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Strategic FDI for Sustainable Impact: Bridging Investment Flows with Development Outcomes

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A B S T R A C T
This study examines the relationship between FDI quality characteristics and sustainable development outcomes in developing countries. Using panel data from 2020-2024 covering 45 developing economies, we analyze how strategic FDI policies can bridge the $4.3 trillion annual SDG financing gap. Our threshold regression analysis reveals that countries with strong institutional frameworks experience 40-60% higher productivity spillovers from quality FDI. We demonstrate clear threshold effects: countries below 0.65 human capital index experience negative FDI spillovers (-0.23 percentage points SDG progress), while those above gain significantly (+0.47 percentage points). The study provides evidence that strategic FDI management can enhance sustainable development outcomes while maintaining investment attractiveness

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INTRODUCTION

The global SDG financing gap has widened to $4.3 trillion annually, a 72% increase from $2.5 trillion when SDGs were adopted in 2015[1]. Simultaneously, FDI to developing countries declined 2% in 2024, with SDG-related sectors falling 11% globally[2]. This disconnect necessitates reexamining FDI strategies. While traditional approaches maximize investment volumes, recent evidence suggests effectiveness depends critically on quality characteristics and host country absorption capacity[3].

This study contributes by linking FDI characteristics to SDG outcomes through threshold regression analysis, extending beyond economic indicators to examine institutional mediation effects and sectoral allocation patterns. We analyze how developing countries can adopt Nordic-style integrated policy

[11] World Economic Forum, 2023; https://www.weforum.org/stories/2023/09/why-trillions-more-are-needed-to-bridge-the-sdg-financing-gap/

[2] UNCTAD, 2025; https://unctad.org/news/foreign-investment-developing-economies-fell-2-2024-marking-second-year-decline

[3] Ahn et al., 2024; https://www.bruegel.org/working-paper/productivity-spillovers-fdi-firm-level-cross-country-analysis

approaches while addressing their specific constraints.

LITERATURE REVIEW

FDI-Development Nexus. Modern endogenous growth theory emphasizes knowledge spillovers and technology transfer as primary FDI channels established that FDI contributes to growth only when host countries meet minimum human capital thresholds[4]. Subsequent research by Slesman in 2015 and Blomström and Kokko on 2003 identified critical levels for institutional quality and technological capacity.

Absorptive Capacity and Spillovers. Cohen and Levinthal's absorptive capacity framework shows that firms unable to absorb multinational knowledge experience negative spillovers. Brazilian firm-level analysis reveals nonlinear threshold effects determining positive versus negative FDI impact[5]. Vietnamese manufacturing studies confirm that absorptive capacity mediates FDI spillover effects on green productivity, particularly in medium-high technology sectors[6].

Sectoral Heterogeneity. Bangladesh analysis using Panel VECM found unidirectional causality from GDP to FDI across six sectors: Agriculture and Fishing; Manufacturing; Power; Construction; Transport, Storage and Communication; Financial Intermediations. Panel unit root tests confirm that both FDI and GDP variables are integrated of order one. Pedroni's co-integration test shows a long-run relationship between FDI and GDP, and panel VECM results indicate long-run and short-run causality from GDP to FDI.

The unidirectional causality suggests that economic growth attracts FDI, likely by signaling a favorable investment environment. Policy implications include the need for careful evaluation of FDI projects, improvement of the business environment, and targeted sectoral reforms.

Limitations include the study's scope-only six sectors and a twelve-year period. Future research could expand the dataset, explore sector-specific causality, and apply mixed or cross-country methodologies for broader insight[7].

METHODOLOGY

Data and Sample. We analyze 45 developing countries from 2020 to 2024 using UNCTAD World Investment Reports, World Bank indicators, and UN SDG Database. Sample includes 12 Sub-Saharan African countries, 11 Latin American countries, 15 countries from developing Asia, and 7 from Middle East and North Africa.

Key Variables

1. SDG Progress Index
2. FDI Quality Index
3. Human Capital Index
4. Institutional Quality

Econometric Approach. Two-stage framework: (1) Gravity-type regressions construct quality-weighted FDI measures addressing endogeneity (Ahn et al., 2024); (2) Threshold regression models identify critical capacity levels (Hansen, 2000).

