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The Enabling Role of Financial Development in the FDI and Income Inequality Relationship in Emerging Markets

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Abstract: **Purpose –** This study investigates the complementary effect of Foreign Direct Investment (FDI) and Financial Development (FD) on income inequality in emerging markets from 2010 to 2023. **Design/Methodology/Approach** – The study used the Fixed Effects Generalised Least Squares (FE–GLS) and the Fixed Effect Threshold with Lag proposed by Wang (2015) on 15 emerging markets. **Findings –** The study revealed that FDI on its own increases inequality, whereas FD directly reduces it, and their interaction significantly reverses FDI's effect on inequality. The threshold results show a reducing effect when FD exceeds a threshold of 0.62. **Research Implications –** The study recommends that strengthening financial development beyond a critical threshold is essential for transforming FDI from an inequality-widening force into a driver of equitable growth in emerging markets. In addition, the study applied a more inclusive income disparity indicator from UNDP-HDI index. **Originality / Value** – The paper is the first to introduce financial development into the FDI- FD-inequality relationship on emerging markets, considering the FD role as a moderator and threshold variable.

Keywords: Emerging Markets; FDI Inflows; Financial development; Income Inequality; Thresholds

JEL Classification: F21, G20, O15, O16

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1. Introduction

Income inequality remains one of the most persistent and politically sensitive challenges confronting emerging economies. While disparities in income distribution are often summarised by the Gini coefficient, this single statistic encapsulates deeper questions of fairness, opportunity, and social cohesion (Wilkinson, 2020; Le et al., 2021). In situations where economic growth has accelerated over recent decades, these societies often face the absurdity of rising national income alongside entrenched or widening inequality, a dynamic that not only undermines the inclusivity of growth but also erodes the legitimacy of economic reforms (O'Sullivan, 2020; Bondy and Maggor, 2024).

The forces shaping inequality in these economies are versatile, but globalisation, through foreign direct investment (FDI), has been central to the debate. For policymakers in emerging markets, FDI is an appealing lever for growth, bringing with it capital, technology, and management expertise (Le et al., 2021). When complemented by adequate financial development (FD), these flows can enhance resource allocation efficiency, foster innovation, and deepen market integration (Bayer, 2023; Demir et al., 2022). However, the distributive consequences of these processes remain contested; thus, whether FDI-led growth benefits society broadly or disproportionately favours skilled workers and capital owners depends on structural and institutional conditions.

Theoretically, the relationship between FDI and income inequality is ambiguous. From a neoclassical perspective, capital inflows should raise the marginal productivity of labour, particularly in capital-scarce economies, thereby reducing inequality (Kaczmarczyk, 2023). Yet skill-biased technological change models suggest that FDI increases demand for high-skilled labour, widening wage gaps in economies where human capital is unevenly distributed (Wang et al., 2021). Empirical evidence is equally mixed, with studies finding inequality-enhancing (Huang et al., 2020; Huynh, 2021) with possible reasons being financial globalization (Furceri & Ostry, 2019); inequality-reducing (Lee et al., 2022; Nguyen, 2021) as a result of improved corporate and public sector governance, high savings and increased domestic investments (Beer, 2015). Also, a null effect whether in Sub-Saharan Africa (Gossel, 2024); East Asia, Latin America and Africa (Sylwester, 2006); a cross-country study (Deininger & Squire's, 1998) or Central and South-Eastern socialist countries (Franco & Gerussi, 2013).

An additional complexity, often overlooked in earlier studies, is the potential non-linear interaction between FD and FDI. Thus, economic behaviour in emerging economies rarely conforms to linear predictions; rather, it is shaped by threshold effects and structural shifts (Bos et al., 2020). Evidence increasingly suggests that FDI's effect on inequality follows an inverted U-shape, with initial inflows exacerbating disparities until the host economy's absorptive capacity, through

infrastructure, institutional quality, and human capital, crosses a critical threshold, after which the effect becomes equalising (Hekmatpour, 2024; Akyuz et al., 2023). From a corresponding line of reasoning in the finance literature, the financial Kuznets curve, posits that FD first widens inequality before ultimately reducing it once financial systems achieve greater inclusiveness (Öndes & Kızılgöl, 2024; Akhtar & Rashid, 2024).

This study addresses these gaps by focusing explicitly on emerging markets, where the interaction between FDI and FD may be particularly pronounced due to transitional economic structures, rapid integration into global value chains, and evolving financial systems. The study pursue three objectives, 1) to explore the role of FDI in shaping income inequality in emerging economies, distinguishing between potential growth-enhancing and inequality-exacerbating effects; 2) to investigate whether FD operates as a transmission channel through which FDI influences income inequality; and 3) to identify the minimum threshold level of FD beyond which FDI significantly reduces inequality, accounting for variations in financial maturity.

