result, foreign and domestic capital are treated as homogenous commodities, fostering economic growth and benefiting the entire economy. This postulates that countries' development processes occur in stages. These stages will have different effects on income inequality. As a result of FDI, technology is transferred, resulting in spillover gains. However, income inequality is crucial in the early stages of development. The theory suggests that increasing foreign capital will worsen income inequality in the early stages of development but will decline once optimal development is reached. The Kuznets effect holds that income inequality increases as per capita income rises, but decreases once a certain level of development is reached. Even though FDI initially stimulates growth in some leading sectors and regions and benefits some skilled elites, growth in the top industries and regions facilitates equal income distribution within a country (Tsai, 1995).

Modernisation theory aligns with Kuznet's (1955) hypothesis that economic development and income inequality are correlated via an inverted U-shaped curve. Several studies have been based on modernisation theory (Hanad & Harrison, 1993; Coe, Helpman, and Hoffmaister, 2009; Blomstrom & Kokko, 1996; Markusen & Venables, 1999). Increasing levels of technology and capital within a country have led to higher overall efficiency and labour productivity.

On the other hand, dependency and world-systems theory view the relationship between FDI and income inequality between the core and periphery of underlying economies (Mihaylova, 2015). The core consists of highly industrialised, developed countries with abundant skilled labour, while the periphery consists of developing countries with plentiful unskilled labour. According to the theory, advanced technologies often drive the development process of the periphery. The periphery remains dependent on the core, and the resulting integration process will increase income inequality. It deviates from the modernisation theory by arguing that although FDI may boost wages in the periphery (in terms of higher wages), it is likely that FDI will engage in capital-intensive production that constrains employment, thereby raising income inequality (Girling, 1973; Pigato, 2000; Le et al., 2021). Feenstra and Hanson (1996, 1997) suggest that what is classified as unskilled labour in developed economies could be classified as skill-

¹ For more details, see Roberts and Hite (2000)

intensive in developing countries. Thus, FDI from developed economies to developing economies may exacerbate inequality. Furthermore, FDI activities are often skill-biased, increasing income inequality (Findlay, 1978; Lee & Vivarelli, 2006; Wang & Blomstrom, 1992).

According to both theories, FDI inflows contribute to rising inequality within countries, and there is a clear distinction between the consequences for developed and developing countries. Modernisation theory emphasises the negative effect of FDI inflows in the development stage. Still, it also points out that once a country has passed that stage, FDI inflows in other sectors help reduce overall income inequality. The dependency theory holds that, because of initial differences in government strength, internal market control, and foreign market dependence, countries develop differently, resulting in varying levels of income inequality.

Empirical Literature

Various arguments regarding the relationship between FDI inflows and income inequality have been examined in empirical studies. Most studies have concluded that FDI has a favourable impact on the host country's economy, particularly in developing countries. Still, the consequences on social justice, notably income inequality, are inconsistent. There are three different strands of empirical studies on the relationship between FDI and income inequality. At the same time, the first group of studies demonstrates that rising FDI inflows have contributed to increasing income inequality (Alderson & Nielsen, 1999; Reuveny & Li, 2003; Bodea & Ye, 2017; Mihaylova, 2015; Song et al., 2021; Le et al., 2021; Huynh, 2021). The rise in income inequality may hamper the progress of poverty reduction. Finally, people concerned with relative income often desire to live in an equal society (Figini & Görg, 2011; Sylwester, 2005). Therefore, if FDI increases income inequality, its positive effects on economic growth will be offset by a lower growth rate and other socioeconomic negative effects. This is a major concern for developing countries that are heavily reliant on FDI. In these countries, social stability plays a key role in economic development. According to the second group, FDI inflows have helped lessen income inequality (Mugeni, 2015; Wu & Hsu, 2012; Chintrakarn et al., 2012; Soto et al., 2024; Yuldashev et al., 2023). The third group suggests that FDI does not affect the host country's income distribution (Sylwester, 2005; Franco & Gerussi, 2013; Im & McLaren, 2015).

The empirical studies on the impact of FDI on poverty and income inequality are largely based on cross-country data analysis, which has resulted in mixed results because several countries included the use of proxies for poverty and income inequality, different time periods, and data techniques (Kaulihowa & Adjasi, 2018; Magombeyi & Odhiambo, 2017; Ucal et al., 2016). Similarly, studies have used FDI modelling in CGE (Nejati & Bahmani, 2020); for example, FDI's impact on household welfare (Zélity, 2021), on workers using a gender-aware CGE model (Latorre, 2016), and on poverty and income distribution (Nunnenkamp et al., 2007).

Recent literature examines the complex relationship between FDI and income inequality by incorporating additional factors, including economic development, institutional quality, human development, and sectoral income distribution. Yuldashev et al. (2023) analyse the impact of FDI on income inequality in the context of human capital in developing Asian countries. While findings show an adverse individual effect of FDI and human capital on income inequality, the interaction term indicates that human capital mitigates the negative impact of FDI on income inequality. Similarly, Huynh (2021) examines the role of institutional quality in moderating the

impact of FDI on income inequality. The results demonstrate that FDI exacerbates income inequality, but this detrimental impact diminishes as institutional quality improves.

