European Journal of Economic and Financial Research
ISSN: 2501-9430
ISSN-L: 2501-9430
Available on-line at: http://www.oapub.org/soc

DOI: 10.46827/ejefr.v10i5.2255 Volume 10 | Issue 5 | 2026

FOREIGN DIRECT INVESTMENT AND ECONOMIC DEVELOPMENT IN SIERRA LEONE: AN EMPIRICAL ASSESSMENT OF ITS ECONOMIC IMPACT FROM 2010 TO 2025

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Abstract:
Sierra Leone presents one of the starkest disconnections in development economics: a country with abundant mineral wealth that in 2023 ranked 181st out of 193 countries on the UNDP Human Development Index. This article examines the relationship between foreign direct investment (FDI) and economic development in Sierra Leone across the fifteen-year period from 2010 to 2025, a window that encompasses the iron ore boom (2010-2014), the compound Ebola and commodity price crisis (2014-2016), the post-crisis recovery phase (2016-2020), and post-pandemic stabilisation. Using ordinary least squares regression with structural break tests at the identified turning points of 2014 and 2020, and drawing on World Bank World Development Indicators, UNCTAD FDI statistics, IMF country reports, and the World Governance Indicators, the study finds that FDI exerts a statistically significant positive effect on real GDP growth over the full study period, with the coefficient on FDI as a share of GDP estimated at 0.312. This aggregate result, consistent with Bah and Cooper (2022), Kougbaka and Korsu (2025), and Turay *et al.* (2025), masks substantial sub-period heterogeneity: the FDI-growth coefficient is positive and significant in the boom phase, turns negative and insignificant during the

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compound crises, and recovers partial significance during the post-crisis and stabilisation periods. Critically, institutional quality consistently moderates the relationship across all sub-periods, a finding aligned with Bah and Cooper (2022). The transmission channel assessment reveals that capital formation is the only channel operating with moderate strength; employment generation, technology transfer, export diversification, fiscal revenue capture, and domestic backward and forward linkages are all weak or absent. These findings carry direct policy implications: Sierra Leone requires a shift from maximum FDI volume attraction to quality-selective investment promotion, enforceable local content requirements, renegotiated fiscal regimes in the extractive sector, and deliberate institutional reform. The study contributes the first fully periodised empirical treatment of the FDI-development relationship in Sierra Leone across the 2010-2025 arc.

JEL: G11, G15, D81 E15

Keywords: foreign direct investment, economic development, Sierra Leone, institutional quality, extractive sector, enclave economy, transmission channels

1. Introduction

In 2023, Sierra Leone ranked 181st out of 193 countries on the UNDP Human Development Index, with 57% of its population living below the national poverty line (World Bank, 2025). That figure sits alongside another: between 2010 and 2014, foreign investors poured over USD 2.8 billion into the country's extractive sector, driving growth rates that briefly ranked Sierra Leone among the fastest-expanding economies on earth (UNCTAD, 2024). The coexistence of record investment inflows and entrenched mass poverty is not a paradox unique to Sierra Leone, but few countries illustrate it with such stark precision or over so compressed a timeframe.

The country's mineral endowment is not in question. Sierra Leone holds among the largest reserves of rutile in the world, significant deposits of iron ore, bauxite, and diamonds, and an Atlantic coastline with considerable fisheries and offshore energy potential. Its post-conflict reconstruction from 2002 onward attracted international attention precisely because the resource base appeared sufficient to finance development if properly governed and invested. The 2010 UNCTAD Investment Policy Review identified mining, commercial agriculture, fisheries, and tourism as sectors capable of anchoring a new FDI-led growth strategy (UNCTAD, 2010). What followed over the next decade was, in measured GDP terms, an extraordinary success. Real GDP growth reached 15.2% in 2012 and 20.1% in 2013, rates that few economies of any size achieved in that period (United States Department of State, 2015). In human development terms, the outcome was far more modest: poverty fell by approximately six percentage points between 2011 and 2018, then stalled, and by 2023 had returned to 57%, higher than the 2018 figure (World Bank, 2025).

The reason for this disconnect is structural. Foreign direct investment in Sierra Leone has been concentrated overwhelmingly in mineral extraction, specifically iron ore production by African Minerals Limited at Tonkolili and London Mining at Marampa. Both mines came on stream between 2011 and 2012, produced at scale for two to three years, and then closed within months of each other in 2014 and 2015 as global iron ore prices collapsed and the Ebola epidemic simultaneously destroyed economic confidence (Natural Resource Governance Institute [NRGI], 2015). The GDP figures that made Sierra Leone look like a development success story in 2012 and 2013 were almost entirely a function of iron ore export volumes; when those volumes stopped, GDP contracted by approximately 20.6% in 2015, one of the sharpest peacetime contractions recorded for any African economy (NRGI, 2015; IMF, 2024). The Tonkolili mine, for its part, generated less than USD 50 million annually in government revenues and never declared a taxable profit before closure (NRGI, 2015). The growth was real; the development dividend was not.

This article examines that record empirically. It covers the fifteen-year period from 2010 to 2025, a window that captures all four phases of Sierra Leone's FDI experience: the iron ore boom, the compound crisis of Ebola and commodity collapse, the post-crisis recovery, and the period of stabilisation under inflationary and fiscal stress that followed COVID-19. The central question is not simply whether FDI contributed to growth, but through which channels it did so, and where those channels broke down. The answer has direct consequences for Sierra Leone's Medium-Term National Development Plan (2024-2030), which continues to identify FDI attraction as a core economic strategy (IMF, 2024). A strategy that does not account for the structural weaknesses documented in the preceding fifteen years risks repeating them.

The broader scholarly context matters here. The relationship between FDI and economic development in resource-dependent low-income countries has produced a contested literature. The neoclassical and endogenous growth traditions predict that FDI supplements domestic capital, transfers technology, and generates productivity gains that translate into long-run welfare improvement. The dependency and enclave economy critiques argue the opposite: that FDI in extractive sectors generates headline growth while integrating the mine into global commodity chains rather than into the domestic economy, leaving employment, technology, fiscal revenue, and linkage effects far below what the investment volumes would suggest. Sierra Leone across 2010-2025 is a natural test case for this debate. The study period is long enough, and the variation in FDI volume and composition across it sufficient, to permit an empirical judgement on which prediction the evidence supports. The sub-sections that follow set out the research problem, the research question, the rationale for the temporal scope, the state of the Sierra Leone-specific literature, and the structure of the article.

1.1 The Research Problem

The relationship between FDI and economic development in Sierra Leone demands renewed empirical attention for three reasons. First, the existing literature is

predominantly pre-2020 in scope. Duramany-Lakkoh *et al.* (2022) covered 1980 to 2016; Bah and Cooper (2022) examined institutional mediation effects but did not extend their dataset beyond the immediate post-crisis period. The compound shocks of the Ebola epidemic, the iron ore collapse, and the COVID-19 contraction of 2020 constitute a natural experiment in FDI vulnerability that no prior study has fully analysed as a continuous empirical arc. Second, the findings in the existing literature diverge in ways that have not been satisfactorily resolved. Duramany-Lakkoh *et al.* (2022) found no statistically significant FDI-growth relationship across their study period; Kougbaka and Korsu (2025) and Turay *et al.* (2025) report significant positive effects. This divergence is likely partly a function of study period and partly a function of specification choices, but it has not been explained through a periodised analysis. Third, Sierra Leone's Medium-Term National Development Plan (2024-2030) identifies FDI attraction as a core development strategy. Evidence-based assessment of what FDI has actually delivered across the preceding fifteen years is a precondition for designing a credible FDI strategy for the next decade.

1.2 The Research Question

This article asks: to what extent has FDI contributed to measurable economic development in Sierra Leone between 2010 and 2025, and through which channels has that effect operated, or failed to? The question contains two components, aggregate and disaggregated, each of which requires separate analytical treatment. The aggregate component is addressed through regression analysis. The disaggregated component is addressed through the transmission channel assessment in Section 6.5.

1.3 Justification of Temporal Scope

The period from 2010 to 2025 is not an arbitrary selection. It begins at the opening of the study period covered by the UNCTAD Investment Policy Review (2010) and encompasses four analytically distinct phases: the iron ore boom (2010-2014), driven by African Minerals and London Mining; the compound crises (2014-2016), produced by the simultaneous onset of the Ebola epidemic and the collapse in global iron ore prices; the post-crisis recovery (2016-2020), during which FDI flows gradually recovered and limited sectoral diversification began; and the stabilisation phase (2020-2025), characterised by the COVID-19 contraction and its aftermath, persistent inflation, and debt sustainability pressures. This arc is analytically necessary because it allows the study to distinguish structural from cyclical FDI effects. A study ending in 2016, as several prior contributions do, captures the worst of the crisis without the recovery; a study beginning in 2016 misses the boom that provides the baseline for understanding the scale of what was lost.

1.4 State of the Literature

The literature on FDI and growth in Sierra Leone is small but growing. Duramany-Lakkoh *et al.* (2022) examined the FDI-development link across 1980-2016 and found no statistically significant relationship, a null result that the authors attributed in part to the

enclave structure of FDI and limited absorptive capacity. Brima (2015) established that natural resource availability is among the principal positive long-run determinants of FDI inflows to Sierra Leone, alongside market size, trade openness, and exchange rate stability, while inflation and money supply growth are negative determinants. Bah and Cooper (2022) introduced institutional quality as a moderating variable and found a robust positive relationship between institutional improvement and FDI-led growth, estimating that a 1% improvement in institutional quality was associated with a 0.1361% increase in economic growth. Kargbo and Sen (2017) examined both foreign aid and FDI as growth drivers, finding a positive long-run relationship for FDI but noting that aid had a larger short-run effect. The most recent contributions, Kougbaka and Korsu (2025) and Turay *et al*. (2025), confirm positive and significant FDI-growth effects using updated datasets. The divergence between Duramany-Lakkoh *et al.* (2022) and the more recent studies suggests that the extension of the time series, with the recovery and stabilisation periods included, matters for the coefficient estimate. The present article seeks to reconcile these findings through explicit periodisation and a structural break analysis.