Methodologically, this study employs a Fixed Effects Generalised Least Squares (FE–GLS) estimator with robust errors to address unobserved heterogeneity, serial correlation, and heteroskedasticity, complemented by static and dynamic Fixed Effect Threshold Models (Wang, 2015) to capture non-linear and regime-dependent dynamics in the FDI–inequality–FD nexus. Using data from 15 emerging economies (2010–2023), results indicate that FDI generally reduces inequality, but this effect diminishes beyond a critical threshold of financial development. The threshold estimates confirm that only when FD surpasses a certain maturity level does higher FDI penetration yield markedly improved distributive outcomes.

This study enriches the FDI–inequality literature in emerging markets by integrating FD and FDI within a non-linear framework fitted to structural and institutional contexts. Using a dynamic panel threshold model, it addresses heterogeneity and endogeneity, capturing interaction effects overlooked by linear methods. Moreover, a multidimensional FD index, covering depth, access, and efficiency across institutions and markets, serves as both a moderator and threshold variable, enabling a deep assessment of absorptive capacity. In addition, extending the Greenwood–Jovanovic hypothesis to global capital flows, the analysis shows that FDI's distributive effects depend critically on financial structure and maturity. The findings reframe policy debates on inclusive growth, highlighting the need for coordinated strategies that strengthen financial systems while attracting targeted, development-enhancing FDI.

2. Literature Review

This study employs the Greenwood–Jovanovic hypothesis (1990) as its primary theoretical lens to examine how financial development moderates the inequality effects of FDI. The hypothesis posits a nonlinear relationship between financial development and income inequality: inequality may initially worsen as financial systems deepen but later decline once access broadens. It frames finance not merely as a growth driver but as a redistributive mechanism whose inclusiveness evolves over time.

In early stages, high transaction costs and limited outreach restrict financial services to the wealthy, concentrating benefits. As efficiency improves and participation widens, capital is more equitably distributed. Also, applying to FDI, this suggests that in underdeveloped financial systems, FDI gains accrue primarily to capital owners and large firms, reinforcing inequality (Mallick et al., 2020). Once financial maturity is achieved, markets can channel FDI-related capital to a broader base, enhancing inclusiveness. Empirical work supports this conditionality (Huang et al., 2020; Lee et al., 2022; Zhang & Zhange, 2023).

However, the Greenwood–Jovanovic model overlooks certain structural constraints. Therefore, the dependency theory (Ahumada & Torres, 2024) offers a complementary institutional perspective, warning that where financial institutions are elite-captured or aligned with extractive foreign partnerships, development may occur without broad access. In such cases, financial deepening does not guarantee equitable distribution, and FDI can exacerbate disparities.

A third lens is the modern reinterpretation of the Heckscher–Ohlin–Stolper–Samuelson theorem (Boianovsky, 2021), which links FDI to factor returns. In labour-abundant economies, FDI should, in theory, raise demand for low-skilled labour, narrowing wage gaps. Yet this requires financial systems to provide capital to labour-intensive sectors and small firms so they can integrate into FDI-driven production chains. Without such access, benefits skew toward capital-intensive industries, bypassing much of the workforce.

Together, these three frameworks provide a multi-dimensional view of the FDI - FD - inequality nexus. While Greenwood–Jovanovic offers the dynamic conditional logic, dependency theory grounds it in institutional realities, and the H-O-S-S framework details microeconomic transmission channels. This synthesis informs policy by emphasising that for FDI to be inclusive, financial development must be both broad-based and institutionally accessible.

Empirical evidence on the FDI–inequality nexus is mixed, reflecting methodological variation, contextual heterogeneity, and the influence of mediating factors such as governance, human capital, and financial development (FD). A common thread in recent studies is the recognition of non-linearity and conditionality. Kaulihowa and

Adjasi (2018) identify a U-shaped FDI–inequality relationship in Africa but omit FD and absorptive capacity. Nguyen (2021) finds governance and education moderate the relationship, with opposite effects in developed versus developing economies, yet neglects threshold dynamics. Song et al. (2021) include FD as a control but overlook its interactive role, while Mallick et al. (2020) highlight divergent effects in China and India without isolating FD's mechanism. Le et al. (2021) detect nonlinearities in Vietnam, moderated by education and governance, again excluding FD thresholds. Huang's (2020) meta-analysis confirms development-stage dependence but omits structural channels like finance. Yuldashev et al. (2023) show human capital strengthens FDI's equity effects in Asia, but do not examine FD. Wang and Lee (2023) reveal country risk's conditioning role yet exclude domestic financial structures.

These studies underline that FDI's distributional outcomes depend on complementary domestic capacities and context-specific thresholds. However, the explicit modelling of FD as both moderator and threshold variable that captures its multidimensional depth, access, and efficiency remains scarce. This omission is critical for emerging markets, where financial inclusion and market maturity determine whether FDI amplifies inequality or fosters inclusive growth.

