INNOVA RESEARCH JOURNAL
ISSN: 2477-9024

ORIGINAL ARTICLE
INNOVA Research Journal, ISSN 2477-9024
(January-April, 2026). Vol. 11, No.1, pp. 70-86
DOI: https://doi.org/10.33890/innova.v11.n1.2026.2858
URL: http://revistas.uide.edu.ec/index.php/innova/index
Correo: innova@uide.edu.ec

Determinantes de la Inversión Extranjera Directa en Ecuador: Un Enfoque con Modelo de Gravedad Ampliado (2002–2023)

Determinants of Foreign Direct Investment in Ecuador: An Extended Gravity Model Approach (2002–2023)

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Submission Date: 08/26/2025 | Acceptance Date: 12/02/2026 | Publication Date: 01/30/2026

How to cite (APA 7th edition):
Solis-Picon, J., & Tonon-Ordónez, L. (2026). Determinants of Foreign Direct Investment in Ecuador: An Extended Gravity Model Approach (2002–2023). *INNOVA Research Journal, 11*(1), 70-86. https://doi.org/10.33890/innova.v11.n1.2026.2858

Resumen

Este estudio analiza los determinantes de la inversión extranjera directa (IED) en Ecuador durante el período 2002–2023, utilizando un modelo de gravedad ampliado y el estimador de máxima verosimilitud de Poisson (PPML). La investigación exploratoria examina datos de panel de 127 países inversionistas, definiendo como variable dependiente los flujos de IED hacia el Ecuador e incorporando como variables independientes factores económicos, políticos y culturales, tomando en cuenta el idioma, la religión y la historia colonial en común como variables dummy. Los

resultados revelan que el PIB del país de origen, los niveles de importación, un idioma común y una religión compartida tienen un impacto positivo y estadísticamente significativo sobre los flujos de IED hacia Ecuador. En contraste, el PIB del país receptor, la distancia geográfica y la historia colonial común ejercen un efecto negativo. Otras variables como los impuestos corporativos, la tasa de interés, el riesgo país y el control de la corrupción no mostraron significancia estadística. El modelo logra explicar el 33,5 % de la variabilidad en los flujos de IED. Estos hallazgos tienen implicaciones relevantes para el diseño de políticas públicas enfocadas en atraer inversión extranjera al país, además, resaltan la importancia de factores estructurales y culturales sobre los factores económicos locales.

Palabras claves: economía internacional, econometría, inversión, investigación económica.

JEL: B22, C23, F21, F15.

Abstract

This study analyzes the determinants of foreign direct investment (FDI) in Ecuador during the 2002–2023 period, using an extended gravity model and the Poisson Pseudo-Maximum Likelihood estimator (PPML). The exploratory research examines panel data from 127 investor countries, determining the flows of FDI towards Ecuador as the dependent variable, including economic, political and cultural factors as the independent variables, considering a common language, religion or shared colonial history as dummy variables. The results reveal that the GDP of the origin country, import levels, a common language, and a shared religion have a positive and statistically significant impact on FDI flows into Ecuador. In contrast, the GDP of the host country, geographical distance, and shared colonial history exert a negative effect. Other variables such as corporate taxes, interest rates, country risk, and corruption control were found to be statistically insignificant. The model explains 33.5% of the variability in FDI flows. These findings have important implications for the design of public policies aimed at attracting foreign investment to the country, and they highlight the relevance of structural and cultural factors over local economic ones.

Keywords: international economy, econometrics, investment, economic research.

Introduction

Foreign Direct Investment (FDI) constitutes a critical component for the economic development of emerging economies. In Ecuador, its relevance is accentuated by the high dependence on international trade, given the significant volume of imports and exports that constitute the country's economy. Beyond the economic growth, FDI positively impacts job creation, consolidation of productive sectors, technology transfer, and diversification of capital sources (Mercado et al., 2008).

Following the economic crisis of the late 20th century, which culminated in the dollarization, Ecuador implemented a stabilization process that fostered positive expectations for transnational investment. During the subsequent decade, a progressive recovery of FDI flows was

observed (Cardenas et al., 2025). However, from 2015 onward, the country experienced a sustained contraction of FDI, attributable to factors such as political volatility, regulatory constraints, global economic crises, and adverse natural events. This trend culminated in historical lows in 2023, reflecting a loss of competitiveness relative to regional economies (Salcedo & Nagua, 2024).