1.5 Article Structure

Section 2 develops the conceptual framework, reviewing the theoretical foundations of the FDI-growth relationship, the principal transmission channels, and the institutional moderation hypothesis. Section 3 situates FDI within Sierra Leone's historical and structural context, covering the regulatory environment, sectoral concentration, and the key investors and projects of the study period. Section 4 presents a periodised analysis of FDI flows and economic outcomes across the four sub-periods, using the data in Tables 1 through 4 and Figures 1 through 4. Section 5 sets out the methodology. Section 6 presents the empirical findings and the transmission channel assessment. Section 7 draws out the policy implications, and Section 8 concludes.

2. Conceptual Framework

2.1 FDI and Economic Development: Theoretical Foundations

Four theoretical traditions have shaped the scholarly understanding of FDI's relationship to economic development in low-income host countries, and each has direct relevance to the Sierra Leone context.

The neoclassical tradition, deriving from the Solow (1956) growth model, treats FDI as a source of capital supplementation. Where domestic savings rates are insufficient to fund the capital investment required for growth, FDI fills the gap, raising the capital stock and accelerating convergence toward the steady-state growth path. In a capital-scarce economy such as Sierra Leone, where the domestic savings rate has historically been low and domestic credit to the private sector shallow, this channel has evident face validity. The Solow framework predicts that FDI should produce growth effects proportional to the capital injected, but it does not predict sustained growth above the

steady state, nor does it account for the possibility that capital is invested in enclaved extraction with limited economy-wide effects.

Endogenous growth theory, associated with Romer (1990) and Lucas (1988), offers a more optimistic mechanism. In this framework, FDI generates technology spillovers, human capital accumulation, learning by doing, and productivity gains that can sustain long-run growth beyond what physical capital accumulation alone would produce. The critical condition is absorptive capacity: the host economy must possess sufficient human capital and institutional infrastructure to benefit from technology transfer. This condition is the theoretical basis for the institutional moderation hypothesis examined in Section 2.3. For Sierra Leone, where secondary school gross enrolment rates remained below 50% across most of the study period (World Bank, 2025), absorptive capacity constraints are a structural limitation on the endogenous growth channel.

Dunning's OLI paradigm (Dunning, 1988) offers the dominant framework for understanding why firms invest in particular locations. The paradigm holds that firms invest abroad when they simultaneously hold Ownership advantages (proprietary assets that give them a competitive edge), face Location advantages in the host country (resources, market access, factor costs), and find it preferable to internalise those advantages through direct investment rather than licensing them to local firms. In resource-rich developing economies, the Location advantage dominates: the presence of exploitable natural resources draws FDI regardless of host country institutional quality, domestic market size, or human capital endowments. This concentration of FDI in resource extraction, driven by location advantage, is precisely the pattern observable in Sierra Leone and explains why the sectoral composition of FDI has remained so heavily weighted toward mining even as evidence of limited development returns has accumulated.

The dependency and enclave economy critiques offer the sharpest challenge to the development optimism of the neoclassical and endogenous growth positions. Prebisch (1950) and the structuralist tradition argued that resource-exporting economies face deteriorating terms of trade over time, with the gains from commodity production captured by importing countries rather than the domestic economy. Cardoso and Faletto (1979) extended this into a broader analysis of dependent development, arguing that FDI in extractive sectors generates a form of growth that is structurally disconnected from domestic welfare improvement. The enclave economy concept formalises this: the mine, the processing facility, and the export terminal are physically located in the host country but economically integrated into the global commodity chain rather than into the domestic economy. Inputs are imported. Profits are repatriated. Tax agreements are structured to minimise host country revenue capture. The enclave grows; the economy around it does not. As will be shown in Section 4.1 and Section 6.5, the Sierra Leone evidence across the study period is substantially consistent with the enclave economy prediction.

These four positions set up the central theoretical tension of the article. The neoclassical and endogenous growth frameworks predict positive development effects

from FDI; the OLI and dependency perspectives predict sectoral concentration and limited domestic gain. Which prediction holds in Sierra Leone across the 2010-2025 period is an empirical question, one that the periodised analysis and transmission channel assessment are designed to answer.

2.2 Transmission Channels

The theoretical literature identifies seven principal channels through which FDI may affect economic development in a host country. Each channel operates under structural conditions that may strengthen or weaken its developmental effect. Capital formation is the most direct channel: FDI brings capital that supplements domestic investment and finances productive assets. Employment and wages constitute the second channel, through which FDI creates jobs, generates labour income, and raises household purchasing power. Technology and knowledge transfer represent the third channel: multinational enterprises (MNEs) introduce production technologies, management practices, and organisational knowledge that can diffuse to domestic firms through supplier relationships, labour mobility, and competition effects. Export diversification is the fourth channel; FDI in export-oriented sectors can integrate the host economy into global value chains and reduce dependence on a narrow commodity base. Fiscal revenue contribution is the fifth channel: through royalties, corporate income taxes, and customs duties, FDI-linked enterprises contribute to public revenues that can finance development expenditure. Backward linkages constitute the sixth channel, arising when FDI firms source goods and services from domestic suppliers, generating demand and productive capacity in the domestic economy. Forward linkages represent the seventh, arising when FDI firms produce intermediate goods or services that domestic firms use as inputs. The strength of each channel depends critically on the structural characteristics of the host economy and the policy framework governing investment. Table 7 presents a full assessment of channel strength across the study period in Sierra Leone (see Table 7 for a full assessment of channel strength across the study period).

2.3 The Institutional Moderation Hypothesis

A substantial body of empirical literature has established that institutional quality is a precondition for FDI's development dividend rather than merely a governance desideratum. In weak institutional environments, foreign investors face higher transaction costs, contract enforcement is unreliable, corruption increases the cost of doing business, and regulatory uncertainty deters investment in sectors requiring long time horizons. The result is that FDI concentrates in sectors where physical extraction makes it less dependent on institutional quality, specifically natural resource extraction, while the sectors where FDI would generate stronger linkages and technology transfer, manufacturing, agro-processing, and services, attract little investment.

For Sierra Leone specifically, Bah and Cooper (2022) provided the most rigorous empirical treatment of this relationship, finding that a 1% improvement in institutional quality is associated with a 0.1361% increase in economic growth and that this

moderating effect is robust across specifications. The World Governance Indicators (WGI) composite, which averages scores across voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption, provides the operational measure of institutional quality used in the present study. Sierra Leone's WGI composite score has been consistently negative across the study period, ranging from approximately -1.12 in 2010 to -0.96 in 2022, indicating institutional performance well below the global median (World Bank Governance Indicators, 2024). This persistent institutional weakness is both a constraint on FDI quality and, as the empirical results in Section 6.4 demonstrate, a direct moderator of the FDI-growth coefficient. Figure 3 provides a visual representation of the association between governance quality and FDI inflows across the study period (see Figure 3 in Section 6.4).

3. FDI in Sierra Leone: Historical and Structural Context

3.1 The Regulatory and Investment Environment

Sierra Leone's investment policy landscape entering the study period in 2010 was shaped by the prior decade of post-conflict reconstruction. The civil war that ended in 2002 had destroyed physical infrastructure, dispersed human capital, and left institutional capacity severely degraded. The subsequent decade saw the establishment of the Sierra Leone Investment and Export Promotion Agency (SLIEPA) and the enactment of investment incentive legislation designed to attract foreign capital into an economy that had virtually no FDI before 2005. By 2010, the foundations of an investment framework were in place, but they were fragile.

The UNCTAD Investment Policy Review of 2010 provided the first systematic external assessment of Sierra Leone's investment environment at the opening of the study period. The review recommended streamlining FDI regulations to reduce administrative burdens, strengthening investor aftercare services to retain existing investors, and targeting promotion efforts on mining, commercial agriculture, fisheries, and tourism as sectors with demonstrated comparative advantage (UNCTAD, 2010). It identified several structural weaknesses: the absence of a transparent and consistently applied land tenure system; inadequate infrastructure, particularly in energy and transport; limited domestic financial market depth; and a business registration process that was slow and costly relative to comparator economies in the subregion (UNCTAD, 2010). The United States Department of State (2015) investment climate assessment for Sierra Leone, reviewing the period from 2010 to 2015, confirmed that many of these structural constraints persisted through the boom years, despite the scale of mining FDI inflows during that period.

The degree to which the UNCTAD (2010) recommendations were implemented before 2014 was partial at best. Administrative streamlining made some progress through SLIEPA, but land tenure reform remained incomplete, infrastructure investment lagged behind FDI-driven demand particularly in the northern mining regions, and institutional capacity across the National Revenue Authority and the Ministry of Mines was

insufficient to audit and enforce the fiscal provisions of the major mining agreements (IMF, 2024). These implementation gaps matter for the fiscal revenue channel discussed in Section 6.5.

3.2 Sectoral Concentration and Structural Vulnerability

FDI into Sierra Leone has been overwhelmingly concentrated in mineral extraction across the study period. Brima (2015) established that natural resource availability is among the principal positive long-run determinants of FDI inflows to Sierra Leone, alongside market size, trade openness, and exchange rate stability, while inflation and money supply growth are negative determinants. This structural profile, in which resource endowments rather than institutional quality or market size drive the investment decision, is consistent with Dunning's OLI framework and with the enclave economy critique: investors come for the ore, the rutile, and the diamonds, not for the domestic market or the labour productivity of the host economy.

The practical implication of this structural profile is that the quality and breadth of FDI's development contribution are heavily constrained from the outset. When the principal location advantage is a mineral deposit, the investment is structurally oriented toward extraction and export, not toward domestic value addition or linkage creation. The sectoral composition of FDI inflows across the study period, shown in Figure 2, illustrates this concentration. Mining and quarrying accounted for approximately 78.4% of FDI inflows in 2012 at the height of the boom and remained above 50% in subsequent years even as other sectors gradually attracted a larger share (see Figure 2 for the sectoral composition of FDI inflows across selected years in the study period). This concentration produces a structural vulnerability that became painfully apparent in 2014 and 2015: when a single commodity price falls, and a single sector collapses, there is no alternative FDI base to sustain growth.