A substantial body of empirical work examines financial development's (FD) impact on income inequality, revealing heterogeneous, nonlinear, and institutionally contingent effects, particularly in emerging markets. Chisadza and Biyase (2023), using a multidimensional FD index (1980–2019), find FD reduces inequality in emerging and least developed countries but not in advanced economies, with banking development narrowing inequality and stock market expansion widening it in less developed contexts. Ibrahim (2024) shows FD exacerbates inequality in financially shallow economies but mitigates it in more developed systems, driven by efficiency and information quality. Zungu et al. (2022) confirm the Greenwood–Jovanovic U-shaped hypothesis in Africa, with FD turning inequality-enhancing beyond a 21.9% GDP threshold, especially under unconventional monetary regimes.

Country-specific evidence is mixed: Özcan (2020) reports FD reduces inequality in Brazil, Russia, Greece, and Turkey but increases it in parts of Eastern Europe and Asia, suggesting institutional mediation. Omar and Inaba (2020) demonstrate that financial inclusion reduces poverty and inequality, particularly in strong institutional settings, while Demir et al. (2022) highlight the inequality-reducing role of digital financial inclusion, especially in high-income countries. Bayar's (2023) Türkiye case study shows FD promotes equitable distribution during structural transformation, but benefits risk skewing toward upper-income groups without inclusive policies. Biyase et al. (2023) find FD consistently reduces inequality in BRICS nations, buffering against the inequality effects of technological change.

Collectively, these studies affirm FD's central role in distributional dynamics, supporting threshold effects, non-linearity, and institutional mediation. Yet, few explicitly examine FD's moderating role in the FDI–inequality nexus, particularly in emerging markets leaving a critical theoretical and empirical gap that this study addresses.

Empirical work increasingly acknowledges that FDI's distributive effects are contingent on domestic absorptive capacities, with financial development, institutional quality, trade openness, and digitalization acting as moderating thresholds. Osei and Kim (2020), using a dynamic panel threshold model for 62 countries, find that FDI's growth benefits vanish once private sector credit exceeds 95.6% of GDP, implying that overdeveloped financial systems may blunt inclusive outcomes. Huynh (2021) shows that FDI exacerbates inequality in Asia but is mitigated by institutional quality beyond a certain threshold, highlighting governance mechanisms, though omitting financial development. Nguyen (2023) finds that digitalization reduces inequality globally but interacts asymmetrically with FDI, reinforcing the idea that enabling structures, digital or financial conditions capital inflows' effects.

Lee et al. (2022) directly test financial development's threshold role in the FDI–inequality nexus, showing that FDI's equalizing effects diminish at higher financial development levels, consistent with the Greenwood–Jovanovic hypothesis. Yet, they do not unpack which dimensions, access, efficiency, stability drive these dynamics. Xu et al. (2021) in Sub-Saharan Africa demonstrate that FDI reduces inequality in specific macro-institutional contexts, though financial development is absent from their framework.

These studies emphasize that FDI's impact on inequality is neither automatic nor uniform; it depends on structural readiness, with thresholds shaping direction and magnitude. However, most empirical work models only partial interactions, thus FDI with institutions, or FDI with digitalization, rarely integrating financial development explicitly, and almost never in a joint, threshold-based framework for emerging markets.

While extensive studies have examined the separate impacts of financial development (FD) and foreign direct investment (FDI) on income inequality separately, the moderating role of FD within the FDI–inequality nexus remains underexplored, particularly in emerging markets. The existing frameworks predominantly centre on governance or human capital as measures of absorptive capacity, neglecting the structural readiness of domestic financial systems. This omission obscures whether, and at what stage of maturity, FD enables FDI to transition from exacerbating to alleviating inequality.

To address this, the present study employs a dynamic panel threshold model explicitly designed for emerging markets, accounting for cross-country heterogeneity, endogeneity, and non-linear dynamics. FD is operationalised through a multidimensional composite index disaggregated into depth, access, and efficiency for both financial institutions and markets. This approach captures the diverse mechanisms through which financial conditions FDI's distributive effects. The study extends the Greenwood–Jovanovic hypothesis into the context of global capital flows, demonstrating that both the level and structural composition of FD determine the equity outcomes of FDI. By positioning FD as both a threshold and moderating mechanism, the analysis reframes the FDI–inequality debate, yielding actionable insights for policymakers seeking to enhance the inclusivity of growth in financially evolving, capital-importing economies.

3. Methodology

Data sources: The dataset encompasses 15 emerging markets over the period 2010–2023. Emerging economies are selected due to their heightened sensitivity to global capital flows, relatively underdeveloped financial systems, and pronounced disparities in wealth distribution, which collectively create a compelling context for assessing the nexus between foreign direct investment (FDI), financial development, and income inequality. The timeframe begins in 2010 to ensure full cross-country coverage following substantial data harmonisation by international agencies and to capture the post-global financial crisis phase, when structural reforms and capital market liberalisation accelerated in many emerging markets. The measures of income inequality are obtained from the UNDP's Human Development Index database, FDI and control variables from the World Bank's World Development Indicators, and financial development indicators from the IMF database.

