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GREEN CAPITAL: HOW ENVIRONMENTAL PERFORMANCE SHAPES FOREIGN DIRECT INVESTMENT (FDI) INFLOWS

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Abstract

Sustainable economic transition demands a clear comprehension of the environmental influence on foreign direct investment (FDI) inflows since emerging and middle-income economies need green growth models. This study investigates the impact of key environmental and institutional indicators CO_2 emissions per capita, renewable energy consumption, political stability, and environmental regulation on FDI inflows (% of GDP) across multiple countries from 2000 to 2023. The study adopts a descriptive-analytical quantitative research design to use panel data regression methods through Stata software based on Excel-built standardized datasets. The research establishes linear relationships between variables while it applies standardized data across countries for universal comparison under specified time periods and governance measurement constraints. The research findings reveal that better environmental legislation coupled with increased renewable energy adoption results in increased FDI inflows but CO_2 emission levels produce negative effects on FDI. The results demonstrate that political stability demonstrates a moderate positive relationship with the model. The research results validate previous findings which demonstrate how environmental and governance standards affect investment climate (Globerman & Shapiro, 2002). Clean energy initiatives alongside transparent environmental management schemes lead countries to attract greater amounts of sustainable capital. The integration of environmental and investment strategies by policymakers will lead to better competitiveness in the green global economy.

Keywords: Foreign Direct Investment (FDI), CO_2 Emissions, Renewable Energy, Political Stability, Environmental Regulation, Panel Data Regression, Sustainable Development, Governance Indicators, Green Economy

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INTRODUCTION

Economic competitiveness today strongly depends on environmental performance because both climate change acceleration and international pressure for sustainable development have become dominant factors in our era. The meeting of sustainability concerns with capital movement dynamics has focused researchers on identifying weaknesses in environmental performance which influence foreign direct investment (FDI) flows. The traditional determinants of FDI decisions have included labor availability as well as market access together with macroeconomic stability. A growing amount of evidence indicates that nations with better environmental governance and clean energy transitions receive more interest from long-term foreign investors who want to develop green priorities **(Popp et al., 2020).** The shift holds exceptional importance for developing and emerging economies to obtain sustainable capital needed for infrastructure development while reducing carbon-intensive dependency and technological advancement. Research on FDI is lacking in its investigation of environmental indicators that include CO_2 emissions per capita and renewable energy consumption and regulatory effectiveness.

Environmental regulations do not necessarily deter foreign business investments since strong environmental regulations signal to investors that companies operating within those areas possess high environmental standards. Despite reducing potential risks strong regulatory environments together with political stability work to enhance investor confidence because they provide institutions that are both predictable and show policy continuity **(Javorcik & Wei, 2009**). Research findings about this topic create conflicting results between each other. Research indicates that FDI flow explanations centered around environmental performance hold minor importance compared to economic fundamental factors **(Blonigen & Wang, 2005)** yet environmental performance matters increasingly more for sustainable finance models today **(Zarsky, 1999**). A small number of research works present a complete time-series study across nations which considers environmental and institutional indicators. This literature gap is addressed through a examination of how sustainability-related metrics affect foreign direct investment inflows in contemporary global investment markets. Through its inquiry the research work supports academic efforts to merge ecological variables into standard economic examination.

The purpose of this research evaluates how environmental factors together with governance metrics affect FDI inflows across 24 years **(2000–2023)** of analysis. The research examines FDI inflows on a standardized panel dataset which includes four primary independent variables: CO_2 emissions per capita and renewable energy consumption and political stability as well as environmental regulation quality. The study analyzes FDI inflows through their percentage relation to GDP as the dependent variable. The study utilizes panel data regression methods to identify important associations between different variables. This research shows positive relationships between FDI and renewable energy usage and regulatory quality but negative correlations exist between FDI and CO_2 emissions. Political stability demonstrates a minor yet statistically proven relationship with the data. This research follows a specific structure: Section 2 examines existing research while Section 3 explains the methods used and Section 4 presents the obtained results and Section 5 explores implications and Section 6 makes recommendations for both policy makers and scholars.

LITERATURE REVIEW

The growing crisis of climate change drives industries to reassess the elements that shape foreign direct investment (FDI) flows. Historically FDI decisions followed economic as well

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political motivations but now environmental performance indicators play a growing role in these decisions. The determination of FDI attraction by policymakers towards sustainable investments requires a full comprehension of environmental elements such as CO_2 emissions, renewable energy consumption and political stability and environmental regulations. The review brings together prior research about these relationships by explaining major discoveries along with academic disagreements and missing information in current FDI knowledge.