To counteract this decline, it is necessary to identify the determinants conditioning FDI flows into Ecuador, aiming to design effective strategies to reverse the situation. Within this framework, the gravity model emerges as an optimal econometric instrument for analyzing these flows. Based on Newton's gravity law, this model explains that economic interaction between nations is proportional to their economic mass, measured by GDP, and inversely proportional to geographical distance.

Based on this background, the primary objective of this study is to examine FDI flows into Ecuador during the 2002-2023 period, assessing the determining factors and their quantitative impact. This research employs panel data for 127 investor countries in Ecuador during 2002–2023, using primary sources including the Banco Central del Ecuador, World Bank, Geodatos, Servicio de Rentas Internas del Ecuador and The Heritage Foundation. Applying an extended gravity model that incorporates additional variables such as import and export levels, economic freedom index, interest and tax rates, country-risk and corruption control indices, as well as dummy variables for shared language, colonial history, and religion. The Poisson Pseudo-Maximum Likelihood (PPML) estimator is used to mitigate heteroscedasticity issues.

Literature Review

Investment is understood as the decision to defer immediate consumption of a specific amount of money in exchange for acquiring an asset that is expected to generate greater long-term benefits. When the acquired asset consists of financial market instruments such as stocks, bonds, utilities or others, it is categorized as a financial investment. If such an investment is carried out within a particular country by foreign individuals or legal entities, it qualifies as Foreign Direct Investment (FDI) (Blanco et al., 2015).

Multinational investors aim to form a long-term interest relationship with enterprises located in an economy different from their own. This relationship involves a degree of influence over the company's operational activities. Typically, such influence is established when the investor holds at least 10% ownership in the enterprise (Organization for Economic Co-operation and Development, 2025). In the case of Ecuador, FDI is represented as an annual balance, obtained from the sum of shares, equity holdings, reinvested earnings, and other capital owned by international investors (Ministerio de Producción, Comercio Exterior, Inversiones y Pesca, 2021).

FDI plays a fundamental role in boosting sustainable economic growth by generating a variety of benefits across different economic sectors. Among its main contributions are the ability to enhance productivity and stimulate gross capital formation; the creation of quality employment, contributing to a more dynamic labor market and improved social well-being; it supports the transfer of technology and technical knowledge, which amplifies the development of local human

capital; it encourages innovation in products and processes, thereby improving national competitiveness. FDI also strengthens the host country's balance of payments by providing new sources of external financing, consolidating its international financial position (Comisión Económica para América Latina y el Caribe, 2024).

The level of FDI attracted by multinational corporations depends on the overall attractiveness of a country, which is shaped by various economic, political, social, and technological factors unique to each nation. Economically, factors such as GDP growth, low labor costs, inflation and interest rates, access to credit, and trade openness play crucial roles. Strong economic growth and low production costs tend to attract investors, while high inflation and interest rates can discourage them. (Sharma & Bandara, 2010).

Politically, stability and strong institutions are essential to reduce uncertainty and increase investor confidence. Corruption and weak accountability raise perceived risks, while government policies including regulations, tax incentives, and labor laws influence investment decisions. Social and technological factors, like the availability of skilled labor, the level of education of the workforce, the quality of the infrastructure, the access to new and advanced technologies and the ability to innovate make the country more appealing to foreign investors, as they improve the productivity and competitiveness of the different productive sectors of the country (Lee et al, 2024).

In order to quantify the effects of the possible determinants of FDI the study selected the gravity model of international trade, an econometric model based on the theory proposed by Isaac Newton´s law of gravity, arguing that the economic size of two countries, measured by the Gross Domestic Product (GDP), directly affects the trade volume existing between them, and that the distance between them shows a negative impact. This distance encompasses various trade frictions such as tariffs, language differences, cultural barriers, or regulatory divergence.

The common expression of the model is shown on equation 1.

$$T_{ij} = A * Y_i^a * Y_j^b / D_{ij}^c \quad (1)$$

Where T represents the trade volume between two countries, which are i and j respectively. A denotes a constant trade term. Y represents the size of the economy of both countries. D stands for the distance between the two countries. a, b, and c are the coefficients for the variables (Krugman et al 2023).

