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Financial Development, Foreign Direct Investment, and Private Sector Development in Sierra Leone: Evidence from ARDL and Granger Causality Analysis (1996–2024)

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Abstract

This study examines the relationships among financial development, foreign direct investment (FDI), and private sector development in Sierra Leone over the period 1996–2024, using annual data from the World Bank, World Development Indicators (WDI) and the Worldwide Governance Indicators (WGI). An autoregressive distributed lag (ARDL) framework is employed alongside moderation analysis and Granger causality tests to investigate long-run and short-run dynamics. The analysis finds that financial development and institutional quality — measured by government effectiveness, regulatory quality, and rule of law — are positively and significantly associated with private sector development in the long run. Foreign direct investment(FDI) exhibits a positive and significant association in the model incorporating government effectiveness, though results are mixed across institutional specifications. The moderation analysis indicates that institutional quality conditions the relationship between foreign direct investment (FDI) and private sector outcomes, with government effectiveness exerting the strongest moderating effect. The error-correction term is negative and significant at the 10% level, consistent with long-run equilibrium adjustment. Granger causality results reveal a unidirectional causal flow from foreign direct investment(FDI) to private sector development but bidirectional causality between financial development and private sector outcomes. The findings contribute to the literature on the foreign direct investment(FDI) –finance–institution nexus in sub-Saharan Africa and carry implications for financial sector deepening and institutional reform in Sierra Leone.

1. Introduction

Sub-Saharan African economies still face deep challenges in resource mobilization for private sector development. The private sector is widely recognized as the main source of job creation, technology transfer, and sustainable economic growth (Aghabarari et al, 2025). Foreign direct investment (FDI) has been perceived as a potential driver of private sector development, especially in developing countries where domestic capital is scarce and the technological capacity is limited (Dunning, 1988). However, empirical evidence on the relationship between FDI and private sector development is still mixed, and outcomes appear to be highly contingent on the absorptive capacity of host economies and the quality of their institutional environments (Iamsiraroj and Ulubasoglu, 2015; Demena and Murshed, 2018).

Sierra Leone presents an interesting case for the study of this relationship. The country is a post-conflict economy that has made significant progress in institutional reconstruction since the end of the civil conflict in 2002. It has experienced significant positive developments in governance indicators, interrupted by the Ebola crisis of 2014–2016, which severely affected economic activity. Meanwhile, FDI inflows have been volatile and largely driven by the country's mineral endowments and shifting investor perceptions of political risk. Financial development, measured by the share of GDP represented by domestic credit to the private sector, has deepened gradually but is still shallow relative to other countries in the region Mlachila et al. (2022).

A dominant feature of the literature is the absence of country-specific time series evidence on the FDI-private sector nexus in Sierra Leone. Most contributions are based on panel data, which aggregate the experiences of diverse countries, thus potentially obscuring country-specific mechanisms through which FDI, financial development, and institutional quality interact. This study fills this gap by exploring the long-run and short-run relationships between these variables in Sierra Leone for the period 1996–2024. The empirical strategy comprises the ARDL bounds testing approach, moderation analysis with three dimensions of institutional quality, and Granger causality tests. (Fig. 1) provides an overview of the key variable trends over the study period.

2. Literature Review

2.1 FDI and Private Sector Development

The relationship between FDI and private sector development has been widely discussed in the development economics literature. Theoretical arguments suggest that FDI can boost private sector activity through technology transfer, knowledge spillovers and the crowding-in of domestic investment (Dunning, 1988; Helpman, 2004). Empirical evidence from sub-Saharan Africa, however, suggests a more nuanced picture. Adegboye et al. (2020) find that FDI has a positive contribution to private sector credit in selected African economies, but it is dependent on the level of financial market development. Similarly, Ehigiamusoe and Lean (2018) find that FDI spillovers are conditional on the depth of financial intermediation, indicating a complementarity between foreign capital inflows and domestic financial capacity. Recent panel studies find that FDI flows do not consistently improve private sector growth in sub-Saharan Africa when institutional frameworks are weak (Kayesi et al., 2025; Ameyaw et al., 2025). These results underscore the importance of country-specific, time-series studies rather than panel estimates which may obscure important heterogeneity across countries. This is especially important for Sierra Leone, a small, resource-dependent, post-conflict economy with unique institutional dynamics.

2.2 Financial Development and Private Sector Development

The finance–growth nexus literature has revealed strong theoretical and empirical links between financial sector development and private sector activity (King and Levine, 1993; Levine, 2005). The financial intermediaries reduce information asymmetries, facilitate resource allocation and lower transaction costs and thus enable the private enterprises to access capital for investment and expansion. More recent contributions have pointed out the potential non-linearity of the relationship between financial development and economic outcomes since excessive credit expansion can be a risk for financial stability (Arcand et al., 2015; Samargandi et al., 2020).

For developing economies with shallow financial systems such as Sierra Leone, the evidence consistently points to a positive role of financial deepening in supporting private sector outcomes (Kamara, 2025; Ismail et al., 2022). The banking sector in Sierra Leone is growing, yet its outreach to

small and medium enterprises is still limited, highlighting the policy relevance of the finance–private sector nexus (Pearce, 2024; Mlachila et al. (2022).

2.3 Institutional Quality as a Conditioning Factor

Recent empirical work has paid considerable attention to the moderating role of institutional quality in mediating the effects of FDI on host economies. Asongu, S. A. (2020) show that the quality of governance is a significant moderator of FDI spillovers in Africa, with more effective government and better regulatory quality linked to better FDI outcomes. Iamsiraroj and Ulubasoglu (2015) find cross-country evidence that rule of law mitigates uncertainty and improves contract enforcement, and therefore strengthens the growth effects of FDI. Demena and Murshed (2018) also find that institutional quality is a critical threshold condition for FDI to generate positive spillovers in developing economies.