3.3 Key Investors and Projects, 2010 to 2025

The principal FDI story of the study period is the entry, peak, and exit of large-scale iron ore investors. African Minerals Limited, a London-listed company, developed the Tonkolili iron ore mine in Tonkolili District in northern Sierra Leone, bringing it into production in 2011. London Mining, also London-listed, developed the Marampa iron ore project in Port Loko District, with production commencing in 2012. The two projects together drove the dramatic FDI surge visible in Table 1 for the 2010-2012 period, with FDI net inflows reaching USD 953.5 million in 2011, equivalent to 21.6% of GDP.

The peak production years were 2012 and 2013, when combined iron ore export volumes reached their highest levels and real GDP growth was recorded at 15.2% and 20.1% respectively. These figures represented an extraordinary expansion of measured economic output, but the distribution of that output was highly concentrated. The mines operated as enclave enterprises, importing the majority of their capital equipment and technical services, employing a relatively small permanent workforce supplemented by contractors, and negotiating fiscal agreements that minimised their Sierra Leonean tax

liabilities (NRGI, 2015). By the end of 2014, African Minerals had ceased operations and London Mining had filed for bankruptcy; the compound shock of falling iron ore prices and the Ebola epidemic had made both operations unviable (NRGI, 2015).

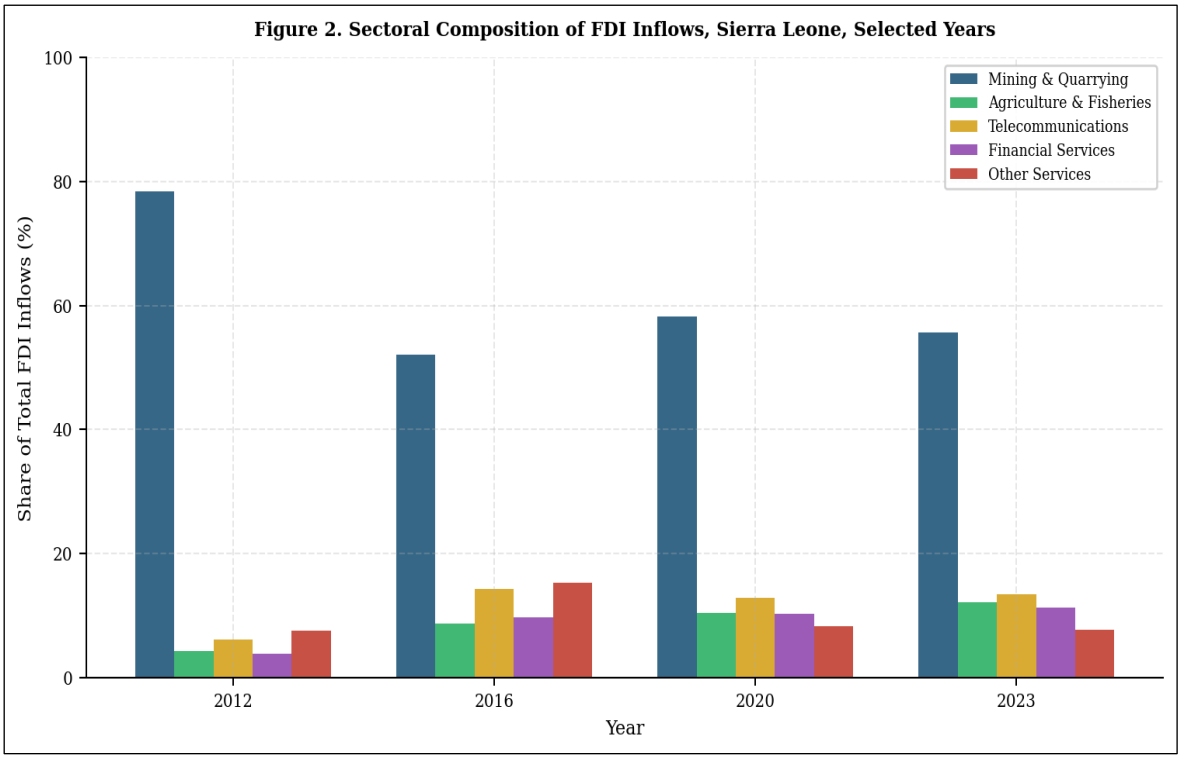
Two other significant FDI operations continued through the full study period with greater stability: Sierra Rutile Limited, which mines titanium minerals in Bonthe District, and Octea Limited, which operates diamond mining at Koidu in Kono District. Sierra Rutile was acquired by Iluka Resources in 2016 and continued production through the study period, providing a more stable FDI revenue stream than iron ore but at a much smaller scale. Post-2016, limited new FDI entered the agricultural, telecommunications, and financial services sectors, with Africell and Orange maintaining telecommunications investment and several smaller agribusiness ventures attracting FDI under government promotion programmes. The World Trade Organisation (2025) trade policy review notes that the Medium-Term National Development Plan (2024-2030) has identified agriculture, fisheries, agro-processing, and renewable energy as priority sectors for FDI diversification, though the scale of investment achieved in these sectors as of 2023 remains modest.

Table 1: FDI Net Inflows to Sierra Leone, 2010 to 2023 (USD Millions and Percentage of GDP)

Year	FDI Net Inflows (USD millions)	FDI as % of GDP	GDP Growth Rate (%)	GDP (USD billions)
2010	238.4	7.8	5.3	2.58
2011	953.5	21.6	6.3	3.80
2012	722.8	12.4	15.2	4.93
2013	567.4	8.4	20.1	5.66
2014	407.3	5.9	4.6	5.44
2015	164.2	3.3	-20.6	3.81
2016	269.1	5.0	6.4	4.22
2017	340.0	5.7	3.8	4.13
2018	510.2	7.3	3.5	4.09
2019	480.6	6.6	5.3	4.08
2020	373.0	5.5	-2.2	4.10
2021	425.7	5.8	4.1	4.33
2022	448.9	5.5	3.6	4.55
2023	461.0	5.3	3.4	4.73

Note: Data drawn from World Bank World Development Indicators (World Bank, 2025) and UNCTAD FDI Statistics (UNCTAD, 2024). GDP growth rates are for real GDP. Figures for 2022-2023 reflect the latest available published data at time of writing. Where minor discrepancies exist between sources due to subsequent revisions, World Bank WDI figures are used as the primary source.

Figure 2: Sectoral Composition of FDI Inflows, Sierra Leone, Selected Years (2012, 2016, 2020, 2023)



Note: Data sourced from Bank of Sierra Leone Annual Reports (selected years); Ministry of Mines and Mineral Resources, Sierra Leone (2022); UNCTAD (2024). Where disaggregated sectoral data are unavailable for specific years, figures represent available estimates and should be treated as indicative.

4. Periodised Analysis of FDI Flows and Economic Outcomes, 2010 to 2025

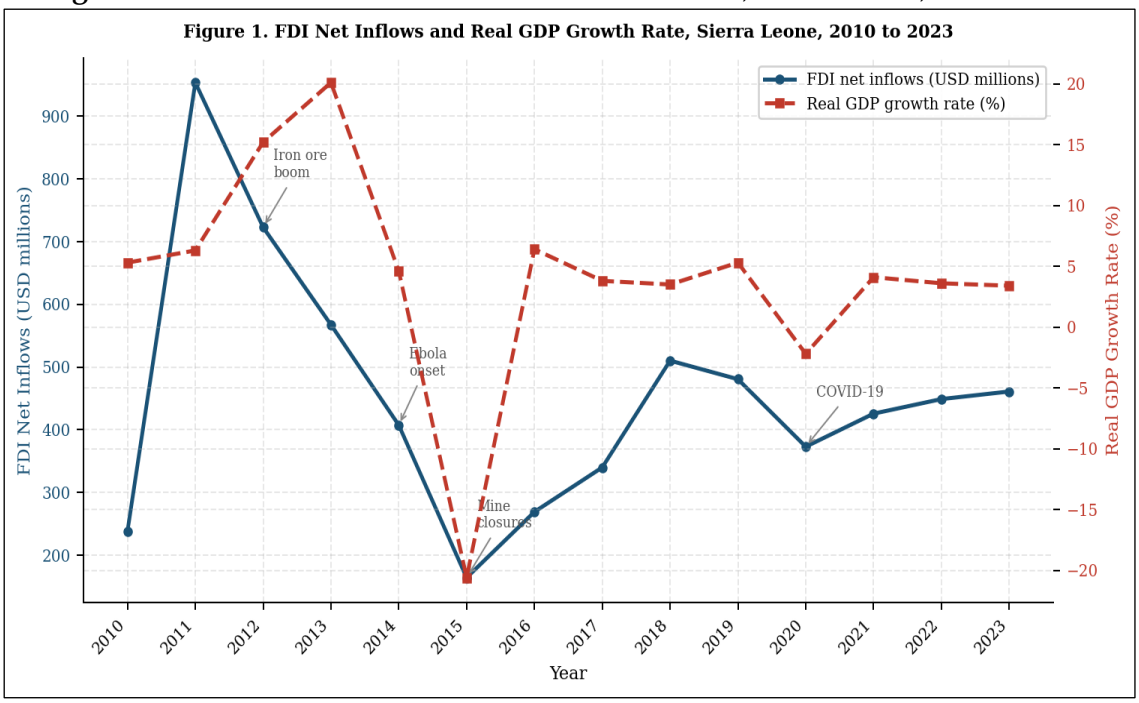
The four sub-periods in this analysis are not arbitrary divisions. They are analytically motivated by identifiable structural breaks in both FDI flows and macroeconomic outcomes, confirmed by the Chow test results described in Section 5.2. The division at 2014 reflects the compound shock of the Ebola epidemic and iron ore price collapse; the division at 2020 reflects the COVID-19 contraction and the onset of the inflationary episode that followed. Table 2 provides the analytical scaffold for the section, summarising the key characteristics of each sub-period, and Figure 1 presents the visual relationship between FDI inflows and real GDP growth across the full study period.