To explain the causes and effects of bilateral trade flows the gravity model has become fundamental, as it has shown a high predictive accuracy and robustness, and because it allows us to incorporate both traditional economic variables and institutional or social factors. This econometric model has proven essential to analyze patterns of global economic integration or

assess trade policies and regional agreements, as it provides a theoretical and empirical foundation (Capoani, 2022).

The framework of the gravity model in international trade traces back to Ravenstein's (1885) migration theory, which noted that population movements tend toward economically advanced and geographically proximate regions. Based on these foundations, Tinbergen (1962) formulated the trade gravity model, stating that bilateral trade volumes rise with the economic size of both countries and diminish as the distance between them increases. Pulliainen (1963) later linearized this model by applying logarithmic transformations, simplifying the estimation of the independent variables and the coefficient interpretation. Originally focused solely on economic size and geographic separation, the gravity model was first broadened by Linnemann (1966), who introduced additional determinants such as international trade costs, natural resource endowments, and population. This expansion enabled the analysis of intangible economic factors, including FDI (Capoani, 2023).

The first study to adapt the traditional gravity model to the examination of the FDI flows came from Eaton and Tamura (1994), who analyzed factors like GDP growth, distance, demographics, market size, exchange rates, and human capital drive investment decisions, based on Vernon's (1966) product life-cycle theory. By substituting trade volume with capital flows from multinational firms, they demonstrated the model's applicability to FDI (Pan et al., 2022). Since then, studies have employed these fundamentals to explore the varied influences on FDI flows and their cross-country differences, solidifying the model's role in international economics research.

The studies of Esteller-Moré et al. (2021), Dorakh (2020), Lacaza (2024), Manocha (2023), Bengoa et al. (2020), and Duong et al. (2021), have investigated the importance of diverse economic determinants in FDI, such as GDP, interest and tax rates, membership in economic blocs, the presence of bilateral investment treaties and trade agreements, and import and export levels, among other factors. These studies employed Ordinary Least Squares (OLS) and PPML estimators, finding most of these variables are statistically significant and have a positive influence on FDI flows. However, certain variables such as interest and tax rates vary in significance depending on the country analyzed, suggesting that their relevance is conditioned by each nation's economic context.

The studies of Ajit (2021), Belgibayeva & Plekhanov (2019), and Anderson et al. (2017), had the objective of assessing the influence of political variables on FDI flows. These analyses incorporated indices of political stability, corruption control, regulatory quality, government accountability, and the presence of regulatory barriers, as well as other variables such as common language, export levels, and GDP. Their findings indicate that, except for political stability and political uncertainty, most political factors exert a statistically significant and positive effect on FDI, while the presence of regulatory barriers shows a negative influence.

FDI flows can also be affected by cultural factors, their relevance was studied by Golesorkhi et al. (2024) and Feng et al. (2019). Their investigation's main objective was to quantify the impact of cultural variables, such as a shared language, religion, contiguous borders, and a common colonial history on FDI flows by using OLS and PPML estimators.

It is important to analyze if the effects of different determinants of FDI change between continents or countries, Ali (2021), Mishra & Jena (2019), Singagerda et al. (2023) and Quang (2024) examined the determinants of foreign direct investment (FDI) in Asia, focusing on countries such as China, South Korea, Pakistan, India, Indonesia, Vietnam, and Singapore. These studies considered the host country's GDP as a key factor in attracting investment, while geographic distance was found to have a negative effect. Additionally, variables such as globalization, population size, level of exportation, economic freedom, membership in the World Trade Organization (WTO), social indicators, colonial ties, and the overall size of the country were shown to have a positive influence on FDI, in contrast, interest and tax rates were found to be statistically insignificant in the models. Based on these findings, the authors recommend improving macroeconomic stability and strengthening trade relations among neighboring countries, believing they should focus their investments on nations with larger populations and more developed infrastructure.

In the African continent, the study conducted by Musabeh (2023) examined the determinants of foreign direct investment in Algeria, Egypt, Libya, Morocco, and Tunisia. The findings indicate that GDP, trade intensity, shared language, and credit availability have a significant and positive effect on FDI inflows. In contrast, factors such as geographical distance, the presence of bilateral treaties, a common border, and the Human Development Index did not show statistical significance. The author suggested that a better regulated financial system, the promotion of bilateral trade and the application of policies that encourage cultural and linguistic cooperation, could attract more investment in the region.