Adeleke (2020) and Moteng et al. (2023) document within the sub-Saharan African context how weak institutional environments constrain the transformative potential of FDI, particularly in resource-dependent economies. The incremental increase in WGI governance scores for Sierra Leone since 2002 provides a useful analytical window to investigate whether better institutional quality has been associated with stronger FDI–private sector linkages over time.

2.4 Identified Gaps

Despite the increasing evidence base, several gaps are relevant to the present study. Firstly, there is a limited availability of country-specific time-series evidence on the FDI–private sector nexus in Sierra Leone. Second, the systematic investigation of the moderating role of specific dimensions of institutional quality, instead of composite governance indices, has not been conducted for this economy. Third, the joint treatment of financial development and institutional quality as conditioning factors within a single ARDL framework is still underexplored in the context of Sierra Leone. The present study considers these three specific dimensions.

3. Theoretical Framework and Hypotheses

3.1 Theoretical Foundations

The study is informed by four theoretical traditions. Endogenous growth theory (Romer, 1990; Lucas, 1988) suggests that the technological progress embedded in FDI can boost domestic productive capacity and increase private sector activity, especially when absorptive conditions, such as human capital and institutional quality, are favourable. This leads to the hypothesis that under such conditions FDI has a positive effect on private sector development.

According to institutional theory (North, 1990), formal institutions – such as property rights, regulation and contract enforcement – determine the incentive structures that investors face. In low institutional quality environments rent-seeking and regulatory uncertainty or weak enforcement may rob the benefits of FDI. The theory of financial intermediation (Gurley and Shaw, 1955; Levine, 2005) argues that financial

institutions are important in mobilizing savings and reducing information asymmetries, which allows private sector firms to co-invest with foreign firms. Dunning (1988)'s Eclectic Paradigm, finally, argues that the location of FDI is determined by ownership advantages, internalization benefits and locational factors such as the quality of institutions and the depth of financial markets. Together, these frameworks suggest the following hypotheses.

3.2 Research Hypotheses

H1: Financial development is positively associated with private sector development in the long run.

H2: FDI is positively associated with private sector development in the long run.

H3: Government effectiveness positively moderates the FDI–private sector development relationship.

H4: Regulatory quality positively moderates the FDI–private sector development relationship.

H5: Rule of law positively moderates the FDI–private sector development relationship.

4. Materials and Methods

4.1 Data Sources and Variable Description

Annual data for Sierra Leone from 1996 to 2024 were obtained from the World Bank World Development Indicators (WDI) and the Worldwide Governance Indicators (WGI). The dependent variable is Private Sector Development (PSD). Domestic credit to the private sector by banks, expressed as a percentage of GDP (WDI code: FD.AST.PRVT.GD.ZS), serves as a proxy for this variable. This proxy does not capture all dimensions of private sector activity but is one of the most consistently available indicators for Sierra Leone over the study period and widely used in the empirical literature (Adegboye et al., 2020; Ismail et al., 2022).

Financial development (FinDev) is measured by domestic credit to the private sector as a share of GDP (FS.AST.PRVT.GD.ZS). FDI is net inflows as a percentage of GDP (net inflows of FDI as a share of GDP) (BX.KLT.DINV.WD.GD.ZS). The three institutional quality variables, government effectiveness (GovEff), regulatory quality (RegQual), and rule of law (RuleofLaw), are obtained from the WGI project and are continuous estimates ranging from approximately − 2.5 to + 2.5, with higher values corresponding to better institutional quality. Control variables included inflation (percentage change in the annual CPI), trade openness (expressed as the sum of exports and imports as a percentage of GDP), and gross capital formation (percentage of GDP). All variables except inflation and the WGI estimates are log-transformed to reduce heteroskedasticity and to ease the interpretation of elasticities. (Table 1) presents descriptive statistics.

Table 1
Descriptive Statistics (1996–2024)

Variable	N	Mean	SD	Min	Max
lnPSD	29	1.829	0.551	0.932	2.557
lnFDI	29	1.072	0.963	−1.238	2.211
lnFinDev	29	1.889	0.527	1.115	2.648
GovEff	29	−0.969	0.310	−1.520	−0.590
RegQual	29	−0.974	0.356	−1.610	−0.550
RuleofLaw	29	−0.886	0.349	−1.510	−0.470
Inflation	29	17.539	14.320	−3.120	54.230
lnTrade	29	3.981	0.178	3.587	4.208
lnGCF	29	2.749	0.395	1.930	3.245

Note: All continuous variables except the WGI indicators are log-transformed. Governance indicators are WGI estimates (scale approximately − 2.5 to + 2.5). N = 29.

The pairwise correlation structure among the variables is illustrated in (Fig. 2)

Note

Lower triangle of the correlation matrix. Colour intensity reflects the strength of the correlation (red = negative, blue = positive). All variables are log-transformed where applicable.

4.2 Empirical Strategy

This study adopted the ARDL bounds testing approach (Pesaran et al., 2001) to examine long-run cointegration. This approach is appropriate for the current data structure because the variables are of mixed integration orders (lnFDI is I(0) whereas most of the other series are I(1)) and the sample size is small (T = 29). The bounds test does not require that all variables are integrated of the same order, which is particularly appropriate here.

To address the high structural correlation among the three WGI governance dimensions (which generates severe multicollinearity when included jointly), the long-run model is estimated separately for each institutional variable, following the approach of Asongu, S. A. (2020). This yields three parsimonious models, each including a single governance variable apart from the core predictors and control variables. The error-correction model (ECM) is estimated by using lagged residuals from the long-run specification as the error-correction term.