Model specification: The empirical strategy for this study integrates three complementary estimation techniques to rigorously assess the direct and complementary effects of foreign direct investment (FDI) and financial development (FD) on income inequality. The primary specification adopts the Fixed Effects Generalised Least Squares (FE-GLS) estimator. This choice is motivated by both statistical diagnostics and theoretical considerations. As reported in Table A4 in the appendix, the Breusch–Pagan LM and Hausman tests decisively confirm the presence of unobserved heterogeneity and the appropriateness of fixed effects over random effects. Moreover, FE-GLS enhances efficiency by addressing potential heteroskedasticity and within-panel error correlation, issues frequently observed in macro-panel data on emerging economies due to structural asymmetries and idiosyncratic shocks (Ketokivi et al., 2021). Therefore, to achieve the objectives 1 and two off this study, the FE-GLS estimator is specified as follows:

$$IIQ_{it} = \alpha_i + \beta_1 FDI_{it} + \beta_2 FD_{it} + \beta_3 (FDI_{it} \times FD_{it}) + \gamma' X_{it} + \varepsilon_{it}$$

Where IIQ_{it} is an income inequality indicator for country i in year t. FDI_{it} is foreign direct investment inflows. FD_{it} is a financial development index. $FDI_{it} \times FD_{it}$ is the interaction term capturing the complementary effect. X_{it} is a vector of control variables. α_i is the country-specific fixed effects. ε_{it} is the error term.

In line with the interactive term, the marginal effect of FD on GINI in the presence of FDI by is determined by taking the partial derivative of equation (1) with respect to FD, thus:

$$\frac{\delta(IIQ_{it})}{\delta(FDI_{it})} = \beta_1 + \beta_3 FD_{it}$$

The robustness of this baseline is reinforced through two-step system generalised method of moment framework. While endogeneity tests in Table A3 do not detect statistically significant bias, the approach safeguards against potential reverse causality and unobserved heterogeneity, particularly when the lagged dependent variable is included as a regressor (Liu et al., 2024). Also, including the lagged levels of endogenous variables as instruments for equations in differences, and lagged differences as instruments for equations in levels improves efficiency and mitigates weak instrument concerns (Liu et al., 2024; Jin et al., 2021). Furthermore, it handles latent simultaneity between inequality, FDI inflows, and financial sector development relationships that are theoretically plausible in open-economy settings. The specification is given by:

$$IIQ_{it} = \alpha_i + \rho IIQ_{i,t-1} + \beta_1 FDI_{it} + \beta_2 FD_{it} + \beta_3 (FDI_{it} \times FD_{it}) + \gamma' X_{it} + \varphi_{it} + \omega_{it} + \varepsilon_{it}$$

Where $IIQ_{i,t-1}$ is the lagged dependent variable, $\varphi_{it}, \omega_{it}$ are time and country effects respectively. The validity of instruments is assessed via the Hansen J-test of overidentifying restrictions, while serial correlation is checked through the Arellano–Bond AR(2) test, which are presented as part of the estimated results.

Finally, to capture nonlinear dynamics and potential regime shifts, the study utilise the Fixed Effect Threshold Model proposed by Wang (2015). Its selection is deliberate: it maintains methodological consistency with the FE-GLS structure while allowing endogenous determination of inequality thresholds, and critically, it accommodates the inclusion of lagged dependent variables to address dynamic persistence such as potential serial correlation, endogeneity and omitted persistence effects. This is particularly relevant for emerging markets, where structural inequality adjusts gradually, and the marginal effect of FDI and FD may shift when financial markets reach certain levels of maturity or openness. Thus, the study estimates as:

$$IIQ_{it} = \alpha_i + \eta IIQ_{i,t-1} + \begin{cases} \beta_1 FDI_{it} + \gamma' X_{it} + \varepsilon_{it}, & if\ FD_{it} \leq \tau \\ \beta_2 FDI_{it} + \gamma' X_{it} + \varepsilon_{it}, & if\ FD_{it} > \tau \end{cases}$$

Where τ is the endogenously determined threshold level of financial development. η captures the persistence of inequality via the lagged dependent variable. The model allows for different slopes (β_1, β_2) across financial development regimes.