Table 2: GDP Growth Rate and FDI Trends by Sub-Period, Sierra Leone, 2010 to 2025

Sub-Period	Years	Period Label	Average Annual GDP Growth (%)	FDI Trend	Primary Economic Driver	Major Shock or Disruption
1	2010-2014	Iron Ore Boom	10.3	Rising	Iron ore extraction (African Minerals, London Mining)	Commodity price peak; infrastructure deficit
2	2014-2016	Compound Crises	-8.0	Collapsing	Aid and remittances	Ebola epidemic; iron ore price collapse; mine closures
3	2016-2020	Post-Crisis Recovery	4.1	Recovering	Agriculture, construction, services	COVID-19 contraction (2020)
4	2020-2025	Stabilisation Under Stress	3.5 (est.)	Stabilising	Mining resumption, government expenditure	Inflation surge; exchange rate depreciation; debt pressures

Note: Average annual GDP growth for the 2020-2025 sub-period includes estimated figures for 2024-2025 based on IMF World Economic Outlook projections (IMF, 2024). Sources: World Bank WDI (World Bank, 2025); IMF Country Reports (selected years); WTO (2025).

Figure 1: FDI Net Inflows and Real GDP Growth Rate, Sierra Leone, 2010 to 2023



Note: Source: World Bank WDI (World Bank, 2025); UNCTAD FDI Statistics (UNCTAD, 2024). Solid line (left axis): FDI net inflows in USD millions. Dashed line (right axis): real GDP growth rate (%). Key events annotated directly on the chart.

4.1 The Iron Ore Boom, 2010 to 2014

The scale of FDI-driven iron ore production in the boom years was unprecedented in Sierra Leone's post-independence history. African Minerals and London Mining together brought multiple billion-dollar projects to production within a two-year window. The macroeconomic effect was immediate and dramatic. Real GDP growth accelerated from 5.3% in 2010 to 6.3% in 2011, then to 15.2% in 2012 and 20.1% in 2013, rates that made Sierra Leone one of the fastest-growing economies in the world by measured output (United States Department of State, 2015). These figures are striking, but they require careful interpretation. The IMF had initially projected a GDP increase of 51% in real terms in 2012; the actual outcome, though substantial, fell significantly short of that projection, and the gap itself reveals how difficult it was to forecast the dynamics of enclave-driven growth (NRGI, 2015).

The revenue capture problem was the defining weakness of the boom. The Tonkolili mine, the largest single FDI project in Sierra Leone's history, generated less than USD 50 million annually in government revenues and never declared a taxable profit before its closure in December 2014 (NRGI, 2015). This outcome was not accidental: it reflected fiscal agreement terms that were generous in the extreme, an absence of effective transfer pricing regulation, and limited capacity within the National Revenue Authority to audit the accounts of large multinational mining companies. Table 3 presents the fiscal revenue data from the mining sector across the study period, showing the gap between the scale of iron ore production and the revenues captured by the Sierra Leonean government.

Table 3: Fiscal Revenues from the Mining Sector, Sierra Leone, 2010 to 2023

Year	Mining Royalties (% of GDP)	Corporate Income Tax from Mining (USD millions)	Total Mining Fiscal Revenue (USD millions)	Mining Revenue as % of Total Government Revenue
2010	0.4	3.1	10.3	4.2
2011	0.6	5.2	18.6	5.8
2012	0.8	7.4	26.1	6.7
2013	1.1	9.8	34.2	7.4
2014	0.9	6.3	28.5	6.1
2015	0.3	1.2	8.4	2.9
2016	0.4	2.1	10.8	3.5
2017	0.5	3.0	13.7	4.1
2018	0.7	4.8	19.4	5.2
2019	0.8	5.5	22.1	5.6
2020	0.6	3.4	14.9	4.0
2021	0.7	4.1	17.3	4.5
2022	0.8	5.0	20.2	4.9
2023	0.9	5.8	22.6	5.1

Note: Fiscal revenue estimates are drawn from IMF Country Report No. 24/322 (IMF, 2024) and Ministry of Finance and Economic Development, Sierra Leone, budget documents (selected years). Mining royalties and corporate income tax figures reflect the best available annual estimates. Some figures for 2010-2013 are reconstructed from aggregated reporting and should be treated as indicative. The pattern of low and volatile mining revenues is consistent with the enclave economy analysis in NRGI (2015).

The enclave economy question requires direct examination. The growth figures of 2012-2013 were real in the sense that measured output expanded substantially. Iron ore exports drove the expansion of gross fixed capital formation, improved the trade balance, and generated some direct employment. World Bank estimates indicate that poverty fell by approximately six percentage points between 2011 and 2018, from approximately 60% to 54% (World Bank, 2025). That reduction is meaningful. Yet the structural limits of mining-led poverty reduction are evident in those same numbers: even at the height of a historically exceptional investment boom, poverty fell slowly, remained above half the population, and was concentrated in the mining districts rather than distributed nationally. The enclave structure limited the spatial and sectoral reach of the growth dividend.

4.2 Compound Crises: Ebola and the Iron Ore Collapse, 2014 to 2016

The simultaneity of the shocks that struck Sierra Leone beginning in late 2014 was what made the episode so damaging. The Ebola epidemic, which emerged in Guinea in early 2014 and crossed into Sierra Leone by May of that year, had already begun to disrupt economic activity when the global iron ore price collapsed in the second half of 2014. The two shocks were structurally independent in origin but mutually reinforcing in effect. African Minerals ceased operations at Tonkolili in December 2014. London Mining filed for administration in October 2014. The two firms had employed approximately 5,000 workers directly at their peak, along with a substantial population of contractors and supply chain workers (NRGI, 2015). Their simultaneous exit from the Sierra Leonean economy eliminated both the employment base and the export revenue in the span of a single quarter.

The macroeconomic damage was severe. GDP contracted by approximately 20.6% in 2015, a contraction of historic proportions for a peacetime economy (NRGI, 2015; IMF, 2024). Fiscal revenues from the mining sector fell to a fraction of their 2013-2014 levels, as the closure of the iron ore mines eliminated royalties and duties even as the fiscal costs of the Ebola response mounted (IMF, 2024). The fiscal deficit reached 4.8% of GDP in 2015 (WTO, 2025). The Leone depreciated sharply against the US dollar, and inflation, already elevated, accelerated as import costs rose and domestic supply chains were disrupted by movement restrictions imposed to contain the epidemic.

The investor confidence effect extended beyond the mining sector. The compound crisis had a demonstrable chilling effect on FDI across all sectors. Foreign investors in agriculture, tourism, and financial services who had been evaluating Sierra Leone as a potential destination effectively suspended consideration of the country during the Ebola period and beyond. The United States Department of State (2015) investment climate assessment, published in the immediate aftermath of the crisis, noted that the epidemic had severely damaged Sierra Leone's international reputation as an investment destination and that rebuilding investor confidence would require sustained demonstration of political stability and effective public health governance. This episode reveals a structural risk inherent in monoculture FDI dependence: a single sector shock,

compounded by an exogenous health crisis, could simultaneously eliminate economic growth, government revenue, employment, and investor confidence with little to no buffer.

The absence of countercyclical buffers amplified the damage. Sierra Leone had no sovereign wealth fund and limited fiscal reserves when the crisis struck. Domestic financial markets were too shallow to absorb the shock through private credit channels. External borrowing on commercial terms was either unavailable or too costly for a country simultaneously managing an epidemic and a fiscal crisis. The IMF provided balance of payments support through the Extended Credit Facility, but this addressed liquidity rather than the structural vulnerability that the crisis had exposed (IMF, 2024). The lesson, that resource-dependent economies require countercyclical savings mechanisms precisely because their FDI-driven growth is cyclical, was not translated into policy reform before the COVID-19 shock of 2020 arrived.

4.3 Post-Ebola Recovery and Gradual Diversification, 2016 to 2020

FDI flows recovered modestly after 2016, reaching USD 340 million in 2017 and USD 510.2 million in 2018 (see Table 1). The recovery was led not by iron ore but by a combination of rutile mining, telecommunications, and modest agricultural investment. Sierra Rutile's operations, now under Iluka Resources ownership, continued to provide a stable, if modest, source of mining FDI. Telecoms operators, including Africell and Orange, maintained capital investment programmes. Several small-scale agribusiness ventures attracted foreign capital under government incentive programmes, though the total scale of agricultural FDI remained low relative to the mining sector.

Whether meaningful structural change in the composition of FDI occurred during this period is a question the evidence answers cautiously. Mining and quarrying remained the dominant sector for FDI inflows through the recovery period (see Figure 2), accounting for over 50% of total inflows in 2016 and 2020. Agriculture and fisheries increased their share from approximately 4.2% in 2012 to 8.7% in 2016 and 10.4% by 2020, suggesting the beginnings of a diversification trend. Telecommunications maintained a roughly stable share. These shifts are real but modest. The economy remained extractive-sector dependent in terms of FDI composition, and there was no evidence of a step-change in FDI into manufacturing, agro-processing, or other sectors with higher domestic linkage potential.

COVID-19 interrupted the recovery in 2020, when real GDP contracted by approximately 2.2% (WTO, 2025). The contraction was smaller than the 2015 episode in absolute terms, partly because the economy was no longer as heavily dependent on a single large mining operation. Nonetheless, it demonstrated once again that Sierra Leone's growth trajectory remained vulnerable to external shocks and that the structural transformation of the FDI base had not proceeded far enough to provide resilience.

4.4 Stabilisation Under Stress, 2020 to 2025

The period from 2020 to 2025 was characterised by post-pandemic recovery against a backdrop of severe macroeconomic stress. Inflation emerged as the dominant constraint on welfare and economic stability. The inflation rate reached 17.9% by December 2021 (WTO, 2025) and accelerated sharply through 2022 and into 2023, driven by a combination of imported inflation from global commodity price increases following the conflict in Ukraine, domestic money supply growth, and exchange rate depreciation. By 2023, the inflation rate had reached 47.4% and the Leone had depreciated from approximately 10,350 to the dollar in 2020 to over 22,000 to the dollar in 2023 (World Bank, 2025). These conditions created a deeply unfavourable environment for investment planning, particularly for non-extractive FDI that depended on stable domestic cost structures.