The moderation analysis adds interaction terms between lnFDI and each moderating variable to test whether the institutional quality and financial development moderate the FDI–PSD relationship. Granger causality tests up to three lags are used to explore the direction of causal flows among the key variables. Diagnostic tests are performed using the Breusch-Pagan heteroskedasticity test, Jarque-Bera normality test, Durbin-Watson and Ljung-Box statistics for serial correlation, and CUSUM stability analysis. All long-run and short-run models use robust standard errors (HC3) (Ejem et al., 2025).

5. Results

5.1 Unit Root Tests

(**Table.2**) shows the results of the Augmented Dickey-Fuller (ADF) unit root test. The tests show that lnFDI is stationary at levels (p = 0.011), while most of the other variables are non-stationary at levels but turn stationary after the first differencing. The governance indicators display persistent non-stationarity even at first differences—a pattern consistent with the smooth, trend-like evolution of WGI scores documented for developing economies (Kaufmann et al., 2010). The presence of the I(0) and I(1) series together also indicates that the ARDL bounds approach is still applicable.

Table 2
Augmented Dickey-Fuller Unit Root Test Results

Variable	ADF (Level)	p-value	ADF (Δ)	p-value	Order
lnPSD	−0.451	0.985	−2.533	0.108	I(1)
lnFDI	−3.925	0.011*	−6.544	0.000***	I(0)
lnFinDev	−2.385	0.388	−2.711	0.072*	I(1)
GovEff	−1.206	0.909	−0.722	0.841	I(1)
RegQual	−0.524	0.983	−1.068	0.728	I(1)
RuleofLaw	−1.034	0.939	−1.134	0.701	I(1)
Inflation	2.004	1.000	−5.882	0.000***	I(1)
lnTrade	−1.413	0.857	−3.567	0.006***	I(1)
lnGCF	0.825	1.000	−3.016	0.033**	I(1)

*Note: Level regressions include constant and trend. First-difference regressions include constant. Lag selection via AIC. ***, **, * denote significance at 1%, 5%, and 10% levels respectively.*

5.2 Long-Run Estimation Results

(**Table.3**) presents the long-run coefficient estimates for three parsimonious specifications. In all three models, the coefficient of financial development (lnFinDev) is positive and significant at 1%, with values between 0.521 and 0.590. These estimates imply that a one percent increase in the domestic credit to

GDP ratio is associated with about a 0.52 to 0.59 percent increase in private sector development in the long run. This result is in line with H1 and is in accordance with financial intermediation theory and recent empirical evidence for developing economies (Ismail et al., 2022; Samargandi et al., 2020).

In Model 1 (coef. = 0.032, p = 0.048), which includes government effectiveness, FDI (ln FDI) is positive and significant at the 5% level but is not statistically significant in Models 2 or 3. This provides partial support for H2 and suggests that the positive contribution of FDI to private sector outcomes in Sierra Leone may be more closely related to the specific dimension of government effectiveness than to broader regulatory or legal institutional dimensions. However, caution should be exercised in the interpretation of the observed differential pattern because of the small sample size.

All three institutional quality variables have positive and significant long-run coefficients: GovEff (coef. = 0.332, p = 0.003), RegQual (coef. = 0.419, p < 0.001), and RuleofLaw (coef. = 0.424, p < 0.001). These results suggest that improvements in institutional quality are independently associated with stronger private sector development in Sierra Leone, consistent with the institutional framework of North (1990) and empirical evidence from sub-Saharan Africa (Asongu, S. A. (2020); Moteng et al., 2023). Domestic investment is also positive and significant in all models, confirming its role in supporting the expansion of the private sector. Inflation and trade openness are not significant in the long run.

Table 3
Long-Run Coefficient Estimates

Variable	**Model 1: GovEff**	**Model 2: RegQual**	**Model 3: RuleofLaw**
Constant	0.141 (0.820)	0.025 (0.968)	0.015 (0.980)
lnFDI	0.032** (0.048)	0.004 (0.809)	0.006 (0.730)
lnFinDev	0.590*** (0.000)	0.521*** (0.000)	0.525*** (0.000)
GovEff	0.332*** (0.003)	—	—
RegQual	—	0.419*** (0.000)	—
RuleofLaw	—	—	0.424*** (0.000)
Inflation	−0.000 (0.707)	−0.000 (0.708)	−0.000 (0.697)
lnTrade	−0.045 (0.810)	0.083 (0.715)	0.076 (0.724)
lnGCF	0.381*** (0.000)	0.326*** (0.004)	0.325*** (0.002)
R^2	0.9978	0.9977	0.9979
Adj. R^2	0.9972	0.9971	0.9973
AIC	−116.27	−115.64	−117.51

*Note: Robust standard errors (HC3). p-values in parentheses. ***, **, * denote significance at 1%, 5%, and 10% levels. Dependent variable: lnPSD. — indicates variable excluded from specification. All models estimated over 1996–2024 (N = 29).*

5.3 Error-Correction Model

(Table 4) shows the short run error correction results. The coefficient on Δ lnFinDev is positive and highly significant (coef. = 0.840, p < 0.001), indicating that short-run changes in financial development are rapidly transmitted to private sector development. The short-run coefficient on Δ lnFDI is positive but not statistically significant (p = 0.354). This is consistent with the expectation that FDI benefits are realized with a lag. The error correction term, ECT(-1), has the expected negative sign (coef. = -0.476, p = 0.098) indicating that about 47.6% of any disequilibrium from the long-run relationship is corrected annually. This estimate should be treated with a grain of salt due to its marginal significance and small sample.