Some studies examine the notion that the impact of FDI on income inequality varies across developed and developing countries. Hekmatpour (2024) analyses the impact of FDI and income inequality in the panel of 141 countries. The findings show a positive linear effect for non-OECD countries, whereas developed countries exhibit a negative inverted-U-shaped effect. In contrast, Nguyen's (2021) study shows that FDI has a negative impact on income inequality in developing countries and a positive impact in developed countries. The study also explores this relationship in the context of governance, education and economic growth. Education and governance narrow the impact for both samples, whereas economic growth widens it. These findings were supported by Nguyen (2023). In this regard, both theoretical and empirical findings fail to provide a clear consensus on the impact of FDI on income inequality. Hence, there is a need for more empirical work on the topic.

Table 1: Review Summary of Selected Latest Empirical Studies

Study	Country	Methodology	Findings
Kyophilavong et al. (2017)	Laos	CGE model	positive impacts on reducing poverty and narrowing the income gap
Le et al. (2021)	Vietnam	Generalised Method of Moments (GMM)	FDI tends to increase income inequality
Ravinthirakumaran & Ravinthirakumaran (2018)	Asia-Pacific Economic Cooperation (APEC) economies	Panel ARDL	FDI inflows decrease income inequality in the long run
Xu et al. (2021)	38 sub-Saharan African countries	GMM	An increase in FDI reduces the level of inequality decrease
Khan & Nawaz (2019)	11 Commonwealth of Independent States (CIS)	system-generalised method of moments (SYS-GMM) estimator	Trade openness and FDI appear to positively affect income distribution.
Nguyen (2021)	24 developed & 37 developing countries	two-step system GMM Arellano-Bond estimator	FDI increases income inequality in developed countries but reduces it in developing countries
Lee et al. (2022)	37 countries	panel smooth transition regression (PSTR) model	FDI helps to reduce income inequality, but this beneficial effect becomes weak when the country has reached a threshold level of financial development
Rezk et al. (2022)	Egypt	OLS Regression	FDI negatively affects income inequality
Fazaaloh (2019)	Indonesia	panel data regression model with panel-corrected standard errors (PCSE)	FDI has a direct and insignificant effect on income inequality. Moreover, FDI has indirect, negative effects on income inequality through economic growth.
Huynh (2021)	36 Asian countries	Feasible Generalised Least Squares (FGLS)	FDI exacerbates income inequality, and the improvement in IQ from FDI diminishes this detrimental impact until a threshold of IQ, then beyond that, FDI reduces income inequality
Braha-Vokshi et	6 Western Balkan	two-stage least squares,	FDI has a significant negative effect

al. (2021)	(WB) countries	fixed and random effect estimators and (GMM)	on income inequality.
Anetor, Esho & Verhoef (2020)	29 Sub-Saharan Africa	Feasible Generalised Least Squares (FGLS) technique	Foreign aid has a negative effect on poverty reduction in the countries studied
Zélity (2021)	Visegrád 4 (V4) countries (Czech Republic, Hungary, Poland, Slovakia)	CGE model	The benefits of FDI outweigh the costs. On average, a 1% increase in the share of foreign firms is associated with a 0.17% increase in welfare.
Song et al. (2021)	20 developing countries	panel cointegration models	An increase in FDI inflows and remittances raises income inequality, while economic growth reduces it.
Munir & Bukhari (2020)	11 Asian Countries	Instrumental variable least squares (IVLS)	Trade globalisation significantly contributes to reducing income inequality.

Data and Model

The ARDL cointegration/Bounds Testing (Pesaran & Shin, 1999; Pesaran, Shin, Smith, 2001) econometric tool has been used to empirically estimate the short- and long-run relationships among the variables of interest. This technique has several features that give it some advantages over conventional cointegration testing techniques. Firstly, it is simple to execute. Unlike other multivariate cointegration techniques, such as those of Johansen and Juselius (1990), the ARDL procedure estimates the cointegration relationship using OLS once the model's lag order is identified. Secondly, it does not require pre-testing for stationarity of the variables included in the model. Other techniques, such as the Johansen approach, require that all variables be stationary in first differences, i.e., I(1). However, with ARDL, it is not necessary to integrate the variables in the same order. It accepts a mixture of I(1) and I(0) order integration variables as regressors. This technique is applicable regardless of whether the regressors in the model are purely I(0), purely I(1), or mutually co-integrated. Thirdly, ARDL is relatively more efficient in small or finite sample sizes.

Estimation Results, Interpretations, and Discussion

Unit Root Test Results

Table 2: Results of stationarity

Variable	ADF		Dickey Fuller GLS (ERS)		Phillips Perron	
	Level	1 st Diff	Level	1 st Diff	Level	1 st Diff
LGDP	-1.45**	-3.20**	-0.09	-3.01***	-1.82	-3.33**
FDI	-3.48**	-3.91**	-3.56**	-3.76*	-2.29	-5.53***
TO	-2.27	-6.80***	-2.04	-6.82***	-2.35	-6.79***
DCPS (GDP)	-3.16	-5.23***	-2.93	-5.36***	-2.60	-5.23***
CPI	5.90	-3.52**	0.11	-3.66***	0.89	-0.29*
LUP	-1.14	-3.46**	-1.52	-1.06*	-2.18	-17.59***
SSE	-0.87	-4.00***	-0.06	-3.92***	-0.50	-4.05***

Note: *, **, * indicate levels of significance at 1%, 5% and 10%.**

The stationarity of the variables was tested using three approaches: the Augmented Dickey-Fuller (ADF) test, the Dickey-Fuller GLS (ERS) test, and the Phillips-Perron (PP) test. The results reveal that most variables become stationary after first differencing, confirming that the series are integrated of order one (I(1)), while some variables are stationary at the level (I(0)). This justifies using the ARDL cointegration approach, as it can accommodate a combination of I(0) and I(1) variables.