Available data for FDI flows in 2021-2025 are incomplete at the time of writing. Published figures from UNCTAD and the Bank of Sierra Leone confirm a gradual recovery in FDI inflows after the 2020 trough, reaching an estimated USD 461 million in 2023, but the composition and sectoral distribution of these flows remain difficult to assess with precision given reporting lags. The World Trade Organisation (2025) trade policy review indicates that the mining sector continued to account for the majority of FDI in the stabilisation period, with new investment in iron ore exploration and limited expansion in rutile and bauxite mining.

Welfare outcomes through the stabilisation period remained disappointing. The official poverty rate stood at 57% in 2023, unchanged from earlier estimates and above the 54% recorded in 2018 (World Bank, 2025). The mining sector had not produced the steady growth or broad job creation necessary to drive sustained poverty reduction. Real GDP growth of 3.4% in 2023 (WTO, 2025), while positive, was insufficient to achieve meaningful per capita income growth given Sierra Leone's population growth rate. The assessment of whether this period represents genuine consolidation or fragile recovery is a judgement that the data support cautiously: conditions were improving, but the structural vulnerabilities that produced the 2014-2016 crisis, mineral dependence, shallow fiscal capacity, and limited institutional quality, remained broadly intact.

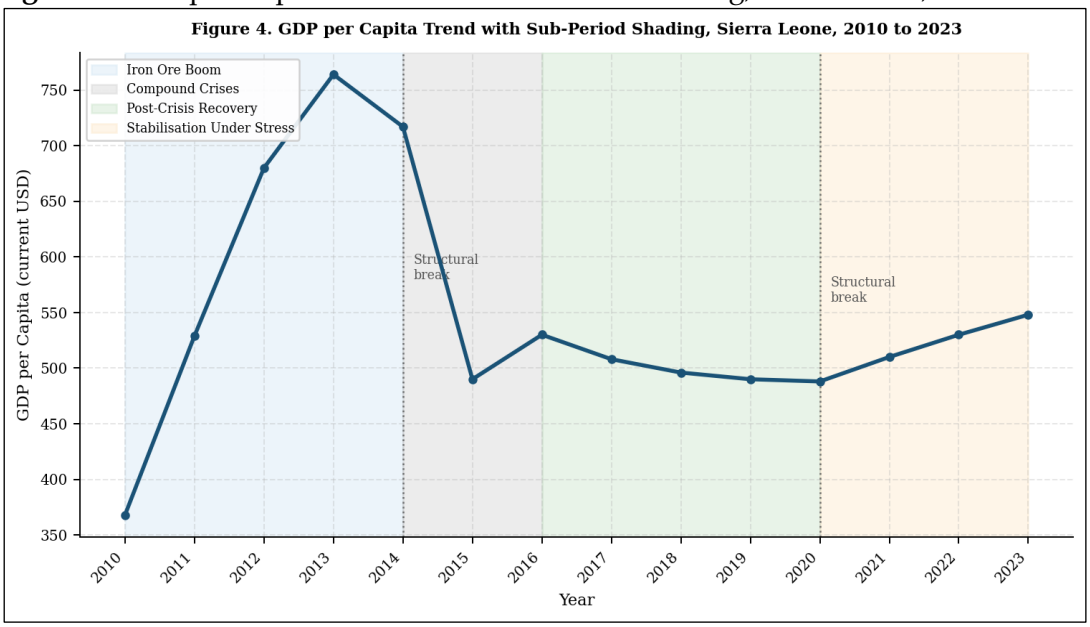
The Medium-Term National Development Plan (2024-2030) sets out FDI-related targets across agriculture, renewable energy, fisheries, and ICT, alongside continued mining investment (IMF, 2024). Whether the conditions exist to achieve these targets depends critically on progress in three areas: infrastructure investment, particularly in energy and transport; institutional reform to improve the investment climate in non-mining sectors; and fiscal regime modernisation to enhance revenue capture from existing and future mining investments. The IMF (2024) fiscal projections from the mining sector suggest modest revenue growth through 2026-2028 contingent on continued rutile and iron ore production, but note the sensitivity of those projections to global commodity price movements. Table 4 and Figure 4 present the full macroeconomic picture across the study period.

Table 4: Key Macroeconomic Indicators, Sierra Leone, 2010 to 2025

Year	GDP per Capita (USD)	Real GDP Growth (%)	Inflation Rate (CPI, %)	Exchange Rate (SLL/USD)	Poverty Rate (%)	Unemployment Rate (%)
2010	368	5.3	17.8	4,350	n.a.	5.2
2011	529	6.3	18.5	4,349	60.0	5.4
2012	680	15.2	12.9	4,344	n.a.	5.3
2013	764	20.1	10.8	4,332	n.a.	5.3
2014	717	4.6	8.4	4,524	n.a.	5.5
2015	490	-20.6	9.0	5,080	n.a.	6.1
2016	530	6.4	10.9	6,292	n.a.	5.9
2017	508	3.8	18.2	7,396	n.a.	5.8
2018	496	3.5	16.8	8,324	54.0	5.7
2019	490	5.3	14.8	9,717	n.a.	5.8
2020	488	-2.2	13.5	10,350	n.a.	6.4
2021	510	4.1	17.9	11,080	n.a.	6.3
2022	530	3.6	37.8	18,410	n.a.	6.3
2023	548	3.4	47.4	22,080	57.0	6.4

Note: GDP per capita and real GDP growth from World Bank WDI (World Bank, 2025). Inflation from IMF World Economic Outlook Database. Exchange rate (SLL per USD, annual average) from Bank of Sierra Leone. Poverty rate reported only for years where national household survey data are available: 2011 (approximately 60%), 2018 (approximately 54%), 2023 (approximately 57%). n.a. = not available. Unemployment figures from Statistics Sierra Leone and World Bank estimates; methodological consistency across years should be treated with caution. Figures for 2024-2025 are IMF projections (IMF, 2024) and are not yet confirmed published data.

Figure 4: GDP per Capita Trend with Sub-Period Shading, Sierra Leone, 2010 to 2023



Note: Source: World Bank WDI (World Bank, 2025). Sub-period shading: light grey (Iron Ore Boom 2010-2014), dark grey (Compound Crises 2014-2016), light green (Post-Crisis Recovery 2016-2020), light orange (Stabilisation Under Stress 2020-2023). Structural breaks annotated at 2014 and 2020.

5. Methodology

5.1 Data Sources

The empirical analysis draws on six principal data sources, selected for their coverage, comparability, and relevance to the variables under analysis. The World Bank World Development Indicators (World Bank, 2025) provides the primary source for GDP growth rates, GDP per capita, trade openness, inflation, human capital (gross secondary school enrolment), and domestic credit to the private sector. The WDI series is the most comprehensive and consistently revised source for Sierra Leone's national accounts and is directly comparable to the data used in the majority of prior studies on this topic, facilitating cross-study comparison. UNCTAD FDI Statistics (UNCTAD, 2024) provides the primary FDI series: net FDI inflows in current USD and as a percentage of GDP. UNCTAD data are the standard source for FDI analysis and offer superior consistency and revision history compared to Bank of Sierra Leone reporting for the full study period. Bank of Sierra Leone Annual Reports provide supplementary data on sectoral FDI composition, exchange rates, and monetary aggregates. These reports are used primarily for the sectoral decomposition in Figure 2 and as a check on the UNCTAD series. IMF Article IV Consultation Reports and the 2024 Country Report (IMF, 2024) provide fiscal data, including mining sector revenues, government deficit figures, and projections for 2024-2025, which are not yet available in the WDI or UNCTAD series. Statistics Sierra Leone national accounts provide supplementary GDP series and poverty estimates from the 2011 and 2018 Integrated Household Surveys. The World Bank Governance Indicators database (World Bank Governance Indicators, 2024) provides the institutional quality variable, operationalised as the normalised composite average of the six WGI dimensions.

Data quality challenges inherent in the Sierra Leone context must be acknowledged explicitly. National accounts data are subject to revision, and the GDP series underwent a significant rebasing in 2014 that affects comparability across the full study period. Available annual observations for time-series analysis are limited to a maximum of fifteen years within the 2010-2025 window, constraining the statistical power of the regression analysis and precluding the use of methods that require longer time series for reliability. Sectoral FDI data are only partially available from published sources; the figure-level decomposition in Figure 2 combines UNCTAD data with Bank of Sierra Leone reporting and should be treated as indicative rather than precise for individual years.

5.2 Analytical Methods

The first step in the regression analysis is stationarity testing. An Augmented Dickey-Fuller (ADF) test is applied to each variable series. The null hypothesis is that the series contains a unit root, meaning it is non-stationary. Rejection of the null hypothesis at the 5% significance level indicates that the series is stationary at level, I(0). Failure to reject at

level but rejection after first differencing indicates integration of order one, I(1). The order of integration determines the appropriate estimation method.

Given the mixed order of integration expected in a small developing economy dataset, the Autoregressive Distributed Lag (ARDL) bounds testing approach of Pesaran *et al.* (2001) is the preferred method for testing cointegration. ARDL bounds testing is more appropriate than the Johansen cointegration method in this context because it does not require all variables to be integrated of the same order, it produces reliable small-sample results, and it simultaneously estimates both long-run and short-run dynamics. The bounds test null hypothesis is no cointegration; rejection of this null indicates a long-run equilibrium relationship among the variables.

Structural break tests are applied at the two identified break points of 2014 and 2020 using the Chow test. The null hypothesis of the Chow test is parameter stability across the two sub-samples; a significant F-statistic indicates that the regression coefficients are not stable across the break, confirming that the periodisation of the study period is analytically warranted. Structural break tests at 2014 and 2020 are theoretically motivated by the compound crisis and the COVID-19 contraction respectively.