Table 4
Short-Run Error-Correction Model

Variable	**Coefficient**	**p-value**
Constant	0.008	0.452
Δ lnFDI	0.028	0.354
Δ lnFinDev	0.840	0.000***
ECT(− 1)	−0.476	0.098*
*Note: Robust standard errors (HC3). ECT(− 1) is the lagged residual from Model 1 (GovEff). ***, **, * denote significance at 1%, 5%, and 10% levels. Dependent variable: Δ lnPSD.*		

5.4 Moderation Analysis

(Table 5) shows the results of the moderation analysis. The interaction between lnFDI and government effectiveness is negative and significant at the 1% level (coef. = −0.349, p = 0.006). The interactions with regulatory quality (coef. = −0.154, p = 0.087) and rule of law (coef. = −0.175, p = 0.053) are significant at the 10% level, while the interaction with financial development is not significant. The negative sign of these interaction coefficients should be interpreted in context; since the WGI governance estimates for Sierra Leone remain negative throughout the study period (ranging from approximately − 1.52 to − 0.47), a negative interaction coefficient means that as FDI increases, the marginal association with private sector development becomes less negative—i.e., more favorable—as governance moves towards zero (i.e., improves). This finding is consistent with threshold arguments in the FDI–institution literature (Asongu, S. A. (2020), providing partial support for H3, H4, and H5.

Table 5
Moderation Analysis: Conditioning Effects of Institutional Quality on the FDI–PSD Relationship

Interaction Term	Coefficient	p-value	Significance
lnFDI × lnFinDev	−0.012	0.868	Not significant
lnFDI × GovEff	−0.349	0.006	*** (1% level)
lnFDI × RegQual	−0.154	0.087	* (10% level)
lnFDI × RuleofLaw	−0.175	0.053	* (10% level)

*Note: Each model estimated separately. Interaction terms are products of lnFDI and the respective moderating variable. Robust standard errors (HC3). ***, **, * denote significance at 1%, 5%, and 10% respectively.*

5.5 Granger Causality

The lnFDI Granger-causes lnPSD ($p < 0.001$ at lag 1), while lnPSD does not Granger-cause lnFDI ($p = 0.282$). It suggests a one-way causal flow from FDI to private sector development. On the other hand, we observe bidirectional Granger causality between lnFinDev and lnPSD (both $p < 0.001$ at lag 1), which is consistent with a mutually reinforcing relationship between financial deepening and private sector growth.

5.6 Diagnostic Tests and Stability

(Table 6) summarizes the diagnostic test results. The Breusch-Pagan test does not indicate heteroskedasticity ($p = 0.487$), and the Jarque-Bera test confirms approximate normality of residuals ($p = 0.446$). The Durbin-Watson statistic of 1.598 is within the acceptable range, and the Ljung-Box test at lag 4 does not indicate significant serial correlation ($p = 0.073$). CUSUM stability analysis, presented in (Fig. 3), confirms parameter stability across the study period, with the cumulative sum of recursive residuals remaining within the 5% critical bounds throughout.

Table 6
Diagnostic Test Results

Test	Statistic	p-value	Decision
Breusch-Pagan (Heteroskedasticity)	5.458	0.487	No heteroskedasticity
Jarque-Bera (Normality)	1.616	0.446	Normal residuals
Durbin-Watson (Autocorrelation)	1.598	—	Within acceptable range
Ljung-Box Q (lag 4)	8.579	0.073	No serial correlation (10%)
CUSUM Stability	—	—	Within 5% critical bounds

Note: Tests conducted on the baseline Model 1 (GovEff specification). CUSUM refers to the cumulative sum of recursive residuals test. Critical bounds at 5% significance level.

Figure 3. CUSUM Stability Test

Note

The solid line represents the CUSUM of recursive residuals. Dashed lines are 5% critical bounds. The CUSUM statistic remains within bounds throughout, supporting parameter stability.

6. Discussion

The empirical results contribute to the evidence for the FDI-finance-private sector nexus through a country-specific time series analysis for Sierra Leone. It is worth mentioning some points of comparison with the larger literature.

The positive and significant long-run effect of financial development on private sector outcomes across all model specifications is consistently positive and significant and is consistent with the financial intermediation theory and the cross-country evidence for sub-Saharan Africa reported by Adegboye et al. (2020) and Ismail et al. (2022). The estimated elasticity of about 0.52–0.59 is generally consistent with those reported in similar single-country ARDL studies for other African economies (Acheampong, 2019; Arize et al. 2024), although comparisons are constrained by differences in definitions of variables and sample periods.

The FDI-led private sector growth hypothesis is further nuanced by the conditional positive effect of FDI, which is statistically significant only in the government effectiveness specification. The findings suggest that FDI benefits in Sierra Leone are more responsive to changes in the government's operational capacity than to broader rule-based institutional dimensions, rather than having an unconditional positive association (Haile et al., 2025). This may reflect the particular channels through which FDI operates in mineral-resource-dependent economies, where effective management of public contracts and administrative processes plays an especially important role in shaping private sector spillovers.

The highly significant positive long-run coefficients on all three governance dimensions confirm the evidence of Asongu, S. A. (2020) and Adeleke (2020) that improvements in institutional quality – even from a low base – go along with stronger private sector outcomes in sub-Saharan Africa. The moderation analysis adds additional nuance, showing that the FDI–PSD relationship is conditioned by institutional quality, with the strongest moderating effect through government effectiveness (Islam et al., 2020). This has implications for policy sequencing; i.e., addressing operational governance deficiencies might be more immediately consequential for private sector outcomes than broader regulatory or legal reforms, at least in the Sierra Leone context.