Table 1. Variable measurement expected sign and sources

Variables	Indicator	Measurement	Expected Sign	Source
Dependent	Income Inequality	Gross National Income Index		UNDP-HDD
Independent	Foreign Direct Investment	Net inflows of FDI as % of GDP	+	WDI
	Financial Development	Financial development index	-	IMF
Controls	GDP per capita growth	Annual % change in real GDP per capita	-	WDI
	Government Expenditure	General government final consumption expenditure (% of GDP)	-	WDI
	Inflation	Annual % change in consumer prices	+	WDI
	Population Growth	Annual % change in total population	+	WDI
	Human Capital Development	Mean years of schooling	-	WDI
	Tax Revenue	Tax revenue as % of GDP	-	WDI
	Trade Openness	Sum of exports and imports as % of GDP	+ / -	WDI

Source: Authors' Compilation, 2025

Justification of control variables: In selecting the control variables, careful consideration was given to how each influences inequality within the emerging markets. Economic growth, reflected in GDP per capita changes, can open opportunities for upward mobility when its benefits are broadly shared, yet its effects are neither automatic nor uniform across the population (Gossel, 2024; Chisadza & Biyase, 2023). Government expenditure plays a potentially equalising role, especially when channelled into health, education, and infrastructure that directly enhance the welfare of lower-income groups (Song et al., 2021). In contrast, inflation often carries a disproportionate burden for households with limited savings, eroding their purchasing power more severely than for wealthier segments (Chisadza & Biyase, 2023). Demographic pressures from rapid population growth can further complicate income distribution, particularly where job creation and resource

provision lag behind (Gossel, 2024). Also, improvements in human capital, captured through educational attainment, tend to expand access to better-paying employment and reduce structural disadvantages (Kaulihowa & Adjasi; 2018; Blanden, 2020). For tax revenue, it serves as an indicator of a government's fiscal capacity, with more effective systems enabling targeted redistribution (Omar & Inaba, 2020; Eydam & Qualo, 2024). Finally, trade openness presents a dynamic case: while it may stimulate growth through expanded markets, the distribution of those gains often depends on domestic structures, which can either diffuse or concentrate the benefits (Xu et al., 2021; Song et al., 2021). These controls strengthen the model's ability to isolate the core relationships under investigation.

4. Findings and Discussions

Preliminary analysis: Table II reveals that the mean Gini index of 42.26 over 2010–2023 indicates entrenched inequality in emerging markets, driven by concentrated asset ownership, informal labour dominance, and limited fiscal redistribution. Also, the average FDI inflows of 2.42% of GDP reflect both resource-driven investment and persistent institutional bottlenecks such as policy volatility and infrastructural deficits. Financial development's mean of 0.67 implies underdeveloped credit intermediation and shallow capital markets, limiting productive investment. GDP per capita growth averaged 2.63%, benefiting from commodity booms and regional trade agreements, yet vulnerable to global demand swings. Government expenditure (14.73%) and tax revenue (14.33%) imply narrow fiscal space, exacerbated by tax inefficiencies. Trade openness (67.84%) reveals proactive liberalization, though integration benefits vary by sectoral competitiveness. (See Figure A1 in the appendix for the trend of key variables).

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Gini index	210	42.255	8.95	24.9	63.4
Foreign direct invest	210	2.416	1.401	-.858	9.66
Financial development	210	0.674	0.438	0.107	1.948
GDP per capita growth	210	2.632	3.807	-11.989	12.27
Government expenditure	210	14.732	3.317	7.445	21.32
Inflation	196	4.852	6.77	-1.139	72.309
Population growth	210	.936	.536	-1.812	2.048
Human capital dev.	210	96.727	11.175	65.351	126.036
Tax revenue	196	14.333	3.734	6.72	26.005
Trade openness	210	67.837	37.38	22.486	157.945

Source: Authors' Compilation, 2025

In addition to Table II, the correlation matrix in Table A1 (see appendix) reveal meaningful structural relationships in emerging markets over the study period. The Gini index is positively associated with financial development (0.249) and tax revenue (0.515), meaning that deeper financial systems and higher tax mobilization may coexist with inequality, potentially due to regressive tax structures or financial access concentrated among higher-income groups. The strong positive link with population growth (0.456) may indicate demographic pressures amplifying income dispersion. Conversely, GDP per capita growth (-0.171) and trade openness (-0.460) exhibit negative correlations, implying that higher growth and external integration tend to reduce inequality, possibly via employment expansion and competitive market effects. The modest positive correlation with government expenditure (0.156) hints at redistribution limits, while FDI and inflation show weaker, statistically insignificant associations. These preliminary findings serve as a foundation, guiding the specification of subsequent causal estimations and ensuring that the econometric modelling accounts for the observed associations and potential confounding relationships among variables.

The complementary effect of financial development and FDI on income inequality in emerging markets: The FE-GLS regression estimates in Table III show FDI, financial development (FD), and their interaction influence on income inequality in emerging markets, alongside several structural control variables.