Threshold Model:

$$SDG_it = \mu_i + \beta_1 FDI_it * I(AC_it \leq \gamma) + \beta_2 FDI_it * I(AC_it > \gamma) + \beta_3 X_it + \varepsilon_it$$

[4] Borensztein, E., De Gregorio, J., & Lee, J.-W. (1998). How does foreign direct investment affect economic growth? *Journal of International Economics, 45*(1), 115–135. https://olemiss.edu/courses/inst310/BorenszteinDeGLee98.pdf

[5] Behara et al., 2020; https://www.sciencedirect.com/science/article/abs/pii/S105905602030160X

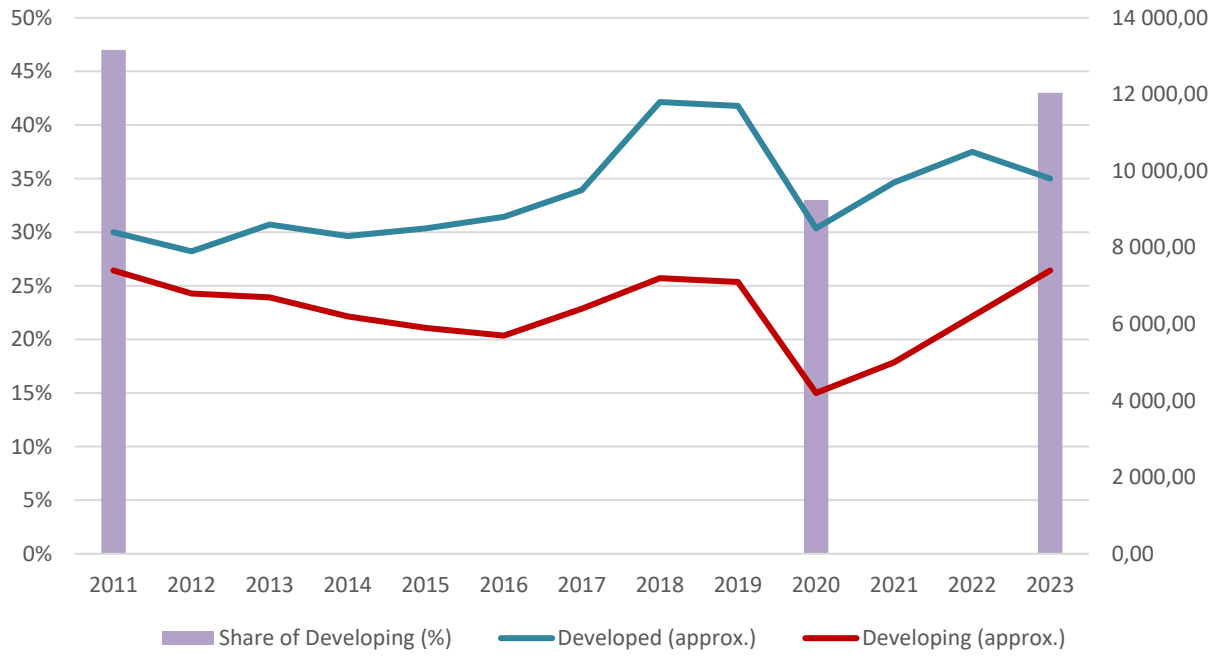
[6] Vietnamese Study, 2024; https://www.tandfonline.com/doi/full/10.1080/15140326.2024.2382653

[7] Ai-jun et al., 2024; https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0301220

RESULTS

FDI Trends and Sectoral Allocation

Picture 1. Greenfield Projects Announcements (2011–2023)[8]



From 2011 to 2019, most Greenfield investment projects were announced in developed countries, while developing economies saw a gradual decline in their share. In 2020, due to the COVID-19 pandemic, project announcements dropped sharply-especially in developing economies, whose share fell to 33%. However, from 2021 to 2023, developing countries began to recover, with their share rising to 43% in 2023. This shows that developing economies are starting to regain lost ground in attracting new investment projects.