The study has several limitations that should be acknowledged. Firstly, the proxy used for private sector development only captures one dimension of a multi-faceted concept and may not reflect the full extent of private sector activity. Second, the small sample size (T = 29) limits the power of statistical tests and constrains the parsimonious modelling approach adopted here. Third, the results are specific to Sierra

Leone and cannot be generalized to other economies without further research. Fourth, Granger causality tests verify the temporal precedence but do not specify the causal mechanism in the structural sense, and unobserved common factors might drive the observed association.

7. Conclusions and Policy Implications

This study has investigated the long-run and short-run interactions between financial development, FDI, and private sector development in Sierra Leone over 1996–2024. The analysis shows the robust relationship between financial development and institutional quality and private sector development in the long run. FDI has a positive contribution, but its impact is conditional on the institutional context, in particular government effectiveness. The short-run dynamics are mainly influenced by changes in financial development, and the error-correction mechanism shows long-run equilibrium adjustment, but the significance of the speed-of-adjustment coefficient is marginal. The Granger causality results suggest a unidirectional causal flow from FDI to private sector development and a bidirectional relationship between financial development and private sector outcomes.

The results imply that for policymakers, the priority should be to continue with the deepening of the financial sector as a complement to the effort to attract FDI. Policies that increase access to credit, reduce the cost of financial intermediation, and strengthen bank supervision may have compounding benefits for private sector development, both directly and indirectly through better absorptive capacity. The evidence on institutional quality also suggests that continued improvements in government effectiveness – through administrative reform, public service delivery, and reduction of regulatory uncertainty – may be particularly consequential for strengthening the private sector benefits of FDI inflows.

Future research could extend this analysis by incorporating higher-frequency data, employing non-linear methods to explore threshold effects, examining sector-specific FDI flows, or comparing Sierra Leone's experience with similar post-conflict economies in the region. More comprehensive private sector indicators for Sierra Leone would also strengthen the empirical basis for this line of inquiry.

Declarations

CRediT authorship contribution statement

Peter Makieu: Writing-original draft, Formal and analysis, Data Curation, Conceptualization, Software, Methodology, Validation, and Visualization, Supervision. Funding acquisition. **Saffa Mohamed Massaquoi**: Writing review & editing, Supervision. Conceptualization, Methodology. **Abdulai Sillah**: Writing review & editing, Methodology, Investigation, Data Curation. **Edison D. Dartue**: Writing review & editing, Methodology, Data Curation.

Conflict of Interest:

The authors declare no conflict of interest.

Ethical Approval:

Not applicable. This study uses only publicly available secondary data with no human participants.

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Author Contribution

Peter Makieu: Writing-original draft, Formal and analysis, Data Curation, Conceptualization, Software, Methodology, Validation, and Visualization, Supervision. Funding acquisition. Saffa Mohamed Massaquoi: Writing review & editing, Supervision. Conceptualization, Methodology. Abdulai Sillah: Writing review & editing, Methodology, Investigation, Data Curation. Edison D. Dartue: Writing review & editing, Methodology, Data Curation.

Data Availability:

All data are publicly available from the World Bank World Development Indicators (https://data.worldbank.org) and the Worldwide Governance Indicators (https://info.worldbank.org/governance/wgi).

References

1. Acheampong AO (2019) Modelling for insight: does financial development improve environmental quality? Energy Econ 83:156–179. https://www.sciencedirect.com/science/article/pii/S0140988319302129
2. Adegboye FB, Osabohien R, Olokoyo FO, Matthew O, Adediran O (2020) Institutional quality, foreign direct investment, and economic development in sub-Saharan Africa. Humanit social Sci Commun 7(1):38. https://www.nature.com/articles/s41599-020-0529-x
3. Adeleke B, Robertson-Andersson D, Moodley G, Taylor S (2020) Aquaculture in Africa: A comparative review of Egypt, Nigeria, and Uganda vis-a-vis South Africa. Reviews Fisheries Sci Aquaculture 29(2):167–197. https://www.tandfonline.com/doi/abs/ 10.1080/23308249.2020.1795615
4. Aghabarari L, Martins RDDC, Mensah JT, Palmade V, Treichel V (2025) Private Sector Investments. 21st-CENTURY AFRICA, 207.

https://openknowledge.worldbank.org/server/api/core/bitstreams/90212e5d-e9fc-4e8c-9a90-f60b7a460672/content#page=235