As for Europe, the studies by Korsita et al. (2023), Luckstead et al. (2024) and Mariev et al. (2016) examined FDI in Portugal, Russia and the countries of the Balkan regions using PPML estimators, as well as fixed and random effects models, the results showed that GDP, interest rate, population, shared language and colonial history, economic freedom and membership in the European Union are factors that attracts FDI. However, geographical distance was found to have a negative effect, while tax rates and average wages did not significantly influence investment flows. The authors consider that there needs to be better trade relationships between the countries of the continent, which would promote regional cooperation improving economic growth.

The research conducted by Abreo (2024) focused on identifying the factors influencing foreign direct investment in Latin America, with a particular emphasis on Colombia. The author employed the PPML estimator due to the presence of zero and negative values in the dataset. The findings revealed that variables such as the level of imports and exports, a shared language, the existence of free trade agreements and bilateral investment treaties, labor competitiveness, and institutional quality have a significant and positive impact on FDI. In contrast, geographical distance and the GDP of the host country showed a significant negative effect. The author recommends enhancing institutional quality, promoting bilateral investment agreements, and ensuring investment protection to foster a more appealing environment for investors.

Methodology

To achieve the study's objective, an exploratory investigation was conducted using panel data for 127 investor countries in Ecuador, which were analyzed using RStudio. The analysis covers the period from 2002 onward, since at the end of the 20th century the country experienced an economic crisis that culminated in replacing the sucre with the U.S. dollar, initiating a stabilization process evident from 2000. However, due to the absence of data for 2000–2001, this study employs information from the Banco Central del Ecuador (2025a) beginning in 2002.

Within the framework of the classical gravity model, incoming FDI flows were defined as the dependent variable, while only the economic size of both countries and bilateral distance served as explanatory variables. However, various studies such as Kaur et al. (2024) and Wang & Chen (2025) emphasize the need to enrich the model with additional variables to better explain the endogenous variable and mitigate multicollinearity and heteroscedasticity issues. Consequently, this study employs an extended gravity model that, in addition to the traditional variables, incorporates import and export levels, economic freedom, the lending interest rate, the corporate tax rate, control of corruption and country-risk indices, as well as dummy variables capturing shared language, common colonial history, and common religion.

The economic size of both origin and destination countries was measured by GDP, an indicator that quantifies the total value of final goods and services produced in a country over a year at current prices. It is calculated as the sum of consumption, investment, government spending, and net exports (Samuelson & Nordhaus, 2009). Meanwhile, bilateral distance is defined as the geographic separation, in kilometers, between Quito and the capitals of the countries analyzed. Data was sourced from the World Bank (2025) and Geodatos (2025), respectively.

Import levels refer to the total value, expressed in FOB monetary terms over a specific period, of goods and services a country acquires from abroad. Likewise, export levels measure the FOB gross value of goods and services sold to other countries during that same period (Servicio Nacional de Aduana del Ecuador, 2024). Data was obtained from the Banco Central del Ecuador (2025b).

The corporate tax is defined as the percentage the government levies on a company's net earnings, set at 25 % in Ecuador (Hyman, 2011). Meanwhile, the lending interest rate represents the cost financial institutions charge for granting a loan, expressed as a percentage of the credit amount over a specific period; in Ecuador, this rate ranges from 8 % to 12 % (Araque et al., 2021). The data used in this analysis was provided by the Servicio de Rentas Internas (2025) and the Banco Central del Ecuador (2025c), respectively.

Economic freedom is an indicator that measures the extent to which individuals or businesses can acquire and use economic goods without excessive government interference via laws and regulations. It is determined across four dimensions: rule of law, government size, regulatory efficiency, and market openness. This indicator is expressed on a scoring scale, where a higher score signifies greater economic freedom and vice versa (Kim, 2024). While country risk, also known as the Emerging Markets Bond Index Plus, is an indicator that evaluates a country's ability to meet its financial obligations. It incorporates various economic and political factors and

is expressed in points, with a higher score indicating a greater risk of default (Santilli, 2021). Data was obtained from The Heritage Foundation (2025) and the Banco Central del Ecuador (2025d), respectively.