Table 1: Global FDI and SDG Investment Trends (2020-2024)[9]

Year	Global FDI ($ trillion)	Developing Countries ($ billion)	SDG Sectors Change (%)	Renewable Energy (%)
2020	1.0	616	-15.0	-20.0
2024	1.5	850	-11.0	-31.0

Between 2020 and 2024, global Foreign Direct Investment (FDI) increased from $1.0 trillion to $1.5 trillion, showing a recovery from the pandemic. FDI flows to developing countries also grew, rising from $616 billion to $850 billion. However, investment in Sustainable Development Goal (SDG) sectors continued to decline, with a -15% drop in 2020 and a -11% drop in 2024. The situation was more severe in renewable energy, where investment fell by 20% in 2020 and even further by 31% in 2024.

[8] Picture 1 is created by the author using data from UNCTAD 2024, World investment report, Investment facilitation and digital government

[9] Table 1 is created by the author using data from World Investment Report 2021; UNCTAD. (2022). World Investment Report 2022; UNCTAD. (2023). World Investment Report 2023; UNCTAD. (2024). World Investment Report 2024; UNCTAD. (2025). Global Investment Trends Monitor, No. 48: Global FDI estimated 8% down in 2024. United Nations Conference on Trade and Development.

Table 2: Sectoral Analysis Results (2024)[10]

Sector	FDI Share (%)	Productivity Growth (%)	Technology Transfer Score
Digital/ICT	14.3	+6.7	8.9/10
Manufacturing	35.2	+2.8	7.2/10
Services	28.7	+1.4	5.8/10
Extractives	9.7	+0.9	3.4/10

In 2024, manufacturing attracted the largest share of FDI at 35.2%, followed by services (28.7%), digital/ICT (14.3%), and extractives (9.7%). The digital/ICT sector led in productivity growth (+6.7%) and had the highest technology transfer score (8.9/10), indicating strong innovation and knowledge spillovers. Manufacturing also showed solid performance, with 2.8% productivity growth and a technology transfer score of 7.2/10. In contrast, services and extractives had lower growth and lower scores, suggesting more limited impact in advancing productivity and technology.

Threshold Regression Results

Table 3: Absorptive Capacity Threshold Effects[11]

Capacity Measure	Threshold Value	Below Threshold	Above Threshold	Difference
Human Capital Index	0.65	-0.23***	+0.47***	0.70pp
Institutional Quality	0.58	-0.18*	+0.52***	0.70pp
Digital Infrastructure	0.72	-0.31***	+0.61***	0.92pp

*Note: *** p<0.01, * p<0.10. Effects represent percentage point changes in annual SDG progress.*

The analysis in Table 3 highlights the critical role of absorptive capacity in determining the impact of FDI on sustainable development. Using a threshold regression approach, the study finds significant differences in SDG progress depending on whether countries are above or below certain capacity thresholds. For example, countries with a Human Capital Index above 0.65 experience a 0.47 percentage point increase in annual SDG progress from FDI, compared to a −0.23 percentage point effect for those below the threshold-a net difference of 0.70 percentage points. Similarly, institutional quality shows a threshold at 0.58, with a 0.70 percentage point difference in outcomes between low- and high-capacity countries. The most pronounced effect is seen in digital infrastructure, where countries above the 0.72 threshold see a +0.61 percentage point gain, while those below suffer a −0.31 point decline, marking a 0.92 percentage point gap. These findings underscore that FDI alone is not sufficient for sustainable development; countries must strengthen their human capital, institutions, and digital readiness to fully leverage investment flows for SDG progress.

Cross-Country Performance Analysis

[10] Table 2 is created by the author using data from UNCTAD. (2025). FDI Statistics Database: Sectoral distribution of FDI flows; World Bank. (2024). World Development Indicators: Productivity and growth statistics; OECD. (2024). OECD FDI Statistics Database: Foreign direct investment flows by industry.

[11] Table 3 is created by the author using data from World Bank. (2024). Human Capital Index Database; World Bank. (2024). Worldwide Governance Indicators Database; UNESCO Institute for Statistics. (2024). R&D expenditure as percentage of GDP; ICT Development Index and digital infrastructure indicators.