5. Alqahtani F, Samargandi N, Kutan AM (2020) The influence of oil prices on the banking sector in oil-exporting economies: Is there a psychological barrier? Int Rev Financial Anal 69:101470. https://www.sciencedirect.com/science/article/abs/pii/S1057521920301149
6. Ameyaw AK, Panibratov A (2025) Two decades of foreign direct investment in Africa: a systematic literature review, integrative framework, and agenda for future research. Eur J Int Manage 27(1):1–47. https://www.inderscienceonline.com/doi/abs/ 10.1504/EJIM.2025.147963
7. Arcand JL, Berkes E, Panizza U (2015) Too much finance? J Econ Growth 20(2):105–148. https://link.springer.com/article/ 10.1007/s10887-015-9115-2
8. Arize A, Kalu EU, Lubiani G, Udemezue NN (2024) Public health expenditure and sustainable health outcomes in 45 Sub-Saharan African countries: Does government effectiveness matter? Economies, 12(6), 129. https://www.mdpi.com/2227-7099/12/6/129
9. Asongu SA (2020) Financial access and productivity dynamics in sub-Saharan Africa. Int J Public Adm 43(12):1029–1041. https://www.tandfonline.com/doi/abs/ 10.1080/01900692.2019.1664570
10. Demena BA, Murshed SM (2018) Transmission channels matter: Identifying spillovers from FDI. J Int Trade Economic Dev 27(7):701–728. https://www.tandfonline.com/doi/abs/ 10.1080/09638199.2018.1439083
11. Dunning JH (1988) The theory of international production. Int Trade J 3(1):21–66. https://www.tandfonline.com/doi/pdf/10.1080/08853908808523656
12. Ehigiamusoe KU, Lean HH (2018) Finance–growth nexus: New insights from the West African region. Emerg Markets Finance Trade 54(11):2596–2613. https://www.tandfonline.com/doi/abs/ 10.1080/1540496X.2017.1364623
13. Ejem EA, Amaechi CO, Nze ON, Aikor TS, Obieche PN, Ogbonnaya BN, Aghanwa OC (2025) Econometric Modeling of Route-Level Market Share Dynamics in Nigeria's Domestic Airline Sector. Transport Economics and Management. https://www.sciencedirect.com/science/article/pii/S2949899625000255
14. Gurley JG, Shaw ES (1955) Financial aspects of economic development. Am Econ Rev 45(4):515–538. https://www.jstor.org/stable/1811632
15. Haile MA, Jayamohan MK, Mulugeta W (2025) Does regulatory convergence shape banking resilience in Africa? Heliyon, 11(1). https://www.cell.com/heliyon/fulltext/S2405-8440(24)17378-1
16. Helpman E, Melitz MJ, Yeaple SR (2004) Export versus FDI with heterogeneous firms. Am Econ Rev 94(1):300–316. https://pubs.aeaweb.org/doi/abs/ 10.1257/000282804322970814
17. Iamsiraroj S, Ulubaşoğlu MA (2015) Foreign direct investment and economic growth: A real relationship or wishful thinking? Econ Model 51:200–213. https://www.sciencedirect.com/science/article/abs/pii/S0264999315002138
18. Islam MA, Khan MA, Popp J, Sroka W, Oláh J (2020) Financial development and foreign direct investment—The moderating role of quality institutions. Sustainability, 12(9), 3556.

https://www.mdpi.com/2071-1050/12/9/3556

19. Ismail IJ (2022) Entrepreneurs' competencies and sustainability of small and medium enterprises in Tanzania. A mediating effect of entrepreneurial innovations. Cogent Bus Manage 9(1):2111036. https://www.tandfonline.com/doi/abs/ 10.1080/23311975.2022.2111036
20. Kamara DAK, Bendu DA, Jalloh MS (2025) The Impact of Financial Indicators on Economic Growth in Sierra Leone: Evidence from the Banking Sector (1980–2024). Available at SSRN 5701023. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5701023
21. Kaufmann D, Kraay A (2010) The worldwide governance indicators. https://www.sidalc.net/search/Record/dig-okr-1098642373/Description
22. Kayesi VM (2025) The Influence of financial innovations on financial inclusion: evidence from regulated non-withdrawable Deposit-Taking Saccos in Nairobi County, Kenya (Doctoral dissertation, Strathmore University). https://orca.cardiff.ac.uk/id/eprint/111113/
23. King RG, Levine R (1993) Finance and growth: Schumpeter might be right. Quart J Econ 108(3):717–737. https://academic.oup.com/qje/article-abstract/108/3/717/1881857
24. Levine R (2005) Finance and growth: theory and evidence. Handb economic growth 1:865–934. https://www.sciencedirect.com/science/article/pii/S1574068405010129
25. Lucas RE (1988) On the mechanics of economic development. J Monet Econ 22(1):3–42. https://www.sciencedirect.com/science/article/pii/0304393288901687
26. Mlachila M, Estevão IMFAI (2022) M., & IDA, A. A. SIERRA LEONE
27. Moteng G, Njangang H, Nvuh-Njoya Y, Nembot LN (2023) International sanctions and economic complexity in developing countries. Revue d'économie politique 133(3):409–452. https://shs.cairn.info/article/REDP_333_0409?tab=texte-integral
28. North DC (1990) Institutions, institutional change and economic performance. Cambridge University Press. https://books.google.co.th/books?hl=en&lr=&id=oFnWbTqgNPYC&oi=fnd&pg=PR6&dq=North,+D.+C.+(1990).+Institutions,+institutional+change+and+economic+performance
29. Pearce RE, Bah A, Barrie A, Smith ME (2024) Credit Creation By Commercial Banks And Economic Growth In Sierra Leone (1992–2022) An Autoregressive Distributed Lag Technique. Eur J Economic Financial Res, 8(2). https://oapub.org/soc/index.php/EJEFR/article/view/1680
30. Pesaran MH, Shin Y, Smith RJ (2001) Bounds testing approaches to the analysis of level relationships. J Appl Econom 16(3):289–326. https://onlinelibrary.wiley.com/doi/abs/10.1002/jae.616
31. Romer PM (1990) Endogenous technological change. Journal of Political Economy, 98(5, Part 2), S71–S102. https://www.journals.uchicago.edu/doi/abs/10.1086/261725