Table 3: Descriptive Statistics

	IIEQ	GDPC	FDI	TO	FD	INF	URB	SSE
Mean	34.5021	6.9650	20.1953	32.4912	22.7565	9.0448	32.7938	28.2853
Median	34.5000	6.9364	20.3895	32.9399	24.0395	8.3736	32.9820	26.9842
Maximum	34.8000	7.3151	22.4442	38.4993	29.7860	38.5119	37.1650	45.2343
Minimum	34.1000	6.5415	17.1984	25.3062	15.3860	0.4002	28.0660	16.9928
Std. Dev.	0.1829	0.2108	1.3476	3.4888	3.9994	6.2976	2.6749	8.0192
Skewness	-0.3032	-0.1599	-0.3163	-0.4277	-0.3724	2.6968	-0.1187	0.5021
Kurtosis	2.0195	2.1434	2.2310	2.4441	2.0294	13.0268	1.8384	2.3024
Jarque-Bera	2.2705	1.4282	1.6940	1.7778	2.5568	221.451	2.4012	2.5545
Probabilit	0.3213	0.4896	0.4286	0.4110	0.2784	0.0000	0.3010	0.2788
y								
Sum	1414.58	285.56	828.009	1332.14	933.017	370.839	1344.54	1159.70
Sum Sq.	1.3394	1.7786	72.6440	486.885	639.828	1586.40	286.206	2572.35
Dev.								
Observatio	41	41	41	41	41	41	41	41
ns								

Table 4: Correlation Matrix of Regressor

	IIEQ	GDPC	FDI	TO	FD	INF	URB	SSE
IIEQ	1							
GDPC	-0.4719	1						
FDI	0.4927	-0.2054	1					
TO	-0.2724	0.0642	0.1607	1				
FD	-0.3624	0.3089	0.3017	0.5455	1			
INF	0.0078	-0.2208	0.0505	0.0427	-0.0057	1		
URB	-0.48488	0.4408	-0.4036	0.4206	0.4327	0.0094	1	
SSE	0.3866	-0.3569	0.3383	-0.3352	-0.6484	-0.0077	-0.3710	1

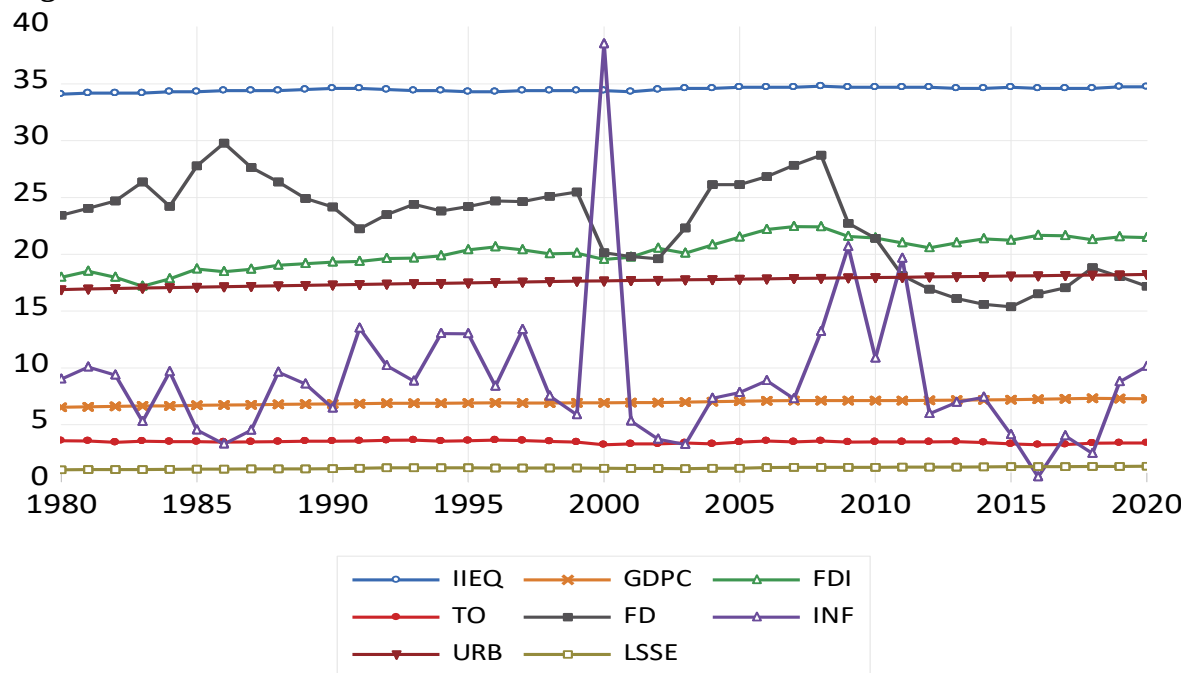
Figure
1:


Table 5: F-statistics and W-Statistics

F-statistic Bounds Test	95% Lower Bound	95% Bound	Upper	90% Bound	Lower	90% Upper
4.8421	2.7114	4.1239		2.2779		3.5186
W-statistic Bound	95% Lower Bound	95% Upper Bound		90% Lower Bound		90% Upper
38.7370	21.6911	32.9912		18.2233		28.1491

If the statistic lies between the bounds, the test is inconclusive. If it is above the upper bound, the null hypothesis of no level effect is rejected. If it is below the lower bound, the null hypothesis of no level effect can't be rejected.