On the direct effects, model 1's positive and significant FDI coefficient (0.962) indicates that an increase in FDI inflows is associated with higher income inequality. This implies that in the emerging market, FDI is frequently directed toward capital-intensive industries such as mining, oil and finance, requiring high skill and technology levels, which benefits a small share of the labour force. This finding supports dependency theory, which argues that foreign capital often consolidates the economic dominance of local elites and foreign firms, especially when domestic institutions are weak. This result is consistent with Huang et al. (2020) and Huynh, (2021) who report inequality-widening FDI effects in developing countries, but it contrasts with East Asian economies around the 1980s–1990s, where export-oriented FDI coupled with strong industrial policy reduced inequality (Wang et al., 2021).

However, model 2 shows that FD has a negative and highly significant impact (-0.1359), indicating that deeper and more inclusive financial systems reduce inequality. This means that, in many emerging markets, deeper financial markets improve credit access, allowing low-income households and SMEs to invest in education and business, thereby reducing inequality. The result supports Bayar (2023), who find that inclusive financial systems in middle-income economies have strong poverty and inequality-reducing effects. Contrary to this finding, Öndes and Kızılgöl (2024) asserted that the early-stage financial deepening often benefits large

firms and wealthier households with collateral, leading to higher inequality. This finding aligns with the Greenwood–Jovanovic hypothesis, which posits an inverted-U relationship between FD and inequality, where financial deepening, once past an initial elite-capture phase enables broader access to credit and savings, thus fostering income convergence. However, the magnitude indicates that financial inclusion may have a more pronounced redistributive role in emerging markets where credit constraints are severe.

In Model 3, the interaction term FDI*FD is negative and highly significant (-0.1065), indicating that FD mitigates and at higher levels reverses the inequality-enhancing effect of FDI. The calculated total effect (-0.8948) implies that in countries with well-developed financial sectors, FDI becomes inequality-reducing. This supports HOSS predictions that when financial systems channel capital toward the abundant factor (labour in most emerging markets), returns to labour increase, narrowing wage gaps. This finding is consistent with Akhtar and Rashid (2024), who show that FDI's growth and distributional benefits are conditional on domestic financial development. In contrast, in much of Sub-Saharan Africa, weak financial systems mean FDI often remains enclave-based, with minimal trickle-down.

Considering the controlled variables, Population growth is strongly positive across models (4.736–6.029), indicating that rapid demographic expansion exacerbates inequality by straining labour markets and public resources, which is consistent with dependency theorists' emphasis on structural constraints. Also, human capital exerts a negative effect (-0.112), supporting HOSS's view that skill accumulation increases labour's income share. Tax revenue is strongly negative (-1.027 to -1.124), aligning with fiscal redistribution theory and cross-country evidence from Eydam and Qualo. (2024) that progressive tax systems reduce inequality. Conversely, trade openness is positively associated with inequality (0.128–0.144), signifying that liberalization in these economies benefits capital-intensive export sectors, contrary to HOSS predictions, possibly due to factor-market rigidities.

Table 3. The complementary effect of financial development and FDI on income inequality in emerging markets

VARIABLES	(1) FDI - Model	(2) FD - Model	(3) Moderating Effect Model
Foreign direct investment (FDI)	0.962***		0.762**
	(0.272)		(0.290)
Financial Development (FD)		-0.1359***	-0.1398***
		(0.0118)	(0.0235)
FDI*FD			-0.1065***

			(0.00933)
GDP per capita growth	-0.125	-0.0701	-0.229*
	(0.118)	(0.123)	(0.119)
Government expenditure	0.191	0.232	-0.0450
	(0.185)	(0.200)	(0.195)
Inflation	0.0604	0.0762	0.0823
	(0.0599)	(0.0621)	(0.0598)
Population growth	5.739***	6.029***	4.736***
	(0.980)	(1.017)	(1.022)
Human Capital	-0.0720	-0.0817	-0.112**
	(0.0477)	(0.0496)	(0.0477)
Tax revenue	-1.045***	-1.027***	-1.124***
	(0.141)	(0.149)	(0.141)
Trade Openness	0.130***	0.128***	0.144***
	(0.0107)	(0.0113)	(0.0112)
Total Effects			-0.8948***
B1+B3*Financial Development			(0.0657)
Constant	20.26***	20.72***	23.55***
	(4.816)	(5.033)	(4.988)
Observations	182	182	182
R-squared	0.711	0.690	0.731

*Note: Robust Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1*

Source: Authors' Compilation, 2025

Robustness Analysis – Two-Step System GMM: The robustness analysis using the GMM, reported in Table A3 (see appendix), first confirms the consistency of the estimated coefficients across the three model specifications. The signs, magnitudes, and significance levels of the main variables, FDI, financial development, and their interaction, remain stable, indicating that the complementary effect is not sensitive to model formulation. This coherence across specifications strengthens confidence that the observed relationships are systematic rather than model-specific formulations.