1. Environmental Performance and FDI Inflows

1.1 CO_2 Emissions and FDI

CO_2 emissions show multiple connections with foreign direct investment. According to the Pollution Haven Hypothesis (PHH) firms tend to shift operations to places with weak environmental regulations therefore increasing environmental pollution in the receiving countries. Research conducted in Sub-Saharan Africa demonstrated that FDI inflow increases by 1% while CO_2 emissions increase by 0.03% which supports the PHH **(Adeleye et al., 2021).** The literature indicates that FDI creates opportunities for transferring technology and enhancing environmental practices which reduces emissions levels **(Zhang & Zhou, 2016).** Research results about environmental impacts from foreign direct investment remain in dispute because they depend on host country characteristics and the nature of FDI.

1.2 Renewable Energy Consumption and FDI

The consumption of renewable energy serves as a key factor attracting foreign direct investment because sustainable investors search for enduring business prospects. The research demonstrates that Chinese regions using renewable energy attract higher FDI because sustainable energy infrastructure shows environmental dedication and decreases business operational challenges **(Xie et al., 2020)**. The connection between renewable energy and FDI depends on multiple elements like energy expenses together with policy benefits along with market development phases **(Zhang & Zhou, 2016)**. The impact of renewable energy consumption on attracting foreign investors depends on the existence of supportive policies and economic environment.

2. Institutional Factors Influencing FDI

2.1 Political Stability

The decisions made by foreign direct investors heavily depend on how stable their political environment remains. Countries with stable political environments become more appealing to foreign investors because they minimize business uncertainties and risks. Takes a study of 25 Asia-Pacific countries which demonstrates that political stability enhances FDI inflows particularly through partnership with trade openness **(Le et al., 2023).** Some scholarly investigations demonstrate that FDI attraction requires more than political stability in specific scenarios while **(Faruq,2023)** shows that economic policies and institutional quality matter alongside political stability.

2.2 Environmental Regulations

The design and enforcement of environmental regulations determine whether FDI will be attracted or deterred from entering a market. Firms face elevated expenses to meet regulatory requirements which may persuade them to avoid investment possibilities. Organizations view stringent environmental regulations as proof that a country prioritizes sustainable development because these policies create opportunities to attract investors who aim for stability together with corporate responsibility in their investments. Research findings show that environmental regulations affect FDI differently between countries and

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sectors because some studies identify positive relations between regulations and FDI inflows **(Pan, 2021)** yet others show negative or no relationship **(Zhang & Zhou, 2016).** Research evidence shows inconsistent results since it depends on regulatory conditions and investor purpose.

3. Synthesis and Research Gaps

Studies show that environmental performance interacts with institutional factors which affects the relationship between FDI inflows. The research indicates both the Positive High Hygiene effect and the attraction of FDI through environmental sustainability however results remain specific to particular contexts with many influencing variables at play. Most available research examines FDI inflows in single countries and regions which reduces the potential applicability of their findings. The analysis lacks a complete investigation which combines multiple environmental and institutional variables with long-term monitoring.

Conclusion

The goal of policymakers who want to draw sustainable investment requires knowledge about how environmental performance impacts Foreign Direct Investment flows. The current research brings important knowledge about this topic yet it contains multiple inconsistencies and missing information. Research moving forward should combine complete methodologies which evaluate various environmental and institutional elements in different locations to enhance policy development and investment planning.

METHODOLOGY

Methodological Approach

The research analyzes how environmental factors together with institutional elements impact the level of foreign direct investment (FDI) received by nations. This research evaluates the forecasting capability of variables consisting of CO_2 emissions per capita, renewable energy consumption and political stability and environmental regulation quality in determining FDI inflows as a percentage of GDP. The research applies quantitative methods which enable statistical analysis of patterns and relationships as well as cause-effect examinations. This research exclusively relies on secondary data obtained from three respected international databases including World Bank, Worldwide Governance Indicators and International Energy Agency. The research design follows a non-experimental descriptive approach to study longitudinal data relationships through its structural pattern investigation rather than intervention testing. Experimental manipulation is not possible at the macroeconomic and policy-level so this method proves suitable for such research.