Long-Run Relationship: Bounds Testing

The ARDL bounds testing approach to cointegration was employed to examine the long-run relationship between the variables. The F-statistic (4.8421) and W-statistic (38.7370) exceed the respective upper critical bounds at the 95% confidence level, indicating the rejection of the null hypothesis of no cointegration. This confirms the existence of a long-run equilibrium relationship among the variables in the model.

Long-Run Coefficient Estimates

The estimated long-run coefficients are presented in Table 7. The results demonstrate that foreign direct investment (FDI) has a statistically significant negative effect on income

inequality, implying that increased FDI reduces inequality over the long term. This finding aligns with modernisation theory, which posits that FDI enhances human capital, facilitates technology transfer, and creates economic opportunities, thereby promoting inclusive growth.

Table 7: Long-Term Results

Regressor	Coefficient	Standard Error	T-Ratio
LGDPPC	0.1137	0.1099	1.0347
LFDI	-0.0298*	.01659	-1.7963
TO	-0.003	0.0110	-0.2998
DCPSGDP	0.0447*	0.0253	1.7610
CPI	0.0069***	0.0027	2.5786
LUP	-0.0743**	0.0365	-2.0341
SSE	-0.0858***	0.0276	-3.1011
C	35.2853	5.4323	6.4954

Note: *, **, * indicate levels of significance at 1%, 5% and 10%.**

The coefficient on GDP per capita (LGDPPC) is positive but not statistically significant, indicating that economic growth alone does not significantly affect income inequality. Conversely, the coefficient for secondary school education (SSE) is negative and highly significant, reinforcing the finding that improved educational attainment reduces inequality. Moreover, urbanisation (LUP) exhibits a negative, significant coefficient, suggesting that urban development fosters a more equitable income distribution.

As measured by the consumer price index (CPI), inflation has a positive and significant effect on income inequality, highlighting that inflationary pressures disproportionately affect lower-income groups. Additionally, domestic credit to the private sector (DCPSGDP) has a positive effect on inequality, indicating that financial sector development may not necessarily benefit lower-income populations.

Short-Run Dynamics

The short-run dynamics estimated using the ARDL error-correction model indicate that changes in GDP per capita (Δ LGDPPC) significantly reduce inequality, whereas changes in FDI (Δ LFDI) increase inequality in the short run. This short-term contradiction may reflect initial structural adjustments and capital concentration, which disproportionately benefit the skilled workforce. Trade openness (Δ TO) and domestic credit to the private sector (Δ DCPSGDP) do not show statistically significant effects on inequality in the short run.

Table 7: Short-Term Results

Regressor	Coefficient	Standard Error	T-Ratio
Δ LGDPPC	-1.9257***	0.66201	-2.9088
Δ LFDI	0.041838**	0.022773	1.8372
Δ TO	0.3018E-4	0.0039800	0.007582
Δ DCPSGDP	-0.0044003	0.0043177	-1.0191
Δ INFGDPD	-0.0053809***	0.0015938	-3.3760

ΔCPI	0.0022234***	0.7261E-3	3.0621
ΔLUP	-0.49252**	0.25124	-1.9603
ΔSSE	-0.075621**	0.040658	-1.8599
$\text{ecm}(-1)$	-0.33913**	0.10236	-3.3130
ECM= GINI_DISP-(0.113*LGDPPC-0.029*LFDI-0.003*TO+0.044*DCPSGDP +0.006*CPI-0.074*LUP-0.085*SSE+35.285*C			

Short-term inflation (ΔCPI) significantly worsens inequality, emphasising the vulnerability of lower-income groups to price shocks. Similarly, changes in urban population (ΔLUP) and secondary school education (ΔSSE) significantly mitigate inequality, indicating that socioeconomic improvements can rapidly address disparities.

The error-correction term (ECM) is negative and statistically significant, indicating that deviations from the long-run equilibrium are corrected relatively quickly. The magnitude of the ECM coefficient (-0.33913) indicates a moderate speed of adjustment towards the long-run equilibrium.

Diagnostic and Robustness Tests

Diagnostic tests, including tests for serial correlation, functional form, normality, and heteroscedasticity, confirm the model's robustness and validity. The absence of serial correlation and heteroscedasticity, along with the correct functional form, substantiates the reliability of the estimated coefficients. However, the normality test indicates non-normality in the residuals, suggesting outliers or non-linearities that might warrant further investigation.