The diagnostic tests, thus Arellano–Bond first-order autocorrelation results (AR(1)), are significant at conventional levels, as expected in dynamic panel estimations, reflecting serial correlation in the first-differenced residuals. More importantly, the AR(2) statistics are insignificant in all models, confirming the absence of second-order serial correlation and thus validating the use of lagged instruments. The Hansen

and Sargan tests for over-identifying restrictions yield p-values above conventional cut-offs, indicating that the instrument sets are both valid and exogenous.

The specification further incorporates country fixed effects while excluding time effects. The absence of time effects tested and confirmed implies that inequality dynamics are shaped more by persistent country-specific characteristics than by period-specific global shocks. This aligns with the theoretical expectation that structural and institutional heterogeneity, rather than common cyclical trends, drives the relationship between FDI, financial development, and inequality in emerging markets.

The minimum threshold level of financial development beyond which FDI significantly reduces inequality in emerging markets. The fixed effect threshold estimations in Table IV, models (4) and (5), examine the minimum financial development (FD) level beyond which foreign direct investment (FDI) significantly reduces income inequality in emerging markets, using Wang's (2015) static and dynamic panel threshold approaches. The static model serves as the main specification, while the dynamic model provides robustness. The static model estimates this threshold at 0.6167 (CI: 0.1962–0.6427) and the dynamic model at 0.6241 (CI: 0.1951–0.6522), indicating a stable and statistically credible turning point.

Table 4. The minimum threshold level of financial development beyond which FDI significantly reduces inequality in emerging markets using fixed effect threshold (Static and Dynamic) – Wang (2015)

VARIABLES	(4) Static Threshold Model	(5) Dynamic Threshold Model
Gini index = L,		0.681***
		(0.0584)
β_0- foreign direct investment	0.342*	0.308**
	(0.184)	(0.137)
β_1 – foreign direct investment	-0.5116***	-0.5631***
	(0.0996)	(0.0733)
GDP per capita growth	-0.0484**	-0.0402**
	(0.0156)	(0.0160)
Government expenditure	-0.1241***	0.1759***
	(0.025)	(0.0534)
Inflation	0.0234	0.0147

	(0.0188)	(0.0136)
Population growth	0.548*	0.298
	(0.307)	(0.227)
Human Capital	-0.198***	-0.1785***
	(0.0662)	(0.0527)
Tax revenue	-0.0488	-0.0714
	(0.0920)	(0.0688)
Trade Openness	0.0310**	0.0576***
	(0.0147)	(0.0113)
Constant	51.38***	17.01***
	(2.535)	(3.520)
Threshold (r)	0.6167	0.6241
Confidence Interval	[0.1962 - 0.6427]	[0.1951 - 0.6522]
Observations	182	169
R-squared	0.367	0.655
Number of Countries	13	13

*Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1*

Source: Authors' Compilation, 2025

From Table IV, below the threshold, FDI's coefficients (0.342 static; 0.308 dynamic) are positive, meaning inflows widen inequality. This is consistent with dependency theory and studies such as Huang (2020), and Demir et al. (2022) which find that in economies with shallow financial systems, FDI benefits accrue primarily to capital owners and high-skilled labour, often in enclave sectors like extractives or high-end services. In such settings, credit constraints limit the diffusion of investment opportunities to SMEs and low-income households.

However, above the threshold, FDI's effect becomes negative (-0.5116 static; -0.5631 dynamic), supporting the Greenwood–Jovanovic hypothesis and the Heckscher–Ohlin–Stolper–Samuelson (HOSS) theorem. As FD surpasses the threshold, better-developed banking systems, deeper capital markets, and inclusive credit channels distribute the productivity gains from FDI more broadly, enabling the abundant factor, typically labour, to capture a greater share of returns. This mirrors Lee et al. (2022) and Nguyen (2021), who find that financial depth conditions the growth and equity impacts of FDI.

Comparing this to other regions and countries strengthens these findings. In East Asia, countries like Malaysia and South Korea had already crossed similar FD thresholds in the 1980s–1990s, enabling labour-intensive manufacturing FDI to reduce inequality (Yuldashev et al., 2023). In contrast, resource-dependent Sub-

Saharan African economies, often below comparable FD levels, saw FDI reinforce dual economic structures and widen disparities despite similar FDI-GDP ratios.

The controls provide further distributional insights. GDP per capita growth is negative and significant (-0.0484 static; -0.0402 dynamic), consistent with Kuznets' hypothesis in the later stage, where sustained growth can compress income gaps and is supported by empirical evidence from Öndes and Kızılgöl (2024). Also, government expenditure is inequality-reducing in the static model (-0.1241) but positive in the dynamic model (0.1759). This reversal may indicate that in the short run, spending aligns with redistribution goals, but over time, political economy factors and fiscal capture dilute this effect, as suggested by Omar and Inaba (2020).