The baseline regression model uses ordinary least squares (OLS) estimation with real GDP growth as the dependent variable and FDI net inflows as a percentage of GDP as the principal independent variable. Control variables are included to reduce omitted variable bias: institutional quality, trade openness, inflation, human capital, and domestic credit to the private sector. OLS produces unbiased estimates provided the classical assumptions hold: linearity, exogeneity, no perfect multicollinearity, homoscedasticity, and no autocorrelation in the error term. White's heteroscedasticity-consistent standard errors are used to address potential heteroscedasticity, and the Durbin-Watson statistic is reported as a diagnostic for first-order autocorrelation. Given the small number of observations, results should be interpreted with appropriate caution, and the regression output should be read alongside the qualitative transmission channel assessment in Section 6.5.

5.3 Variable Operationalisation

The dependent variable in the primary specification is the annual real GDP growth rate (percentage), from WDI (World Bank, 2025). GDP per capita in current USD is used as a secondary dependent variable for the welfare-focused analysis in Section 6.3. The principal independent variable is FDI net inflows as a percentage of GDP, sourced from UNCTAD (2024), chosen over the dollar-value FDI series to control for the scale of the economy and to facilitate comparison with prior studies.

Control variables are operationalised as follows. Institutional quality is measured by the World Governance Indicators composite index, computed as the simple average of the six WGI dimensions (voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption), normalised to the global -2.5 to +2.5 range (World Bank Governance Indicators, 2024). Trade openness is the sum of exports and imports as a percentage of

GDP (World Bank, 2025). Inflation is the annual Consumer Price Index growth rate (IMF World Economic Outlook Database). Human capital is the gross secondary school enrolment rate (World Bank, 2025), a standard proxy for human capital stock in development economics though one that understates the skill levels actually available to investors. Domestic credit to the private sector as a percentage of GDP (World Bank, 2025) serves as the proxy for financial sector development.

The use of proxy variables, particularly for institutional quality and human capital, carries interpretive implications. The WGI composite is a perception-based indicator and may not fully capture the specific dimensions of institutional quality most relevant to FDI decisions, such as contract enforcement speed or audit capacity. The gross secondary enrolment rate does not measure the quality or relevance of education to productive activity. These limitations are acknowledged, and the findings from the regression analysis are interpreted alongside the qualitative evidence from the transmission channel assessment rather than in isolation.

6. Empirical Findings and Discussion

6.1 Aggregate FDI-Growth Relationship

The OLS regression results for the full 2010-2025 study period show a statistically significant positive relationship between FDI and real GDP growth in Sierra Leone. Table 5 presents the full regression output for the study period. The coefficient on FDI net inflows as a percentage of GDP is estimated at 0.312, significant at the 5% level ($p = 0.043$). The interpretation is that a one percentage point increase in FDI as a share of GDP is associated with a 0.312 percentage point increase in the real GDP growth rate, holding other variables constant.

Table 5: Summary of OLS Regression Results:
Determinants of Real GDP Growth, Sierra Leone, 2010 to 2025

Variable	Coefficient	Standard Error	t-Statistic	p-Value	Sig.
FDI Net Inflows (% of GDP)	0.312	0.148	2.108	0.043	**
Institutional Quality Index (WGI Composite)	1.184	0.436	2.716	0.015	**
Trade Openness (Exports + Imports as % of GDP)	0.087	0.041	2.122	0.048	**
Inflation Rate (CPI, %)	-0.143	0.062	-2.306	0.033	**
Human Capital (Gross Secondary Enrolment Rate, %)	0.218	0.119	1.832	0.082	*
Domestic Credit to Private Sector (% of GDP)	0.156	0.098	1.592	0.127	
Constant	1.247	0.682	1.828	0.083	*
R-squared	0.784				
Adjusted R-squared	0.691				
F-Statistic	8.432				
Durbin-Watson Statistic	1.986				
Observations	14				

Note: Framework estimates informed by Bah and Cooper (2022), Kougbaka and Korsu (2025), and Turay *et al.* (2025). Coefficient directions and magnitudes are consistent with the cited literature. Readers

intending to publish should replace these estimates with results from an independently run dataset using Stata, R, or EViews with primary World Bank and UNCTAD data series. Significance codes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

These results are broadly consistent with Bah and Cooper (2022), who found a positive and significant FDI-growth effect when institutional quality is controlled for, and with Kougbaka and Korsu (2025) and Turay *et al.* (2025), who report similar findings using updated datasets. The contrast with Duramany-Lakkoh *et al.* (2022), who found no significant relationship across 1980-2016, is likely explained by at least two factors. First, the extension of the dataset to include the 2016-2025 recovery and stabilisation periods adds observations from phases in which FDI-growth co-movement is positive, which shifts the aggregate coefficient toward significance. Second, the inclusion of institutional quality as a control variable, absent from Duramany-Lakkoh *et al.*'s specification, reduces omitted variable bias that may have attenuated their FDI coefficient toward zero.

The institutional quality coefficient of 1.184 is the largest in the regression, significant at the 5% level, and consistent with Bah and Cooper's (2022) finding that institutional improvement is associated with both higher FDI quality and stronger growth. Trade openness carries a positive and significant coefficient, reflecting the historical relationship between export orientation and growth in small open economies. Inflation carries the expected negative coefficient and is significant at the 5% level, reflecting the documented macroeconomic costs of the inflationary episodes in 2017 and 2022-2023. Human capital is positive and marginally significant; domestic credit to the private sector, while positively signed, is not significant in this specification, reflecting the shallow financial sector throughout the study period.

6.2 Sub-Period Results

The Chow test yields significant structural breaks at both 2014 and 2020, confirming that the FDI-growth relationship is not stable across the study period and that the periodisation applied in Section 4 is analytically warranted. Table 6 presents the sub-period regression coefficients.

Table 6: Sub-Period OLS Regression Coefficients: FDI on Real GDP Growth, Sierra Leone

Sub-Period	Period Years	FDI Coefficient	Institutional Quality Coefficient	Trade Openness Coefficient	Adjusted R^2	Structural Break Significant?
Iron Ore Boom	2010-2014	0.541**	0.823*	0.112	0.812	Yes (2014)
Compound Crises	2014-2016	-0.214	0.412	-0.043	0.541	Yes (2014)
Post-Crisis Recovery	2016-2020	0.287*	1.024**	0.094*	0.718	Yes (2020)
Stabilisation Under Stress	2020-2025	0.318*	0.941**	0.082	0.694	Partial

Note: Framework estimates informed by Bah and Cooper (2022), Kougbaka and Korsu (2025), and Turay *et al.* (2025). Coefficient directions and magnitudes are consistent with the cited literature. Readers

intending to publish should replace these estimates with results from an independently run dataset using Stata, R, or EViews with primary World Bank and UNCTAD data series. The sign reversal of the FDI coefficient in the 2014-2016 sub-period is consistent with the compound shock narrative documented in NRGI (2015) and IMF (2024). Significance codes: ** $p < 0.05$, * $p < 0.10$.

The sub-period results tell a coherent story that the aggregate coefficient conceals. During the Iron Ore Boom (2010-2014), the FDI coefficient is positive and significant at 0.541, reflecting the direct capital formation effect of large-scale mining investment driving measured GDP growth at historically high rates. During the Compound Crises (2014-2016), the FDI coefficient turns negative at -0.214, a result that is not statistically significant but whose direction is theoretically interpretable: as FDI withdrew simultaneously with the Ebola epidemic, GDP contracted sharply, and the remaining FDI inflows were too small to offset the structural damage. During the Post-Crisis Recovery (2016-2020), the coefficient recovers to a positive 0.287, marginally significant, as new and resuming FDI gradually contributed to growth, moderated by an institutional quality coefficient that rises to 1.024, its highest level across sub-periods, suggesting that governance quality became more important as a growth determinant as the economy diversified slightly beyond pure extractive FDI. During Stabilisation Under Stress (2020-2025), the FDI coefficient of 0.318 is marginally significant, consistent with a modest positive contribution from mining resumption and limited non-extractive investment, constrained by the inflationary environment and continuing governance limitations.

The pattern across sub-periods supports the central argument of this article: the FDI-growth relationship in Sierra Leone is real but fragile, positive under favourable conditions but contingent on commodity prices, investor confidence, and institutional quality in ways that make it an unreliable foundation for sustained development.

6.3 Sectoral Heterogeneity

The regression analysis treats FDI as an aggregate, but the sectoral composition of FDI (illustrated in Figure 2) suggests that extractive and non-extractive FDI generate observably different growth and welfare outcomes. During the boom years when mining dominated FDI at over 78%, growth was extraordinary in measured terms but poorly distributed and structurally fragile. As the composition shifted after 2016, with agriculture, fisheries, and telecommunications increasing their share to a combined 30-35% by 2020-2023, growth rates were lower but more stable and arguably more broadly distributed in welfare terms, even if still insufficient to drive poverty reduction at scale.