Table 6: Diagnostic Tests

	Test Statistics	LM Version
* A: Serial Correlation*CHSQ(1)	2.3039[0.129]*F(1,27)	= 1.6501[.210]
* B: Functional Form *CHSQ(1)	2.8935[.089]*F(1,27)	= 2.1054[0.158]
* C: Normality *CHSQ(2)	0.41453[0.813]	Non-applicable
*D:Heteroscedasticity*CHSQ(1)	0.63484 [0.42]*F(1,38)	0.61282 [0.439]

A: Lagrange multiplier test of residual serial correlation

B: Ramsey's RESET test using the square of the fitted values

C: Based on a test of skewness and kurtosis of residuals

D: Based on the regression of squared residuals on squared fitted values

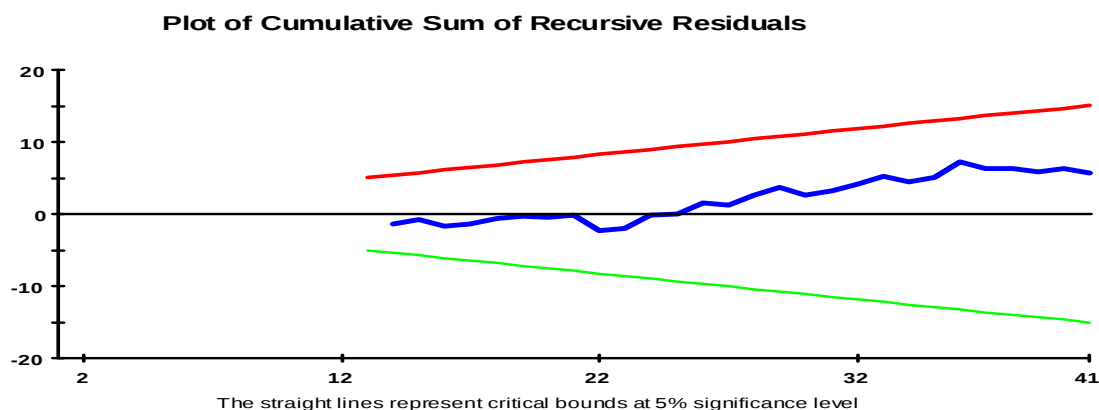


Figure 2a: Plot of Cumulative Sum of Recursive Residuals

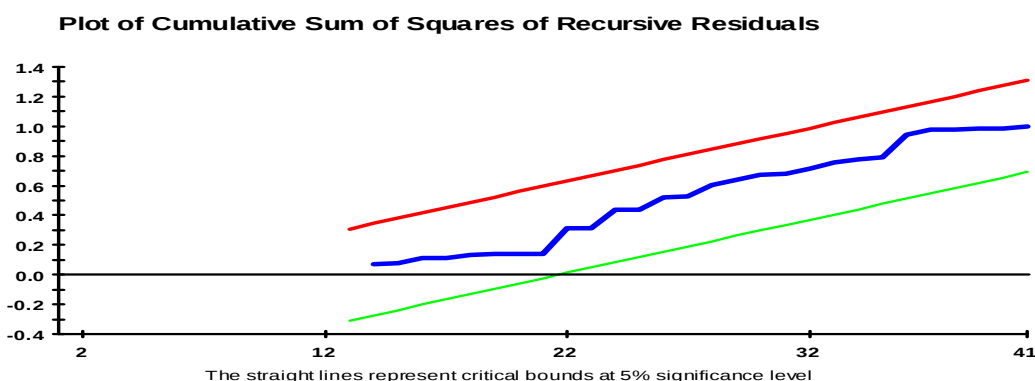


Figure 2b: Plot of Cumulative Sum of Recursive Residuals

Discussion and Implications

The findings of this study contribute to the ongoing discourse on the role of FDI in shaping income inequality. The negative long-run impact of FDI on inequality aligns with the modernisation perspective, suggesting that FDI-driven economic integration facilitates wealth distribution over time. Furthermore, FDI enables access to international markets, efficient utilisation of production factors, technology and knowledge spillovers, and exposure to advanced management skills and human development, thereby reducing income inequality (Rezk et al., 2022; Soto et al., 2024). However, the positive short-term impact highlights transitional challenges where capital-intensive industries initially benefit skilled labour more than unskilled labour (Feenstra & Hanson, 1996).

Educational attainment and urbanisation are key factors in mitigating inequality, indicating the importance of human capital development and inclusive urban policies. Conversely, inflationary pressures pose a persistent threat to equitable growth, necessitating targeted monetary policies. These findings highlight the need for a balanced approach to economic policy that encourages

sustainable FDI inflows while simultaneously addressing the distributional impacts of growth. Investing in human capital and controlling inflation can enhance the long-term benefits of FDI, thereby fostering a more inclusive economic environment.

Conclusion and Policy Implications

The empirical findings from the ARDL model offer important insights into the dynamic relationship between FDI, economic growth, and income inequality in Pakistan. The results indicate a significant long-run relationship among the variables, as evidenced by the F-statistic and W-statistic exceeding the upper critical bounds. The model's robustness is supported by diagnostic tests that confirm the absence of serial correlation, functional form misspecification, and heteroscedasticity. However, the normality assumption was not met, suggesting that the residual distribution may still contain some outliers or non-linear patterns.

The long-term analysis reveals that FDI reduces income inequality, aligning with modernisation theory, which suggests that economic integration and technology transfer can ultimately benefit the wider population. Conversely, the short-run results indicate that FDI may initially exacerbate inequality, as capital-intensive investments primarily benefit skilled workers. This underscores the importance of designing policies that mitigate transitional disparities during the early investment phases.

Furthermore, the findings highlight the crucial role of human capital development: secondary school education significantly reduces income inequality in both the short and long run. Urbanisation also emerges as a vital factor in promoting equitable income distribution, while inflation continues to pose a challenge by disproportionately affecting lower-income groups. Additionally, the positive effect of domestic credit on inequality suggests that financial development alone may not yield inclusive growth without complementary social and economic policies.