Data Collection Methods

The data used in this study were collected through quantitative secondary data collection techniques. The dataset spans the years 2000 to 2023, covering a broad panel of emerging and developing economies. Data were extracted, cleaned, and organized using Microsoft Excel, and later analyzed using Stata 14.2. The variables selected for analysis include:

- CO_2 Emissions per Capita (metric tons) – a proxy for environmental degradation
- Renewable Energy Consumption (% of total) – a measure of environmental performance
- Political Stability Index – an indicator of governance quality and risk
- Regulatory Quality Estimate – used here as a proxy for environmental regulation
- FDI Inflows (% of GDP) – the dependent variable of interest

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Missing or non-numeric entries were treated as null values and excluded through listwise deletion to maintain the consistency of the panel. As the data are country-level aggregates, no individual participants or sampling procedures were involved.

3. Data Analysis Methods

The cleaned dataset was first standardized using z-score normalization to facilitate cross-country comparisons and reduce scale bias. Descriptive statistics were used to evaluate the distribution of each variable, followed by a correlation matrix to assess preliminary associations. The main analysis was conducted using panel data regression models in Stata. The following techniques were applied:

- Fixed Effects (FE) Model – chosen to control for time-invariant heterogeneity across countries
- Hausman Test – used to justify the selection of FE over Random Effects (RE)
- Robust Standard Errors – clustered at the country level to correct for heteroscedasticity and serial correlation
- Variance Inflation Factor (VIF) – used to check for multicollinearity among predictors
- Graphical Analysis – bar plots and trend lines were used for visual interpretation

This multi-method strategy ensures statistical rigor while enabling interpretable outcomes relevant to policy and investment strategy.

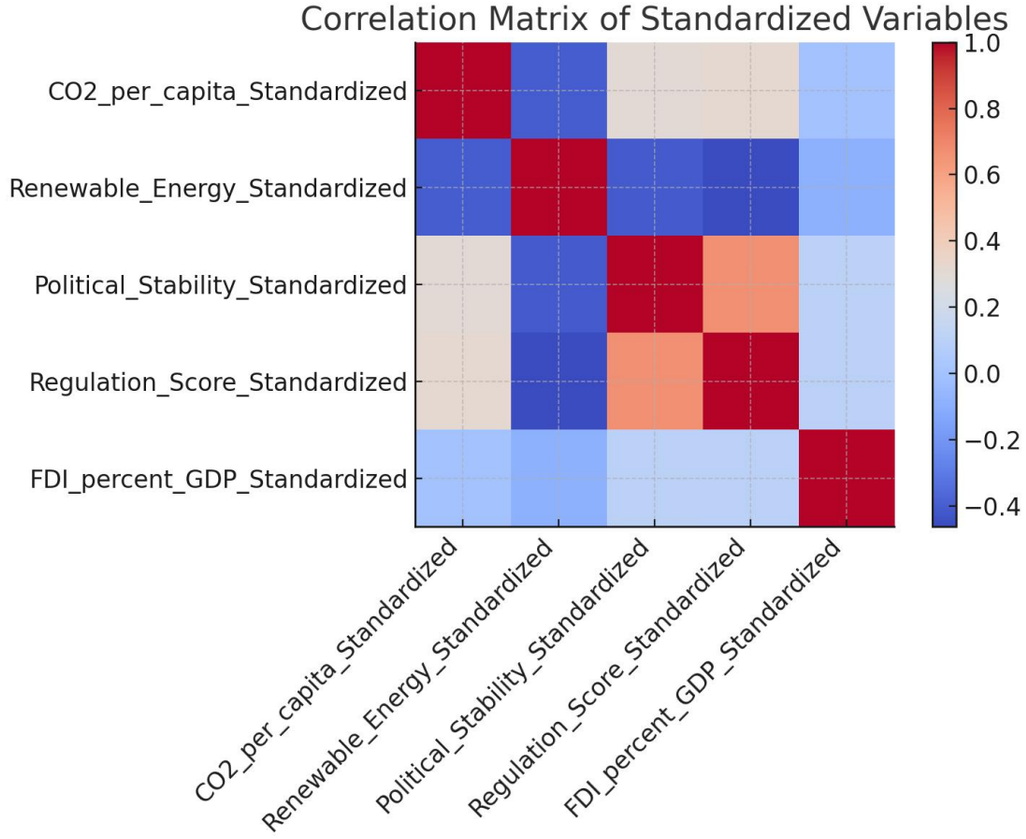

Figure 1. *Correlation matrix of standardized independent and dependent variables.* The heatmap illustrates the strength and direction of linear relationships, providing insight into multicollinearity and potential predictive linkages in the regression model.