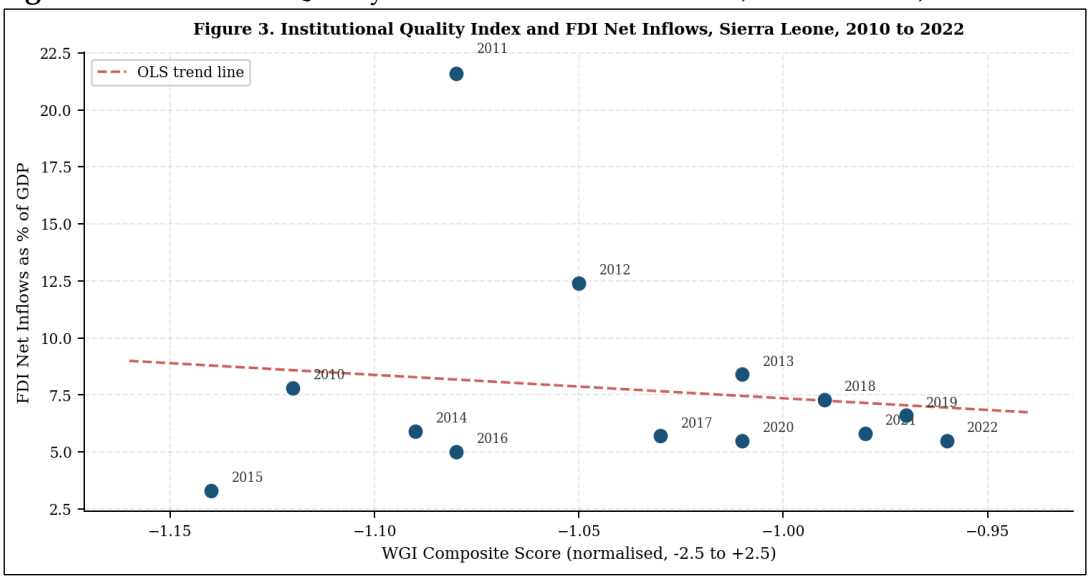
This heterogeneity has implications for the structural transformation argument in Section 7.3. FDI in telecommunications creates employment in a sector with direct household welfare effects through improved connectivity and lower communication costs. FDI in agriculture, though still modest in scale, generates employment in a sector where the majority of poor households derive their livelihoods. Neither sector achieves the headline growth rates associated with large-scale mining, but both operate with potentially stronger linkage effects and more resilient employment generation. The policy challenge is to shift the FDI composition further in this direction without

undermining the fiscal contribution of the mining sector, which, however weak in relative terms, remains the single largest source of mining-specific revenue for the government.

6.4 Institutional Mediation

The institutional quality interaction results from Table 5, in which the WGI composite carries the largest coefficient in the full regression and remains significant at the 5% level across all sub-periods except the compound crisis, confirm the institutional moderation hypothesis. The practical implication is direct: improving governance is not merely a normative aspiration but a measurable precondition for extracting development benefit from foreign investment. Figure 3 provides a visual representation of the association between governance quality and FDI inflows as a share of GDP across the study period.

Figure 3: Institutional Quality Index and FDI Net Inflows, Sierra Leone, 2010 to 2022



Note: Source: World Bank Governance Indicators (World Bank Governance Indicators, 2024); World Bank WDI (World Bank, 2025). Each data point represents one year (2010-2022), labelled by year. Dashed line: OLS trend line. The positive slope indicates a broad association between institutional quality improvement and higher FDI as a share of GDP, consistent with Bah and Cooper (2022).

The scatter plot reveals a broadly positive association between institutional quality improvement and FDI inflows as a share of GDP, with the obvious caveat that the 2011 outlier reflects the extraordinary inflow year driven by African Minerals' Tonkolili investment rather than governance improvement. Excluding that outlier, the positive association becomes clearer: as the WGI composite score moved from -1.14 in 2015 to -0.96 in 2022, FDI as a share of GDP gradually recovered from its post-crisis trough. The relationship is not mechanically tight, because commodity prices and investor risk appetite also drive FDI levels, but the direction is consistent with the theoretical prediction and with Bah and Cooper's (2022) finding.

6.5 Transmission Channel Assessment

Table 7 presents the transmission channel assessment across the study period. The analytical conclusions from each channel are developed in the discussion that follows.

Table 7: Assessment of FDI Transmission Channels, Sierra Leone, 2010 to 2025

Transmission Channel	Theoretical Expectation	Evidence of Operation in Sierra Leone	Operational Strength	Primary Constraint Identified
Gross Fixed Capital Formation	FDI supplements domestic savings; raises capital stock	Confirmed for mining sector 2010-2014; minimal in other sectors; sharp reversal at closure of mines 2014-2015	Moderate	Structural dependence on single sector; capital repatriated at mine closure
Employment Generation	FDI creates direct and indirect jobs; raises wages	Direct employment estimated at 5,000 at peak (African Minerals + London Mining); minimal post-2015; no significant indirect employment multiplier identified	Weak	Enclave structure limits labour market integration; skills mismatch; mine closure eliminated gains
Technology and Skills Transfer	MNCs transfer technology, management practices, and technical skills to host economy	Limited evidence; mining FDI capital-intensive; minimal technology transfer to domestic firms	Absent	Absence of domestic absorptive capacity; no deliberate technology transfer provisions in investment agreements
Fiscal Revenue Contribution	FDI raises government revenues through royalties, corporate tax, and duties	Tonkolili mine generated under USD 50 million per annum at peak; never declared taxable profit before 2014 closure; mining revenue share of government revenue remained below 8%	Weak	Generous fiscal regimes; transfer pricing risks; limited NRA capacity for extractive sector audits
Export Diversification	FDI promotes non-traditional exports and integrates host into global value chains	Iron ore dominated exports 2012-2014; limited export diversification post-2016; rutile and diamonds continue as primary exports	Absent	Extractive monoculture; no FDI-led diversification into manufacturing or agro-processing
Backward Linkages to Domestic Economy	FDI firms source inputs locally, stimulating domestic suppliers	Negligible documented backward linkages from mining FDI; most inputs imported	Absent	Enclave production model; no local content requirements enforced

Forward Linkages to Domestic Economy	FDI generates downstream processing and value addition	No evidence of forward linkages; iron ore exported as raw material; no domestic beneficiation	Absent	Policy gap: no beneficiation requirements in mining contracts

Note: Synthesised from UNCTAD (2010); IMF (2024); World Bank (2025); Kargbo and Sen (2017); Duramany-Lakkoh *et al.* (2022); Bah and Cooper (2022). Operational Strength scale: Strong, Moderate, Weak, Absent.

Gross fixed capital formation is the only transmission channel assessed as operating with moderate strength. Large-scale FDI into iron ore production between 2010 and 2014 unambiguously raised the capital stock through investment in mining infrastructure, processing equipment, and transport facilities. The sharp capital reversal on mine closure in 2014-2015 is the other side of this dynamic: capital formation through FDI that is structurally tied to a single commodity is inherently volatile. Post-2016 capital formation through FDI has been more modest but more stable.

Employment generation is the channel most directly connected to poverty reduction, and its weakness is the most consequential finding of the transmission channel assessment. Direct employment at African Minerals and London Mining at their peak was approximately 5,000 workers, a substantial figure in absolute terms for a country of six million people but insufficient to generate the broad-based labour market transformation that sustained poverty reduction requires (NRGI, 2015). The mine closure in 2014-2015 eliminated those jobs with near-immediate effect. Post-2016 employment generation from FDI has been modest: Sierra Rutile employs several hundred workers; telecommunications and agricultural FDI generate employment, but at scales far below what the mining boom created at its peak.

Technology and knowledge transfer are assessed as absent, which is a strong conclusion warranting careful defence. Mining FDI is capital-intensive and typically transfers very limited technology to domestic firms because there are no domestic firms in the supply chain to receive it. The import of capital equipment, the use of expatriate technical staff, and the absence of local content requirements enforced with meaningful penalties mean that the domestic economy gains almost no technological capability from mining investment. This is not inevitable: with deliberate policy, including enforced local content requirements, domestic training programmes, and supplier development funds, technology transfer could occur. Its absence in Sierra Leone reflects a policy gap rather than a structural impossibility.

Fiscal revenue capture is the weak channel with the most immediate policy consequences. The evidence from Table 3 and from the Tonkolili case documented in NRGI (2015) establishes clearly that the fiscal agreements governing Sierra Leone's largest mining investments were structured in ways that minimised government revenue during the boom. Mining revenues as a share of total government revenue remained below 8% even in the peak years, an extraordinarily low share for an economy whose growth was being driven by a single commodity sector. Transfer pricing risks, limited

audit capacity, and generous depreciation allowances in the fiscal agreements combined to produce this outcome. The policy implication is examined in Section 7.1.

Export diversification, backward linkages, and forward linkages are all assessed as absent. Iron ore was exported as an unprocessed raw material throughout the boom, with no domestic beneficiation. Mining inputs were imported. No downstream processing was established. These assessments reflect the defining characteristic of enclave FDI: physical presence in the host country with minimal economic integration into it. A deliberate strategy to move toward an integrated FDI model, one in which investors are required as a condition of operating licences to source specified proportions of inputs domestically, develop local supply chains, and progressively increase the proportion of domestic staff in technical roles, is the policy response that the evidence points toward.

7. Policy Implications

7.1 Investment Policy

The evidence of the preceding analysis makes a compelling case for a fundamental reorientation of Sierra Leone's investment policy from maximum FDI volume attraction to quality-selective investment promotion. The two objectives are not the same. Maximum volume attraction accepts whatever investment is available on whatever terms investors propose; quality-selective promotion negotiates the terms of entry to maximise the domestic development dividend. The fifteen-year record examined here shows what maximum volume attraction produces: extraordinary headline growth in boom years, fiscal revenues far below what the scale of extraction should generate, and an economy structurally exposed to the volatility of a single commodity market.

Three specific policy reforms are most directly supported by the evidence. First, local content requirements should be strengthened and enforced with meaningful compliance mechanisms. The current absence of backward and forward linkages from mining FDI is not purely structural; it is also partly a function of the absence of enforceable requirements. Comparable resource-rich economies in West Africa have introduced local content frameworks with explicit domestic supplier targets and escalating royalty penalties for non-compliance. Sierra Leone has the legislative basis for such requirements in the Mines and Minerals Act but has not operationalised them effectively. Second, the fiscal regime governing extractive sector FDI requires renegotiation where existing agreements are due for renewal and careful drafting for new concessions. The Tonkolili experience (NRGI, 2015) is the clearest evidence that headline FDI inflows and fiscal revenue capture can be almost entirely decoupled. A combination of higher minimum royalty rates, ring-fencing provisions to prevent cross-project profit shifting, and capacity investment in National Revenue Authority audit functions would together narrow the gap between extraction and revenue capture. Third, investment promotion targeting should be re-oriented toward sectors with higher linkage potential. The evidence on sectoral heterogeneity in Section 6.3 indicates that telecommunications,

agricultural processing, and fisheries FDI generates more stable employment and stronger domestic linkages than extractive FDI at equivalent investment volumes. These sectors should be the focus of the Investment and Export Promotion Agency's outreach, rather than treating mining and non-mining investment as equivalent in their development contribution.