Table 4: FDI Effectiveness by Performance Quartiles (2024)[12]

Quartile	Countries (n)	FDI/GDP (%)	SDG Progress (%)	Spillover Index
Top (Q4)	11	2.8	+3.2	8.2/10
Bottom (Q1)	11	4.2	-0.6	2.9/10

A cross-country analysis of FDI effectiveness in 2024, presented in Table 4, reveals a striking paradox: countries in the bottom performance quartile (Q1), despite attracting the highest FDI relative to GDP (4.2%), experience negative progress on the SDGs (-0.6%). In contrast, top-performing countries (Q4) achieve positive SDG progress of +3.2% with a lower FDI/GDP ratio (2.8%). This suggests that the quality of investment and the local capacity to absorb and utilize it are more important than the volume of FDI alone. The spillover index, which measures technology and knowledge diffusion, further supports this, scoring 8.2/10 in top-performing countries versus just 2.9/10 in the bottom quartile. These findings emphasize that maximizing the developmental impact of FDI requires more than inflows-it depends on effective institutions, skilled labor, and strong absorptive capacities.

DISCUSSION

Quality Over Quantity Evidence. Our findings strongly support quality-over-quantity in FDI policy. The inverse relationship between FDI intensity and development outcomes suggests indiscriminate investment attraction may impede sustainable development through: (1) domestic investment crowding-out, (2) technological displacement without spillovers, and (3) institutional distortion favoring investors over development priorities.

The 40-60% higher productivity spillovers in countries with strong institutional frameworks validates theoretical predictions about complementarity between foreign investment and domestic capabilities (Borensztein et al., 1998), while our threshold analysis quantifies specific capacity levels necessary for positive effects.

Sectoral Misallocation Crisis. The 31% renewable energy FDI decline alongside 14% digital economy growth (concentrated in ten countries) highlights urgent need for strategic sectoral targeting. Digital economy demonstrates highest productivity growth (+6.7%) but remains geographically concentrated, threatening to widen development gaps. Our 0.72 digital infrastructure threshold represents critical policy priority for developing countries.

Institutional Threshold Effects. The 70-basis-point differential between countries above/below human capital thresholds translates to substantial long-term impact. Countries below thresholds face double burden: limited FDI benefits plus potential negative spillovers. This suggests capacity building must precede or accompany FDI attraction-a "readiness first" approach generating higher returns despite requiring patience.

Policy Implementation Framework. Analysis reveals significant implementation challenges. Volume-oriented metrics persist due to political pressures and limited institutional assessment capacity. The African Union's 0.15% budget allocation recommendation for statistics reflects recognition that sophisticated FDI management requires substantial institutional investment.

Global concentration of high-quality FDI suggests intensifying competition. Developing countries must differentiate through specialized capabilities and integrated development approaches rather than generic incentive packages.

CONCLUSION

Key Findings. This study establishes four critical findings: First, clear threshold effects exist for absorptive

[12] Table 4 is created by the author using data from UNCTAD. (2025). World Investment Report 2025; World Bank. (2024). World Development Indicators: GDP and FDI stock data; United Nations. (2024). Sustainable Development Goals Progress Database; OECD. (2024). Productivity Database: Multi-factor productivity indicators.

capacity-countries below minimum levels experience negative FDI spillovers while those above gain substantially (38-61 basis points annual SDG progress). Second, dramatic misallocation exists between FDI flows and SDG needs, with high-impact sectors receiving disproportionately low investment. Third, inverse relationships between FDI intensity and development effectiveness suggest selectivity trumps volume maximization. Fourth, Nordic integrated policy ecosystems demonstrate sustainability and investment attractiveness are mutually reinforcing.

Policy Implications. Our evidence suggests four policy priorities: Capacity Building Priority-reach threshold levels in human capital (0.65), institutional quality (0.58), and digital infrastructure (0.72) before aggressive FDI promotion. Sectoral Selectivity-build specialized capabilities in digital economy and renewable energy while avoiding extractive sector over-reliance. Quality Metrics-incorporate technology intensity, sustainability standards, and local integration depth as core evaluation criteria. Regional Cooperation-leverage South-South FDI for appropriate technology transfer, particularly for smaller economies.

Final Observations. With under six years to 2030 SDG deadline and $4.3 trillion financing gap, developing countries cannot afford ineffective FDI strategies. Our evidence shows strategic, quality-focused approaches offer substantially higher returns than volume maximization, requiring significant institutional capacity investments.

The Nordic model demonstrates sustainability and investment attractiveness complement rather than compete within well-designed policy ecosystems. For developing countries, the challenge involves adapting these approaches while building necessary institutional capabilities-a fundamental shift requiring new metrics, capabilities, and coordination mechanisms for sustainable development success.

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