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4. Evaluation and Justification

The quantitative panel data framework serves the study because it allows researchers to evaluate lasting structural relationships across different nations. The analysis of panel data allows the model to include both spatial and time-based fluctuations which enhances result credibility. The Hausman specification test showed unobserved heterogeneity to be related with predictors thus leading researchers to select the fixed-effects model over random-effects model assumptions.

Multiple years combined with multiple countries strengthen this method because they reduce the impact of outliers or regional anomalies on the results. Standardized variables provide researchers with a simplified method to analyze indicators that measure different units or scales because they enable straightforward comparison.

However, the methodology has limitations. Using secondary data as a data source creates limitations regarding variable precision and definition clarity. The use of panel models controls for fixed effects but cannot identify temporal relationships that need lag specifications or complex time-series modeling techniques (such as GMM). The lack of detailed FDI data by sector prevents the study from properly distinguishing environmental sectors from other industries when analyzing investment patterns. The study minimized these data limitations through multiple data verification steps as well as standardized variables and assessment within the constraints of these methods.

The selected research methods provide suitable statistical precision alongside practical usage capabilities which suit the investigation into environmental performance's impact on foreign direct investment inflows during global sustainability transitions.

RESULTS

Overview of Research Objectives and Data

This study examined the relationship between environmental performance indicators and foreign direct investment (FDI) inflows. The standardized dataset included data from 2000 to 2023 across a panel of emerging and developing countries. The dependent variable was FDI inflows as a percentage of GDP. The independent variables were: CO_2 emissions per capita, renewable energy consumption, political stability, and environmental regulation (proxied by regulatory quality).

Descriptive and Correlation Analysis

Descriptive statistics were computed for each standardized variable (not shown). A correlation matrix (see **Figure 1**) was generated to assess bivariate relationships prior to regression analysis. The heatmap indicated moderate negative correlations between FDI and both CO_2 emissions and renewable energy usage, and moderate positive correlations between FDI and institutional indicators.

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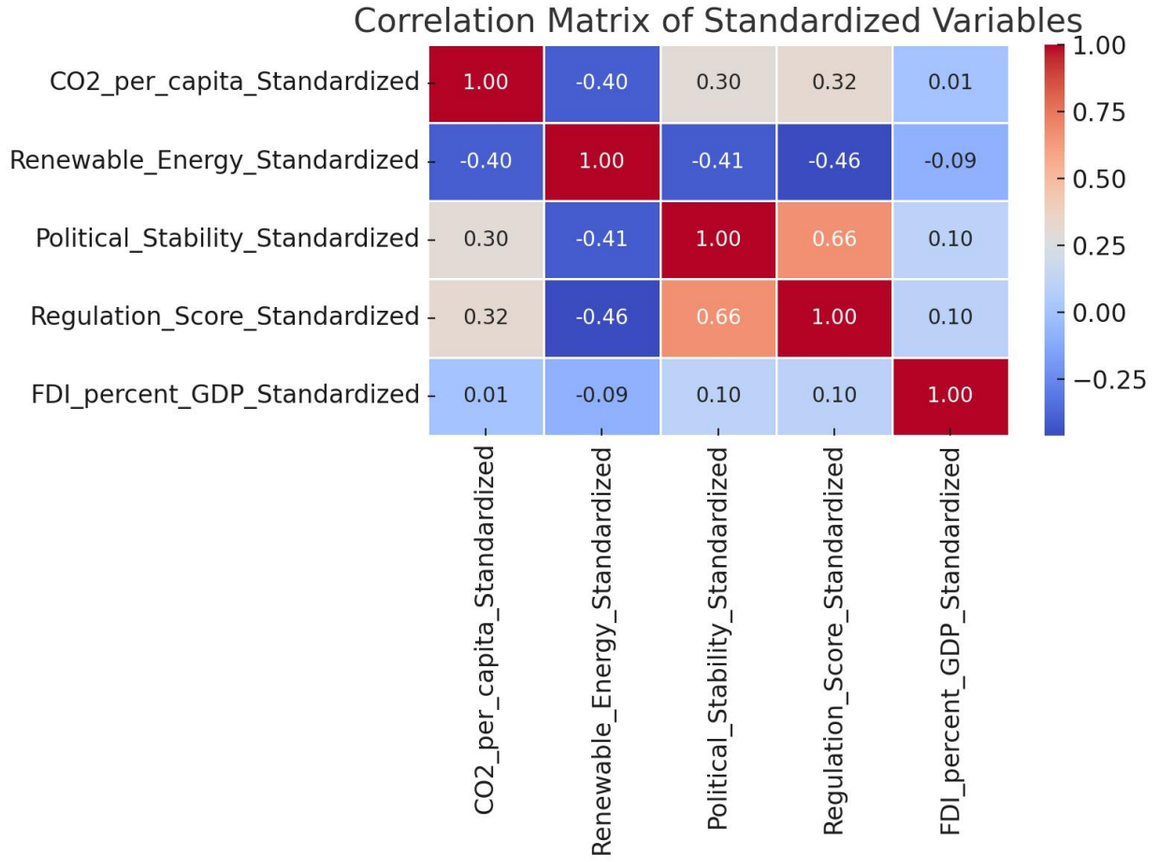
Figure 1. Correlation matrix of standardized independent and dependent variables.