Figures

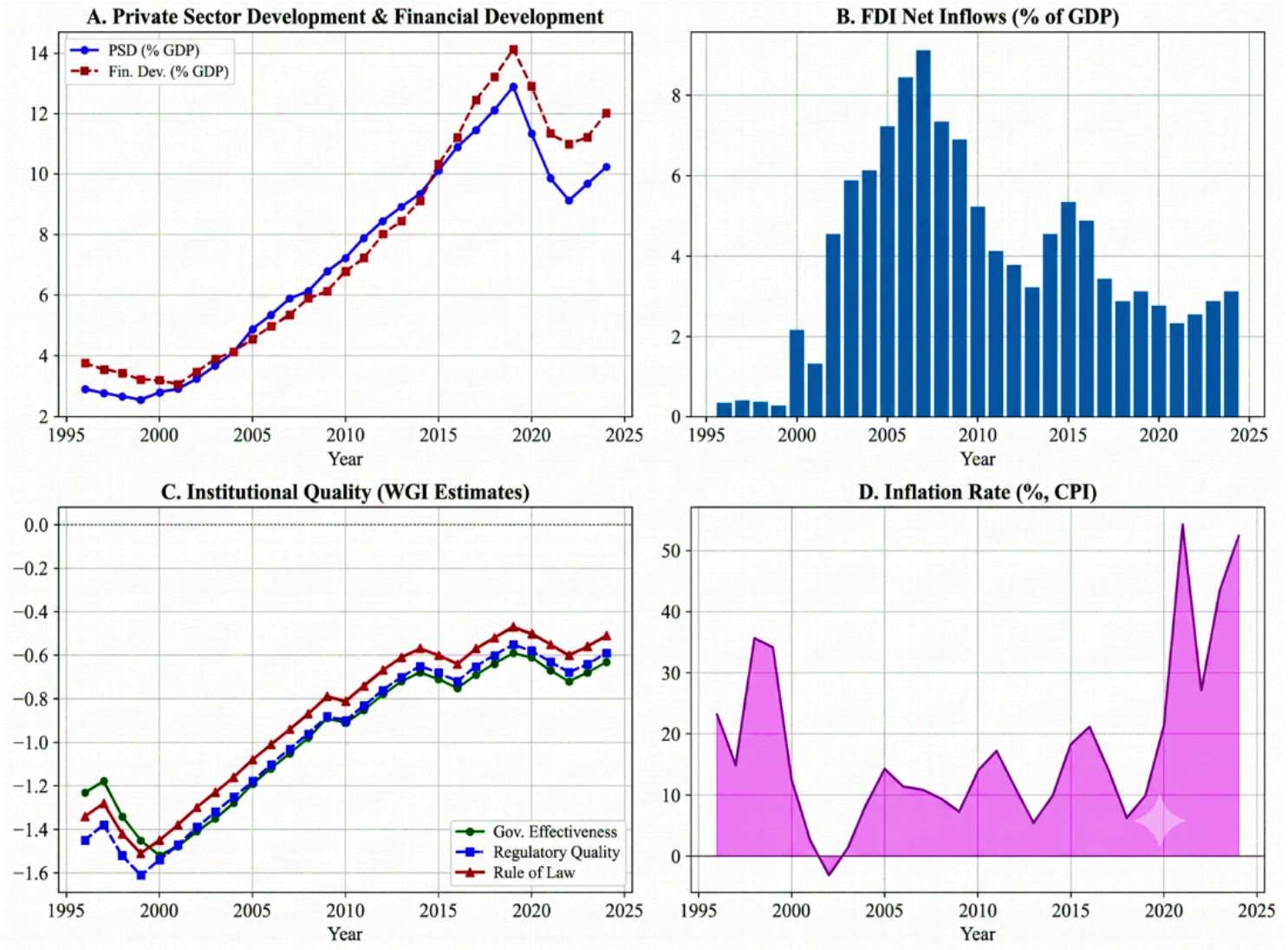


Figure 1

Key Economic and Institutional Trends in Sierra Leone (1996–2024). World Bank WDI and WGI. Panel A: private sector development and financial development (% of GDP). Panel B: FDI net inflows (% of GDP). Panel C: Institutional quality (WGI estimates). Panel D: Inflation rate (CPI, annual %).