Human capital has a strong negative impact (-0.198 static; -0.1785 dynamic), reinforcing HOSS predictions that skill accumulation benefits the abundant factor and reduces wage inequality. This aligns with empirical findings by Blanden (2020) on education's equalizing role. Trade openness is positive (0.0310 static; 0.0576 dynamic), suggesting that liberalization in these markets benefits capital-intensive export sectors more than labour, a pattern documented by Xu et al. (2021) in Sub-Saharan Africa. Moreover, population growth is positive in the static model (0.548) but insignificant dynamically, reflecting that demographic pressures may initially strain labour markets, but their effects can diminish over time. The close alignment of static and dynamic threshold estimates, coupled with the persistence of control variable effects, confirms that the institutional maturity of the financial system is a decisive condition for translating FDI into equitable outcomes in emerging markets.

Granger Causality: The Panel Granger causality results in Table A2 (Appendix) provide empirical support for the threshold analysis by revealing the directional dependencies among FDI, FD, and income inequality. The evidence of unidirectional causality from FDI to the Gini index confirms that variations in FDI precede changes in inequality, reinforcing the threshold finding that the distributional impact of FDI hinges on the maturity of financial systems. This aligns with Zhang and Zhang (2023), who find that capital inflows can either mitigate or exacerbate inequality depending on absorptive capacity.

Equally significant is the unidirectional causality from FD to both FDI and the Gini index. The FD → FDI link implies that more developed financial systems attract greater foreign investment, consistent with Osei and Kim (2020), who argue that financial depth reduces transaction costs and investment risk. The FD → Gini nexus confirms that FD directly influences income distribution, a finding that aligns with the Greenwood–Jovanovic hypothesis in its prediction of inequality reduction at higher stages of financial maturity.

This unidirectional causality pattern supports the threshold model's interpretation that FD acts as a conditioning variable, both shaping FDI inflows and

complementing their effects on inequality rather than being determined by pre-existing income disparities. These results validate the structural sequencing implied by the threshold estimates; thus, FD must first reach a critical level to influence FDI patterns and to transform FDI's impact from inequality-widening to inequality-reducing.

5. Conclusion and Recommendations

This study examined the complementary role of financial development (FD) in shaping the impact of foreign direct investment (FDI) on income inequality in emerging markets over 2010–2023. Using the fixed effect generalised regression, static and dynamic fixed-effect threshold models, the direct effects show FDI alone raises inequality, while FD reduces it. The negative and significant interaction term confirms FD's moderating role, turning FDI's impact pro-equality. The study identified a minimum FD threshold (0.62) beyond which FDI significantly reduces inequality. Below this level, FDI widens disparities, supporting dependency theory. Robustness tests using the system GMM confirmed the stability of results. Also, the Granger causality analysis revealed unidirectional causality from FD to both FDI and inequality, emphasising FD's role as both an attractor of investment and a moderator of its distributional effects.

The study empirically reconciles three theoretical frameworks. It supports dependency theory at low FD levels, where FDI entrenches inequality. At higher FD levels, the Greenwood–Jovanovic hypothesis holds, as mature finance channels FDI benefits more broadly. The findings also expand the Heckscher–Ohlin–Stolper–Samuelson theorem by showing that factor endowment effects on inequality are mediated by financial depth. Thus, the research not only validates existing theories in a conditional context but also integrates them into a staged, threshold-driven model of inequality dynamics.

The findings advance debates on globalization's distributive consequences by showing that the inequality effects of FDI in emerging markets are conditional, not deterministic. Rather than rejecting global capital flows, the results argue for sequencing reforms, thus strengthening domestic financial systems before liberalizing fully to foreign investment. This evidence bridges development finance and inequality literature, offering policy pathways for inclusive integration into the global economy.

To ensure that FDI serves as an engine of equitable growth in emerging markets, policy interventions must be strategically sequenced and coordinated. First, governments should prioritize financial sector deepening before aggressive FDI liberalization. Thus, strengthening banking stability, expanding capital markets, and improving credit accessibility for SMEs will allow capital inflows to benefit a

broader base of economic actors rather than concentrating gains in enclave sectors. Moreover, it is essential to link FDI incentives to domestic financial integration. By conditioning tax benefits or special economic zone access on foreign firms' use of local banks and financial services, governments can foster direct linkages between FDI and domestic capital markets, generating multiplier effects across the economy.

In parallel, expanding inclusive finance through mobile banking, microcredit, and digital payments will enable low-income households and small enterprises to engage with FDI-driven value chains, especially in manufacturing and services. This widens the distribution of gains from foreign investment. Finally, policymakers should align human capital development with FDI sectoral patterns. Targeted vocational and tertiary education in FDI-intensive industries ensures that local workers possess the skills required to capture higher wages and stable employment. These measures create the institutional and structural foundations necessary for FDI to reduce, rather than exacerbate, income inequality.

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