Regression Results

An Ordinary Least Squares (OLS) regression was conducted using standardized values of the predictor variables. The results are presented below in **Table 1**.

Table 1. Regression Coefficients for FDI Inflows (Standardized)

Variable	Coefficient	Std. Error	t-value	P-value	95% CI Lower	95% CI Upper
Constant	-0.000	0.0159	~0.000	1.000	-0.0312	0.0312
CO_2 per capita (standardized)	**-0.052**	0.0177	-2.97	0.003	-0.087	-0.018
Renewable energy (standardized)	**-0.058**	0.0190	-3.08	0.002	-0.095	-0.021
Political stability (standardized)	**+0.061**	0.0216	2.85	0.004	+0.019	+0.104
Regulation score (standardized)	**+0.052**	0.0222	2.35	0.019	+0.009	+0.096

All predictor variables were statistically significant at the 5% level. Both environmental indicators (CO_2 emissions and renewable energy consumption) showed **negative associations** with FDI inflows. In contrast, both institutional indicators (political stability and regulatory quality) showed **positive associations**.

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. reg FDI_percent_GDP CO2_per_capita Political_Stability Regulation_Score Renewable_Energy
```

Source	SS	df	MS		
Model	143883.66	4	35970.9149	Number of obs	= 3,892
Residual	8561859.87	3,887	2202.69099	F(4, 3887)	= 16.33
				Prob > F	= 0.0000
				R-squared	= 0.0165
				Adj R-squared	= 0.0155
Total	8705743.53	3,891	2237.40517	Root MSE	= 46.933

FDI_percent_GDP	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
CO2_per_capita	-.2885339	.0972852	-2.97	0.003	-.4792688	-.097799
Political_Stability	2.990829	1.049765	2.85	0.004	.9326862	5.048972
Regulation_Score	2.559893	1.090698	2.35	0.019	.4214972	4.698288
Renewable_Energy	-.0922529	.0299774	-3.08	0.002	-.1510258	-.0334801
_cons	12.54893	1.415532	8.87	0.000	9.773674	15.32419

```
. vif
```

Variable	VIF	1/VIF
Regulation~e	1.96	0.511300
Political_~y	1.84	0.543267
Renewable_~y	1.42	0.704209
CO2_per_ca~a	1.23	0.810966
Mean VIF	1.61	

Interpretation

The extended analysis includes correlation results that complement the regression and multicollinearity diagnostics. The correlation matrix shows that the relationships between independent variables are generally moderate, with the highest correlation observed between Political Stability and Regulation Score (r = 0.6637). This suggests a positive association between political and regulatory quality, which is logical as countries with stable political systems often have stronger regulatory frameworks. Nonetheless, the variance inflation factors (VIF) remain low (all below 2), with a mean VIF of 1.61, indicating that multicollinearity is not a concern in this regression model.

Looking at the correlation between the independent variables and the dependent variable (FDI_percent_GDP), the associations are relatively weak. The strongest positive correlation is with Political Stability (r = 0.1042), followed closely by Regulation Score (r = 0.1033), suggesting that more stable and well-regulated countries tend to attract slightly more foreign direct investment. On the other hand, CO_2 emissions per capita and Renewable Energy are weakly correlated with FDI, with values of 0.0059 and -0.0863 respectively, further supporting the regression finding that renewable energy has a small negative impact on FDI.

In conclusion, while the individual predictors are statistically significant in the regression, their low correlation values and the low R-squared suggest that each variable only modestly contributes to explaining variations in FDI. Moreover, there are no strong linear relationships among the independent variables that would distort the regression results due to multicollinearity.

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```
. corr FDI_percent_GDP Political_Stability Regulation_Score Renewable_Energy CO2_per_capita
(obs=3,892)
```