Policy Implications

To optimise the socioeconomic benefits of FDI, policymakers should focus on enhancing the economy's absorptive capacity through investment in human capital and skills development. Integrating targeted social policies to support unskilled and marginalised groups is crucial in mitigating the short-term adverse effects of FDI on inequality.

Additionally, urban policies promoting inclusive growth should be prioritised to ensure that urbanisation improves living standards across socioeconomic groups. Addressing inflation through prudent monetary policies is essential to safeguarding the purchasing power of vulnerable populations.

Lastly, while encouraging private sector credit expansion, it is essential to ensure that credit policies are inclusive and designed to benefit small and medium-sized enterprises (SMEs) and lower-income households. A balanced approach that combines economic liberalisation with social protection measures will enable Pakistan to maximise the long-term gains from FDI while minimising its potential downsides.

Given the non-normality of the residuals and the potential presence of outliers, future research could explore more advanced econometric techniques to further validate the findings. Additionally, disaggregating FDI by sector or origin could provide deeper insights into how different types of investment impact income inequality. Exploring regional disparities within Pakistan could also shed light on the localised effects of FDI and growth policies.

References

1. Alderson, A. S., & Nielsen, F. (1999). Income Inequality, Development, and Dependence: A Reconsideration. *American Sociological Review*, 64, 606-631. <http://dx.doi.org/10.2307/2657259>
2. Anetor, F. O., Esho, E., & Verhoef, G. (2020). The impact of foreign direct investment, foreign aid and trade on poverty reduction: Evidence from sub-Saharan African countries. *Cogent Economics & Finance*, 8(1), 1737347. <https://doi.org/10.1080/23322039.2020.1737347>
3. Atalay, E., Phongthiengtham, P., Sotelo, S., & Tannenbaum, D. (2018). New technologies and the labor market. *Journal of Monetary Economics*, 97, 48-67. <https://doi.org/10.1016/j.jmoneco.2018.05.008>
4. Blomström, M., & Kokko, A. (1996). *The impact of foreign investment on host countries: a review of the empirical evidence*. Policy Research Working Paper, 1745.
5. Bodea, C., & Ye, F. (2017). Bilateral Investment Treaties (BITs): The Global Investment Regime and Human Rights. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3054606>
6. Braha-Vokshi, L., Rexhepi, G., Ramadani, V., Abazi-Alili, H. and Sharif, A. (2022). The impact of multinational companies on inequality in Western Balkan countries, *Review of International Business and Strategy*, 32 (2), pp. 305-323. <https://doi.org/10.1108/RIBS-04-2021-0057>
7. Chintrakarn, P., Herzer, D., & Nunnenkamp, P. (2012). FDI and income inequality: Evidence from a panel of US states. *Economic Inquiry*, 50(3), 788-801. <https://doi.org/10.1111/j.1465-7295.2011.00384.x>.
8. Coe, D. T., Helpman, E., & Hoffmaister, A. W. (2009). International R&D spillovers and institutions. *European Economic Review*, 53(7), 723-741. <https://doi.org/10.1016/j.euroecorev.2009.02.005>
9. Dinh, T. T.-H., Vo, D. H., The Vo, A., & Nguyen, T. C. (2019). Foreign Direct Investment and Economic Growth in the Short Run and Long Run: Empirical Evidence from Developing Countries. *Journal of Risk and Financial Management*, 12(4), 176. MDPI AG. Retrieved from <http://dx.doi.org/10.3390/jrfm12040176>.
10. Fazaaloh, A. M. (2019). Is foreign direct investment helpful to reduce income inequality in Indonesia? *Economics & Sociology*, 12(3), 25-36. <https://doi.org/10.14254/2071-789x.2019/12-3/2>.
11. Feenstra, R. and Hanson, G. (1996). 'Foreign investment, outsourcing and relative wages.' In *Political Economy of Trade Policy: Essays in Honor of Jagdish Bhagwati* (ed. R. Feenstra, G. Grossm Irwin), Cambridge MA: MIT Press.
12. Feenstra, R. and Hanson, G. (1997). *Productivity measurement and the impact of trade and technology on wages: estimates for the US, 1972-90*. Working Paper 97-17, University of California at Davis.