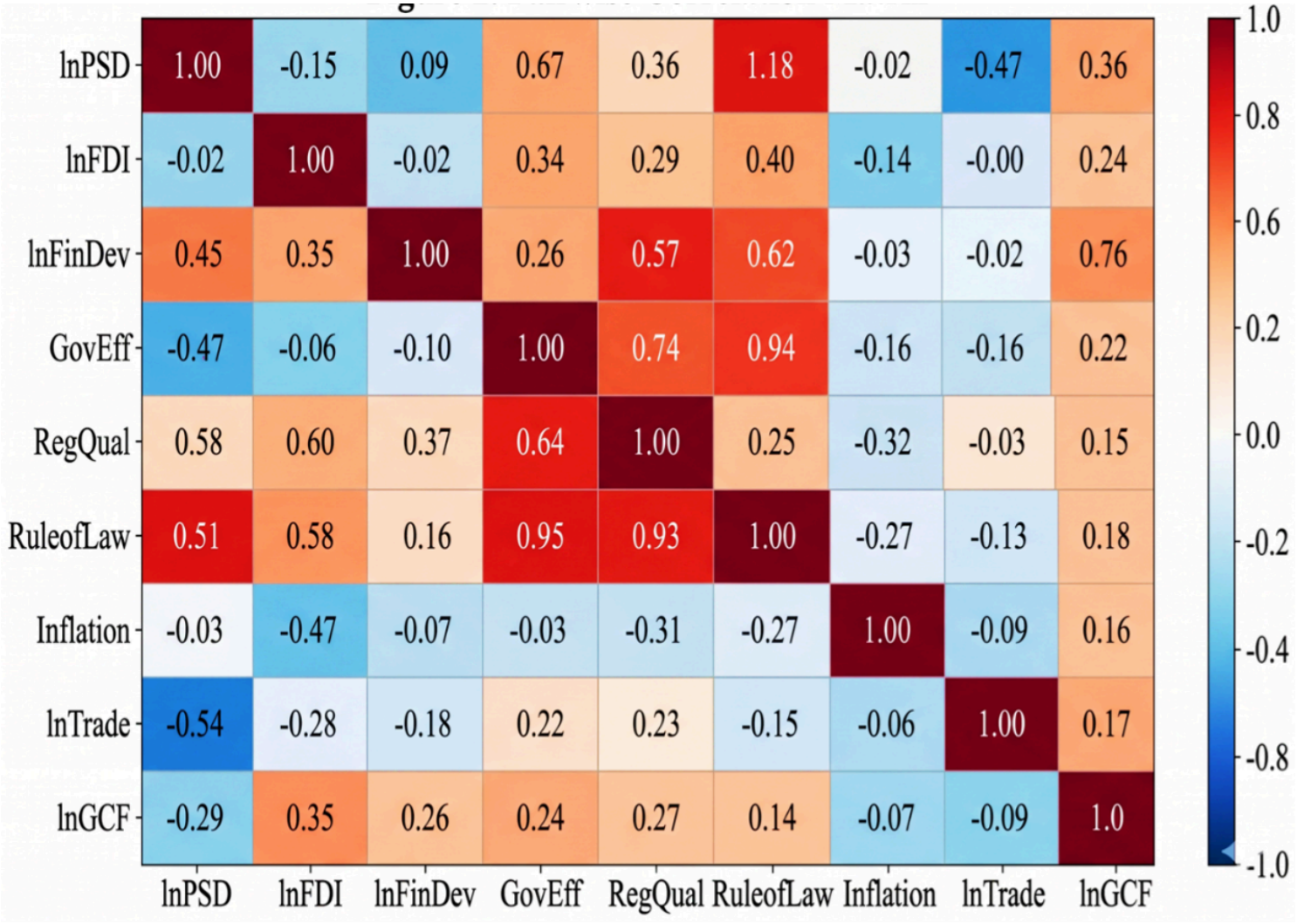


Figure 2

Pairwise Correlation Matrix

Note: Lower triangle of the correlation matrix. Colour intensity reflects the strength of the correlation (red = negative, blue = positive). All variables are log-transformed where applicable.

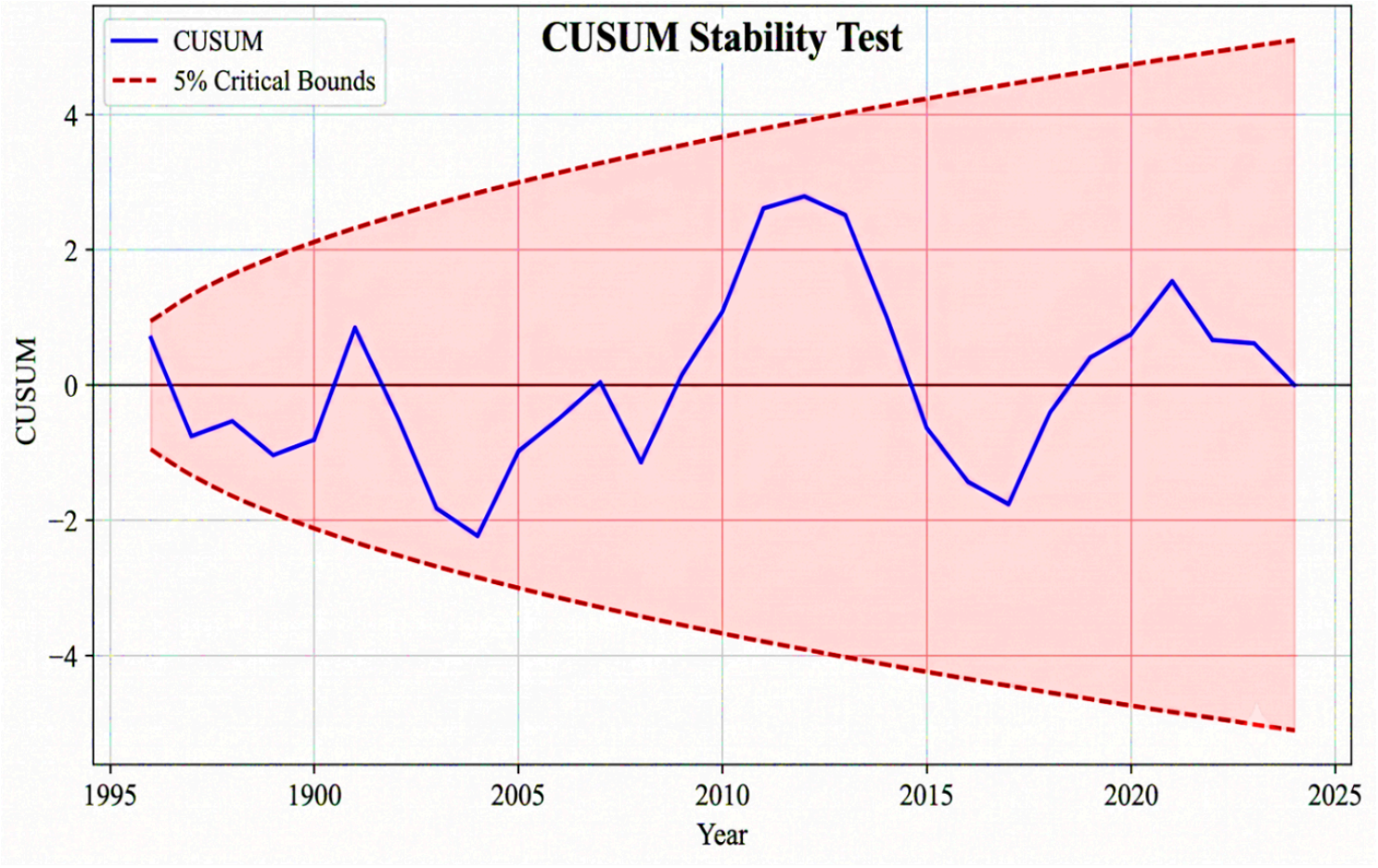


Figure 3

CUSUM Stability Test

Note: The solid line represents the CUSUM of recursive residuals. Dashed lines are 5% critical bounds. The CUSUM statistic remains within bounds throughout, supporting parameter stability.