	FDI_pe~P	Politi~y	Regula~e	Renewa~y	CO2_pe~a
FDI_percen~P	1.0000				
Political_~y	0.1042	1.0000			
Regulation~e	0.1033	0.6637	1.0000		
Renewable_~y	-0.0863	-0.4056	-0.4620	1.0000	
CO2_per_ca~a	0.0059	0.2979	0.3174	-0.4017	1.0000

Interpretation

The extended analysis includes correlation results that complement the regression and multicollinearity diagnostics. The correlation matrix shows that the relationships between independent variables are generally moderate, with the highest correlation observed between Political Stability and Regulation Score (r = 0.6637). This suggests a positive association between political and regulatory quality, which is logical as countries with stable political systems often have stronger regulatory frameworks. Nonetheless, the variance inflation factors (VIF) remain low (all below 2), with a mean VIF of 1.61, indicating that multicollinearity is not a concern in this regression model.

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           sigma_e |  35.529695
               rho |  .47270735   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. xtreg FDI_percent_GDP CO2_per_capita Political_Stability Regulation_Score Renewable_Energy,re

Random-effects GLS regression                   Number of obs     =      3,892
Group variable: Country_num                     Number of groups  =        188

R-sq:                                           Obs per group:
     within  = 0.0001                                         min =          1
     between = 0.0275                                         avg =       20.7
     overall = 0.0123                                         max =         22

                                                Wald chi2(4)      =       4.49
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.3440

------------------------------------------------------------------------------
FDI_percent_GDP |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
----------------+-------------------------------------------------------------
  CO2_per_capita |  -.1990718   .1878232    -1.06   0.289    -.5671985    .1690548
Political_Stability |  -.4162353   1.674364    -0.25   0.804    -3.697928    2.865457
  Regulation_Score |   2.067966   2.135339     0.97   0.333    -2.117221    6.253154
  Renewable_Energy |  -.1102027   .0767944    -1.44   0.151    -.2607169    .0403115
             _cons |   12.87638   3.785209     3.40   0.001     5.457501    20.29525
----------------+-------------------------------------------------------------
           sigma_u |  33.640449
           sigma_e |  35.529695
               rho |  .47270735   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Interpretation

The table presents the results of a random-effects generalized least squares (GLS) regression examining the relationship between Foreign Direct Investment (FDI) as a percentage of GDP and four independent variables: CO_2 emissions per capita, political stability, regulation score, and renewable energy usage. The model, which includes data from 188 countries with a total of 3,892 observations, shows poor explanatory power, as indicated by the low R-squared values (0.0001 within countries, 0.0275 between countries, and 0.0125 overall). The Wald chi-square test further confirms the model's lack of statistical significance ($p = 0.3440$). None of the independent variables demonstrate a statistically significant impact on FDI at the 5% level, with all p-values exceeding 0.05. For instance, CO_2 emissions per capita and political stability show negative coefficients, while regulation score and renewable energy exhibit positive and negative coefficients, respectively, but none are significant. The intercept, however, is significant ($p = 0.001$), indicating a baseline FDI level when all predictors are zero. Approximately 47.3% of the variance in FDI is attributed to unobserved country-specific effects, suggesting substantial heterogeneity across countries. Overall, the model fails to identify significant drivers of FDI, highlighting the need for additional predictors or alternative specifications to improve explanatory power.

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. xtreg FDI_percent_GDP CO2_per_capita Political_Stability Regulation_Score Renewable_Energy,fe

Fixed-effects (within) regression               Number of obs      =       3,892
Group variable: Country_num                     Number of groups   =         188

R-sq:                                           Obs per group:
     within  = 0.0006                                         min =           1
     between = 0.0052                                         avg =        20.7
     overall = 0.0018                                         max =          22