13. Figini, P., & Görg, H. (2011). Does foreign direct investment affect wage inequality? An empirical investigation. *The World Economy*, 34(9), 1455-1475. <https://doi.org/10.1111/j.1467-9701.2011.01397.x>.
14. Findlay, R. (1978). Relative backwardness, direct foreign investment, and the transfer of technology: a simple dynamic model. *The Quarterly Journal of Economics*, 92(1), 1–16. <https://doi.org/10.2307/1885996>.
15. Franco, C., & Gerussi, E. (2013). Trade, foreign direct investments (FDI) and income inequality: Empirical evidence from transition countries. *The Journal of International Trade & Economic Development*, 22(8), 1131-1160. <https://doi.org/10.1080/09638199.2011.647048>.
16. Girling, R. (1973). Dependency and persistent income inequality. In F. Bonilla & R. Girling (Eds.), *Structures of Dependency* (pp. 83–101). Stanford, CA: Institute of Political Studies.
17. Haddad, M., & Harrison, A. (1993). Are there positive spillovers from direct foreign investment?: Evidence from panel data for Morocco. *Journal of Development Economics*, 42(1), 51-74. [https://doi.org/10.1016/0304-3878\(93\)90072-U](https://doi.org/10.1016/0304-3878(93)90072-U)
18. Hekmatpour, P. (2024). Foreign direct investment, sectoral distribution and income inequality in developed and developing economies. *International Journal of Sociology*, 54(3), 133–154. <https://doi.org/10.1080/00207659.2024.2348380>
19. Huynh, C. M. (2021). Foreign direct investment and income inequality: Does institutional quality matter?. *The Journal of International Trade & Economic Development*, 30(8), 1231–1243. <https://doi.org/10.1080/09638199.2021.1942164>.
20. Im, H., & McLaren, J. (2015). Does foreign direct investment raise income inequality in developing countries? A new instrumental variables approach. *School of Economics and Finance*, Yeungnam University.
21. Jahanzaib, M., & Ahmed, Z. S. (2024). The China Factor in Pakistan’s Geo-economic Tilt. *International Studies*. <https://doi.org/10.1177/00208817241298339>
22. Jaumotte, F., Lall, S., & Papageorgiou, C. (2013). Rising income inequality: technology, or trade and financial globalisation? *IMF economic review*, 61(2), 271–309. <https://doi.org/10.1057/imfer.2013.7>.
23. Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration with application to the demand for money. *Oxford Bulletin of Economics and Statistics*, 52, 169-210. <https://doi.org/10.1111/j.1468-0084.1990.mp52002003.x>
24. Joshua, U., Rotimi, M. E., & Sarkodie, S. A. (2020). Global FDI Inflow and Its Implications across Economic Income Groups. *Journal of Risk and Financial Management*, 13(11), 291. MDPI AG. Retrieved from <http://dx.doi.org/10.3390/jrfm13110291>.
25. Kaulihowa, T., & Adjasi, C. (2018). FDI and income inequality in Africa. *Oxford Development Studies*, 46(2), 250-265. <https://doi.org/10.1080/13600818.2017.1381233>.
26. Khan, I. and Nawaz, Z. (2019). Trade, FDI and income inequality: empirical evidence from CIS, *International Journal of Development Issues*, 18(1), 88-108. <https://doi.org/10.1108/IJDI-07-2018-0107>.
27. Kuznets, S. (1955). International differences in capital formation and financing. In *Capital formation and economic growth* (pp. 19–111). Princeton University Press.

28. Kyophilavong, P., Bin, X., Vanhnala, B., Wongpit, P., Phonvisay, A., & Onphanhdala, P. (2017). The Impact of Chinese FDI on Economy and Poverty of Lao PDR. *International Journal of China Studies*, 8(2), 259-276.
29. Latorre, M. C. (2016). A CGE analysis of the impact of foreign direct investment and tariff reform on female and male workers in Tanzania. *World Development*, 77, 346-366. <https://doi.org/10.1016/j.worlddev.2015.08.011>
30. Le, Q. H., Do, Q. A., Pham, H. C., & Nguyen, T. D. (2021). The Impact of Foreign Direct Investment on Income Inequality in Vietnam. *Economies*, 9(1), 27. <https://doi.org/10.3390/economies9010027>.
31. Lee, C. C., Lee, C. C., & Cheng, C. Y. (2022). The impact of FDI on income inequality: Evidence from the perspective of financial development. *International Journal of Finance & Economics*, 27(1), 137-157 <https://doi.org/10.1002/ijfe.2143>
32. Lee, E., & Vivarelli, M. (2006). The social impact of globalisation in the developing countries. *International Labour Review*, 145 (3), 167-184.
33. Magombeyi, M. T., & Odhiambo, N. M. (2017). Foreign direct investment and poverty reduction. *Comparative Economic Research*, 20(2), 73-89. doi:10.1515/cer-2017-0013.
34. Markusen, J. R., & Venables, A. J. (1999). Foreign direct investment as a catalyst for industrial development. *European Economic Review*, 43(2), 335-356. [https://doi.org/10.1016/S0014-2921\(98\)00048-8](https://doi.org/10.1016/S0014-2921(98)00048-8)
35. Mihaylova, S. (2015). Foreign direct investment and income inequality in Central and Eastern Europe. *Theoretical & Applied Economics*, 22(2). 23-42
36. Mugeni, S. (2015). *Foreign investment, democracy and income inequality: empirical evidence*. Master's Thesis, Department of Economics, University of Ottawa, U.S.A.
37. Munir, K., & Bukhari, M. (2020). Impact of globalisation on income inequality in Asian emerging economies. *International Journal of Sociology and Social Policy*. 40 (1/2), 44-57. <https://doi.org/10.1108/IJSSP-08-2019-0167>
38. Nejati, M., & Bahmani, M. (2020). The economic impacts of foreign direct investment in oil and gas sector: A CGE analysis for Iranian economy. *Energy Strategy Reviews*, 32, 100579. <https://doi.org/10.1016/j.esr.2020.100579>.
39. Nguyen, V. B. (2021). The difference in the FDI inflows–Income inequality relationship between developed and developing countries. *The Journal of International Trade & Economic Development*, 30(8), 1123-1137. <https://doi.org/10.1080/09638199.2021.1925331>.
40. Nguyen, V.B. (2023). The role of digitalisation in the FDI – income inequality relationship in developed and developing countries. *Journal of Economics, Finance and Administrative Science*, 28(55), 6-26. <https://doi.org/10.1108/JEFAS-09-2021-0189>
41. Nunnenkamp, P., Schweickert, R., & Wiebelt, M. (2007). Distributional effects of FDI: How the interaction of FDI and economic policy affects poor households in Bolivia. *Development Policy Review*, 25(4), 429-450. <https://doi.org/10.1111/j.1467-7679.2007.00379.x>
42. Pesaran, M. H., & Shin, Y. (1999). An autoregressive distributed lag modeling approach to cointegration analysis. Chapter 11 in S. Strom (ed.), *Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium*. Cambridge University Press, Cambridge.

43. Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, 16(3), 289-326. <https://doi.org/10.1002/jae.616>
44. Pigato, M. (2000). *Foreign direct investment in Africa: Old tales and new evidence*. Washington, DC: Mimeo, the World Bank.
45. Ravinthirakumaran, K., & Ravinthirakumaran, N. (2018). The impact of foreign direct investment on income inequality: a panel Autogressive Distributed Lag approach for the Asia-Pacific Economic Cooperation developing economies. *Asia-Pacific Sustainable Development*, 25(1), 57-84. <https://doi.org/10.18356/d30b620b-en>.
46. Reuveny, R., & Li, Q. (2003). Economic Openness, Democracy, and Income Inequality. *Comparative Political Studies*, 36(5). <https://doi.org/10.1177/0010414003036005004>
47. Rezk, H., Amer, G., Fathi, N., & Sun, S. (2022). The impact of FDI on income inequality in Egypt. *Economic Change and Restructuring*, 55, 2011–2030, <https://doi.org/10.1007/s10644-021-09375-z>.
48. Roberts, J. T. and A. Hite, Eds. (2000). *From modernisation to globalisation: perspectives on development and social change* Malden, Mass : Blackwell.
49. Rostow W. (1960). *The Stages of Economic Growth: A Non – communist Manifesto*, Chapter II, Cambridge University Press.
50. Saidi, S., Mani, V., Mefteh, H., Shahbaz, M., & Akhtar, P. (2020). Dynamic linkages between transport, logistics, foreign direct investment, and economic growth: Empirical evidence from developing countries. *Transportation Research Part A: Policy and Practice*, 141, 277–293. <https://doi.org/10.1016/j.tra.2020.09.020>.
51. Song, Y., Paramati, S. R., Ummalla, M., Zakari, A., & Kummitha, H. R. (2021). The effect of remittances and FDI inflows on income distribution in developing economies. *Economic Analysis and Policy*, 72, 255-267. <https://doi.org/10.1016/j.eap.2021.08.011>
52. Soto, G., Jardon, C. M., & Martinez-Cobas, X. (2024). FDI and income inequality in tax-haven countries: The relevance of tax pressure. *Economic Systems*, 48(1), 101172. <https://doi.org/10.1016/j.ecosys.2023.101172>
53. Sylwester, K. (2005). Foreign direct investment, growth and income inequality in less developed countries. *International Review of Applied Economics*, 19(3), 289-300. <https://doi.org/10.1080/02692170500119748>.
54. Tsai, P.-L. (1995). Foreign direct investment and income inequality: further evidence. *World Development*, 23: 469–83. [https://doi.org/10.1016/0305-750X\(95\)00136-Z](https://doi.org/10.1016/0305-750X(95)00136-Z).
55. Ucal, M., Haug, A. A., & Bilgin, M. H. (2015). Income inequality and FDI: Evidence with Turkish data. *Applied Economics*, 48(11), 1030-1045. <https://doi.org/10.1080/00036846.2015.1093081>
56. Varadi, B., & King, L. P. (2002). Beyond Manichean economics: foreign direct investment and growth in the transition from socialism. *Communist and Post-Communist Studies*, 35(1), 1-21.
57. Wang, J. Y., & Blomström, M. (1992). Foreign investment and technology transfer: A simple model. *European Economic Review*, 36(1), 137-155. [https://doi.org/10.1016/0014-2921\(92\)90021-N](https://doi.org/10.1016/0014-2921(92)90021-N).
58. Wang, W., Xu, T., Liu, X., & Sun, Y. (2023). FDI inflows and income inequality: A Schumpeterian economic growth. *International Review of Economics & Finance*, 83, 805–820. <https://doi.org/10.1016/j.iref.2022.10.023>

59. Wu, J. Y., & Hsu, C. C. (2012). Foreign direct investment and income inequality: Does the relationship vary with absorptive capacity? *Economic Modelling*, 29(6), 2183-2189. <https://doi.org/10.1016/j.econmod.2012.06.013>.
60. Xu, C., Han, M., Dossou, T. A. M., & Bekun, F. V. (2021). Trade openness, FDI, and income inequality: Evidence from sub-Saharan Africa. *African Development Review*, 33(1), 193-203. <https://doi.org/10.1111/1467-8268.12511>.
61. Yuldashev, M., Khalikov, U., Nasriddinov, F., Ismailova, N., Kuldasheva, Z., & Ahmad, M. (2023). Impact of foreign direct investment on income inequality: Evidence from selected Asian economies. *PLOS ONE*, 18(2), e0281870. <https://doi.org/10.1371/journal.pone.0281870>
62. Zélity, B. (2021). The welfare effects of FDI: A quantitative analysis. *Journal of Comparative Economics*. Available online <https://doi.org/10.1016/j.jce.2021.09.007>.