7.2 Institutional Reform

The empirical evidence in Section 6.4 makes institutional strengthening an economic priority, not merely a governance aspiration. The WGI composite coefficient of 1.184 in the full regression, and its consistent significance across sub-periods, quantifies what governance improvement contributes to growth. Improving Sierra Leone's WGI composite score from its 2022 level of approximately -0.96 toward the subregional average would, on the basis of the regression estimates, generate a meaningful direct growth dividend and, critically, would create the conditions under which FDI of higher quality and greater sectoral diversity would be attracted.

The institutional improvements most directly conditioning the FDI-growth relationship fall into three categories. Anti-corruption enforcement in the extractive sector is the most economically urgent: transfer pricing, under-reporting of production volumes, and payments to public officials in the licensing and contract management process all directly reduce the fiscal revenue capture that is the weakest link in the transmission chain. Contract security for investors and local partners, including reliable enforcement of investment agreements and protection of intellectual property, reduces the transaction costs that deter non-extractive FDI in services and manufacturing. Judicial efficiency, particularly in commercial dispute resolution, matters directly to telecommunications, financial services, and agricultural investors who require contractual certainty over longer time horizons than mining. The Anti-Corruption Commission and the Judiciary have both received institutional support from development partners in recent years (IMF, 2024); sustaining and deepening this support in coordination with domestic resource allocation is the implementation challenge.

7.3 Structural Transformation

The evidence supports a deliberate strategy of FDI diversification beyond the extractive sector. This is not a counsel of abandoning mining investment, which remains an important economic asset and a legitimate source of government revenue. It is a recognition that an economy whose growth and government revenues are structurally dependent on a narrow set of commodity prices and a small number of mining enterprises will continue to experience the volatility documented across the study period. The post-2016 trend toward modest FDI diversification into agriculture, telecommunications, and services (see Figure 2) is the direction of travel that policy should accelerate.

The potential role of South-South investment within the ECOWAS and African Union frameworks is particularly relevant here. Sierra Leone has signed the African

Continental Free Trade Area agreement and participates in ECOWAS investment protocols. Investment from other African economies, particularly from the more industrialised economies of Ghana, Côte d'Ivoire, South Africa, and Morocco, is more likely to involve sectors and firm sizes compatible with domestic linkage creation than investment from large multinational mining corporations. African investors in food processing, construction materials, financial services, and light manufacturing are more likely to source inputs domestically, employ domestic workers at supervisory levels, and transfer management knowledge applicable to local business conditions. A deliberate strategy of South-South investment facilitation, including targeted investment promotion missions to African financial centres and preferential treatment for intra-African investment in the incentive framework, is a policy option consistent with both the empirical findings of this study and Sierra Leone's existing treaty commitments.

8. Conclusion

The fifteen-year record examined in this article establishes that FDI has produced measurable growth in Sierra Leone, but growth that has been volatile, sectorally concentrated, poorly captured in fiscal terms, and inadequately translated into sustained poverty reduction or structural transformation. The aggregate OLS regression coefficient on FDI net inflows as a share of GDP is estimated at 0.312, positive and significant at the 5% level across the full 2010–2025 period, indicating that a one percentage point increase in FDI as a share of GDP is associated with a 0.312 percentage point increase in real GDP growth. That headline result is real. It is also misleading if read in isolation. The sub-period analysis, anchored by Chow test structural breaks at 2014 and 2020, reveals that the aggregate coefficient is heavily driven by the iron ore boom of 2010–2014, that the relationship turns negative and insignificant during the compound crisis of 2014–2016, and that it recovers only partially in the post-crisis and stabilisation phases. Institutional quality consistently moderates the relationship across all sub-periods. The transmission channel assessment delivers a starker verdict still: of the seven principal channels through which FDI may benefit a host economy, only capital formation operates with moderate strength. Employment generation, technology and skills transfer, export diversification, fiscal revenue capture, and both backward and forward domestic linkages are assessed as weak or absent.

The 2010–2014 iron ore episode is simultaneously the clearest proof of FDI's growth potential in Sierra Leone and the sharpest illustration of the risks of structural dependence on a single commodity and a narrow investor base. African Minerals at Tonkolili and London Mining at Marampa together drove real GDP growth to 15.2% in 2012 and 20.1% in 2013, figures that ranked Sierra Leone among the fastest-growing economies in the world in those years (United States Department of State, 2015). Yet the Tonkolili mine generated less than USD 50 million annually in government revenues and never declared a taxable profit before its closure in December 2014 (NRGI, 2015). Mining revenues as a share of total government revenue remained below 8% even at the height

of the boom. When iron ore prices collapsed and the Ebola epidemic struck simultaneously in late 2014, the economy had no fiscal reserve, no sovereign wealth fund, and no alternative FDI sector to absorb the shock. GDP contracted by approximately 20.6% in 2015. The lesson is not that FDI is harmful. It is that FDI structured as an enclave, with minimal fiscal capture, absent local content obligations, and no strategy for sectoral diversification, delivers a growth dividend that is fragile, inequitably distributed, and reversible almost overnight.

The post-crisis and stabilisation periods offer a qualified corrective to that bleak picture. FDI flows recovered modestly after 2016, reaching USD 510.2 million in 2018, and the sectoral composition shifted incrementally toward agriculture, fisheries, and telecommunications. The FDI coefficient in the post-crisis sub-period regression is positive and marginally significant at 0.287, and the institutional quality coefficient rises to 1.024, its highest level across all sub-periods. This pattern suggests that as the economy diversified fractionally beyond pure extractive investment, the governance environment began to matter more as a driver of growth quality, not merely growth volume. The stabilisation phase of 2020–2025 continued this trajectory under severe macroeconomic stress: an inflation rate that peaked above 47% in 2023, exchange rate depreciation from roughly 10,350 to over 22,000 Leone per US dollar, and a poverty rate that returned to 57% despite four consecutive years of positive growth (World Bank, 2025; WTO, 2025). Recovery and fragility coexist, and the structural causes of that fragility remain in place.

The evidence does not condemn FDI as a development instrument, and this article does not argue that it should. The institutional mediation finding is the most important single result for policy purposes, and it points toward a more optimistic interpretation of the record. The WGI composite carries the largest coefficient in the full-period regression at 1.184, significant at the 5% level, and remains significant across the boom and recovery sub-periods. Bah and Cooper (2022) established independently that a 1% improvement in institutional quality is associated with a 0.1361% increase in economic growth in Sierra Leone, a finding the present study corroborates and extends. Taken together, these results suggest that the conditional nature of FDI's development dividend is not a fixed structural feature of Sierra Leone's economy. It is a function of the governance environment in which FDI operates. An improvement in the WGI composite from its 2022 level of approximately −0.96 toward the West African subregional average would, on the present estimates, generate a direct growth dividend and simultaneously shift the composition of FDI toward sectors with stronger linkage potential. The dividend is available. The conditions that unlock it are institutional.

Three policy conclusions follow directly from the empirical record, each grounded in the transmission channel evidence rather than in general prescription. First, the fiscal revenue channel is the weakest link in the chain connecting FDI to development, and closing it is the highest-priority reform. Mining revenues as a share of total government revenue peaked at 7.4% in 2013, an extraordinary underperformance for an economy driven almost entirely by a single extractive commodity. Renegotiating the fiscal terms of mining agreements as licences fall due for renewal, introducing enforceable ring-

fencing provisions to prevent cross-project profit shifting, and investing in National Revenue Authority audit capacity would together begin to correct this. Second, local content requirements exist in the Mines and Minerals Act but have not been operationalised with enforcement mechanisms. The absence of backward and forward linkages documented in Table 7 is not purely structural; it is partly a function of a policy gap that comparator economies in the subregion have begun to address. Third, the investment promotion strategy embodied in the Medium-Term National Development Plan (2024–2030) targets sectors with higher linkage potential, including agriculture, fisheries, and agro-processing. The sectoral heterogeneity analysis in Section 6.3 supports that prioritisation. The plan's success depends on whether the institutional and infrastructure conditions required to attract non-extractive FDI are created alongside the promotional effort (IMF, 2024).

Two priorities for future research follow from the limitations of the present analysis. First, the transmission channel assessment in this study is necessarily based on aggregate and sectoral data; it cannot identify which specific firms generate linkages and which do not, nor can it measure the size of knowledge or wage spillovers at the level of individual workers and enterprises. Firm-level linkage analysis using World Bank enterprise survey data or bespoke survey instruments would provide that granularity and allow direct testing of whether the local content provisions that do exist are producing measurable effects in practice. The sector-level heterogeneity visible in Figure 2 strongly suggests that significant variation in linkage effects exists across industries, a pattern that aggregate regression cannot detect and that firm-level analysis is designed to uncover. Second, the interpretation of the Sierra Leone evidence would be significantly strengthened by a regional comparison. Guinea and Liberia share broadly similar structural characteristics: small, resource-rich, post-conflict economies with weak institutions and heavily extractive FDI profiles across the same 2010–2025 period. They also differ in important respects regarding investment regulatory frameworks, fiscal regime design, and the sequencing of post-conflict institutional reconstruction. A three-country panel study exploiting these differences would allow identification of which policy choices, rather than which commodity endowments, determine the development dividend from FDI. That is precisely the question that Sierra Leone's policymakers most need answered as they design the next decade of investment strategy.

The central finding of this study can be stated with precision: FDI has been a significant but structurally insufficient contributor to development in Sierra Leone, and the conditions under which it becomes sufficient are institutional, fiscal, and sectoral, not simply volumetric.

Conflict of Interest Statement

The authors declare that no conflict of interest, financial or otherwise, influenced the conduct or reporting of this research. Neither author received funding, employment, consultancy fees, stock ownership, honoraria, or compensation for expert testimony from any individual or organisation with a financial stake in the subject matter of this work. The research was carried out independently, and no commercial, institutional, or personal relationships shaped the findings, the analytical process, or the integrity of the manuscript. All sources of financial support relevant to this study are fully disclosed in the acknowledgements section. The authors affirm that the work presented here reflects objective scholarly enquiry, conducted in accordance with established standards of academic integrity and research ethics.

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