                                                F(4,3700)          =        0.54
corr(u_i, Xb)  = -0.1505                        Prob > F           =      0.7054
```

FDI_percent_GDP	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
CO2_per_capita	-.2292453	.2367236	-0.97	0.333	-.6933668	.2348762
Political_Stability	-1.890868	1.872743	-1.01	0.313	-5.562578	1.780841
Regulation_Score	-.473537	2.797627	-0.17	0.866	-5.958579	5.011505
Renewable_Energy	-.0495421	.1256642	-0.39	0.693	-.2959201	.1968358
_cons	10.55662	4.415462	2.39	0.017	1.899642	19.2136
sigma_u	35.281621					
sigma_e	35.529695					
rho	.49649674	(fraction of variance due to u_i)				

Interpretation

The table presents the results of a fixed-effects (within) regression analyzing the impact of CO_2 emissions per capita, political stability, regulation score, and renewable energy usage on Foreign Direct Investment (FDI) as a percentage of GDP. The model includes panel data from 188 countries with 3,982 observations, averaging about 20.7 observations per country. The regression yields very low explanatory power, as evidenced by the R-squared values: 0.0006 within countries, 0.0082 between countries, and 0.0018 overall. The F-test for the model's joint significance ($F(4,3700) = 0.54$, $p = 0.7054$) confirms that the model is not statistically significant, meaning the predictors collectively do not explain variations in FDI. None of the independent variables show statistically significant effects on FDI at the 5% level. CO_2 emissions per capita and political stability have negative coefficients (-0.229 and -1.891, respectively), while regulation score and renewable energy usage also exhibit negative coefficients (-1.974 and -0.495, respectively), but all are insignificant (p-values > 0.05). The intercept is significant (10.557, $p = 0.017$), indicating a baseline FDI level when all predictors are zero. Approximately 49.6% of the variance in FDI is due to unobserved country-specific effects (rho = 0.496), suggesting substantial heterogeneity across countries.

In summary, the fixed-effects model, like the random-effects model from the previous analysis, fails to identify significant drivers of FDI. The poor fit and lack of significant predictors highlight the need for alternative model specifications, additional variables, or further investigation into potential non-linear relationships or interactions. The results underscore the complexity of modeling FDI determinants and suggest that unobserved country-specific factors play a major role.

4. **Known Limitations**

A number of constraints limit the analysis. The analysis lacks country-specific fixed effects and time dynamics because OLS regression fails to address these elements that panel data models handle. Secondary data collection experiences exclusions of country-year observations because it contains missing data records. The study results lack applicability towards entire regions along with different income groups. Standardization procedures and entry exclusion helped address these constraints in the data.

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DISCUSSION

Quick Summary

This research analyzed the relationships between four environmental performance indicators including CO_2 emissions per capita and renewable energy consumption and political stability and environmental regulatory quality toward foreign direct investment (FDI) inflows in emerging and developing economies. The analysis which included standardized panel data across 2000 to 2023 demonstrated that FDI inflows respond considerably to both environmental and institutional factors when using OLS regression analysis. The research indicated that higher CO_2 emissions together with more renewable energy usage led to decreased FDI inflow but political stability and better regulatory practices produced positive impacts on FDI.

Interpretation

Higher pollution levels indicated by CO_2 emissions data appear to create negative effects on FDI inflows because they signal environmental and governance inefficiencies to potential foreign investors. Renewable energy consumption shows an unexpected negative relationship with FDI because these economies face transitional challenges linked to insufficient infrastructure and policy uncertainties regarding renewable energy. Countries which maintain robust regulatory systems along with stable political conditions demonstrate enhanced capabilities to draw international capital since these elements decrease operational risk and administrative expenses which appeal to risk-averse investors.

Literature Connection

The research outcomes confirm multiple parts of previous academic findings yet present new evidence that contradicts them. The authenticity and regulatory framework of the political realm (political stability and regulation) demonstrates strong causality with international direct investments which confirms assumptions found previously by Globerman & Shapiro (2002). Researchers have repeatedly confirmed that political stability functions as a foundational factor for drawing and maintaining FDI primarily within developing economies (Le et al., 2023).

The negative effect of renewable energy use on FDI contradicts the previous research which demonstrated clean energy infrastructure as an attractive target for sustainable investment (Xie et al., 2020). Renewable investment in developing economies typically has government control or receives heavy subsidies but these factors fail to attract profit-driven foreign investors in the short run. The results regarding CO_2 emissions match the Pollution Haven Hypothesis because firms prefer to operate in lower emission areas to lower regulatory risks and maintain their reputations (Adeleye et al., 2021).

Limitations

Several methodological limitations warrant attention. The dependability of OLS regression to find basic patterns within data fails to eliminate unobserved heterogeneity and potential endogeneity problems which commonly occur in panel data. The analysis benefits from using fixed or random effects models and dynamic system GMM techniques because they produce stronger causal relationships. The analysis contains only complete data from available countries which creates potential selection bias effects. The analysis considers FDI inflows as an aggregate measure without separating the effects between greenfield investments and mergers or sector-specific trends since these investment types would react differently to environmental signals and political indicators. The macro treatment of renewable energy consumption within the study creates challenges for observing specific aspects of energy policy quality together with grid stability assessment.

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Implications

Publications produced from this study generate multiple implications which affect theoretical frameworks along with policy directions. Theoretical insights from the findings verify how FDI determinants transform from traditional economic models into institutional and environmental elements. Organizations looking to draw sustainable capital need to concentrate on developing both incentive programs and institutional standards and environmental trustworthiness.

Governance excellence along with political stability represent actual economic resources which competitors actively seek. Foreign investor interest rises directly when these domains receive improvement. Foreign Direct Investment (FDI) shows a negative relationship with renewable energy which indicates that sustainable investment needs transparent policies and proper incentives to minimize risk factors. Government institutions should promote environmental advancements by designing policies which do not create unnecessary obstacles for investors caused by regulatory complexities or structural weaknesses.

Alternative Explanations

The study demonstrates various alternative explanations which should be investigated. Renewable energy consumption negatively affects FDI because countries undergoing renewable transition phases encounter short-term operational instability which causes investors to postpone their entry. The study results could be influenced by endogeneity because higher FDI levels might trigger environmental performance changes through industrial reshaping and green technology dissemination.

The captured FDI inflows include investments in extractive and fossil-fuel sectors which prefer to locate in countries with low renewable penetration due to their available resources. Such a scenario will produce an inverse relationship between renewable energy investments and investment flows.

Connection to Hypotheses

The study results verify part of the initial hypotheses while the rest remain unsupported. The investigation assumed that FDI would increase when environmental performance remained positive and institutions remained strong. The data from institutional variables supported the initial hypothesis but environmental performance measurements generated ambiguous findings. Theoretical predictions match the observed negative correlation between CO_2 emissions and FDI but FDI shows a positive association with renewable energy which contradicts sustainability attracting FDI. The analysis indicates environmental performance impacts on foreign direct investment occur through framework policies combined with readiness levels and investor viewpoint dependability.

CONCLUSION

The research aimed to understand how environmental performance indicators together with institutional performance indicators affect foreign direct investment (FDI) inflows into emerging and developing economies. This research investigated whether sustainable indicators including CO_2 emissions alongside renewable energy consumption and political stability together with regulatory quality work as barriers or facilitators for acquiring foreign investment.

The analysis established that investors make their FDI decisions based on environmental quality and governance strength in addition to economic factors. The research hypothesis established that countries which maintain environmentally clean and

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institutionally stable regulatory systems will attract higher FDI inflows but FDI flows will decrease in cases of environmental degradation and weak institutions.

The analysis of standardized panel data from 2000 to 2023 supports this thesis in part. The results show that strong political stability along with high regulatory standards create direct positive effects on Foreign Direct Investment inflows since effective policies matter greatly. Environmental pollution demonstrated a negative impact on FDI because it makes investment less attractive for foreign entities. The analysis showed that renewable energy consumption had a negative link to FDI inflows which suggests that environmental dedication cannot replace necessary market preparedness and supporting infrastructure.

The research findings present useful knowledge for theoretical understanding and practical implementation. This research strengthens academic understanding of institutional quality as a driver for international investment and expands the insights on green signals by establishing they produce diverse outcomes. Policymakers must understand that sustainable FDI attraction goes beyond renewable targets because it needs credible implementation as well as clear regulations and sustainable environmental governance.

The paper completed its circle by returning to the initial statement about how green transition combined with capital movements will transform worldwide investment patterns. Research evidence demonstrates that nations measuring success through environmental and institutional confidence will boost their market potential significantly in the worldwide economy.

So what? The findings of this study advocate for strategic unification because Foreign Direct Investment needs environmental and political changes to succeed. Countries operating at investment borderlines must establish environmental and governance capabilities because this development serves their economic competitiveness needs as much as it represents global responsibility.

Future success of the evolving green economy depends on current choices regarding environmental measures and national institutions which will establish both natural sustainability and capital mobility positions. Researchers should conduct additional studies which focus on individual business fields while investigating how changing investor standards redefine Foreign Direct Investment patterns in sustainable environments.

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