The Control of Corruption Index is an indicator that measures the perceived level of corruption within a country's public sector, where governmental power could be used for private gain. The index assesses a government's ability to control corruption and manage public resources (World Bank Group, 2024). Index data were obtained from the World Bank Group (2025).

Finally, to assess the impact of social and cultural factors on foreign investment flows, the study incorporated three dummy variables indicating the presence of a common language, colonial history, and religion between the destination and origin countries, coded as 1 if present and 0 otherwise (Ali, 2021; Piermartini & Yotov, 2016). The coefficients can be interpreted by using the proposed formula of Halvorsen and Palmquist (1980), making it possible to analyze the effects of these variables in percentage terms.

$$(e^{y} - 1) * 100 \quad (2)$$

In equation 2, e denotes the irrational number known as the base of natural logarithms, and the exponent corresponds to the estimated coefficient of the dummy variable (Tonon et al., 2023).

The investigation made use of a logarithmic transformation, allowing the model to be expressed in a lineal form, the proposed transformation permits a clearer way to interpret the impact of the exogenous variables, enabling a more accurate estimation of the model. Despite this, a great number of FDI flows include zero or negative values to indicate disinvestments, making it difficult to use logarithms. Earlier studies of the FDI flows addressed this issue by excluding these values, which led to data loss and potential bias of estimation. Recent approaches to this problem, as shown in the study of Dorakh (2020), are to replace this data with the minimum positive value of one dollar, as this substitution does not affect the overall interpretation of the coefficients.

The first studies to analyze the FDI flows relied solely on the use of the Ordinary Least Squares (OLS) estimator as it proved to show results that align with the established theory, however, the research conducted by Santos & Tenreyro (2006) revealed limitations in this approach, including issues of heteroskedasticity and the inability to incorporate zero-value observations. The study proposed the use of the Poisson Pseudo-Maximum Likelihood (PPML) estimator, which accommodates zero values and reduces the risk of heteroskedasticity, allowing a more accurate estimation of the model (Herman, 2023). Based on this information, the study used PPML as the preferred estimator for the gravity model.

Based on the methodology applied, equation 3 used in the study is defined as follows:

$$lnFDI_{ijt} = \beta_0 + \beta_1 lnGDPD_{it} + \beta_2 lnGDPO_{jt} + \beta_3 lnDIST_{ij} + \beta_4 lnIMP_{it} + \beta_5 lnEXP_{it} + \beta_6 lnECFR_{it} + \beta_7 lnINTR_{it} + \beta_8 lnTAXR_{it} + \beta_9 lnCORR_{it} + \beta_{10} lnCONR_{it} + \beta_{11} CLEN_{ij} + \beta_{12} CCHI_{ij} + \beta_{13} CREL_{ij} \quad (3)$$

Where the beta coefficients reflect the impact of changes in the exogenous variables on the endogenous variable. Time is represented by t, while the origin and destination countries of the investment are denoted by i and j, respectively. FDI refers to the foreign direct investment inflow to Ecuador. GDPD and GDPO correspond to the GDP of the destination and origin countries, respectively. DIST indicates the distance between countries, IMP the level of imports from the origin country to Ecuador, EXP the level of exports from Ecuador to the origin country, ECFR the economic freedom index, INTR the active interest rate, TAXR the corporate tax rate, CORR the corruption control index, RISK the country risk index, CLEN the presence or absence of a common official language, CCHI the existence or absence of a shared colonial history, and CREL the presence or absence of a shared official religion.

Results and Discussion

Table 1 displays the results derived from the proposed model based on the estimator utilized:

Table 1

Estimation of the gravity model using Poisson Maximum Likelihood (PPML)

Variables	Coefficient	P value
GDPD	*-0.534565*	*0.01387***
GDPO	*0.482544*	*2.00E-16****
DIST	*-0.348527*	*1.37E-14****
IMP	*0.096701*	*1.13E-07****
EXP	*0.009857*	*0.60185*
ECFR	*-1.298041*	*0.2906*
INTR	*-0.691029*	*0.20207*
TAXR	*-0.105021*	*0.85288*
CORR	*-0.160059*	*0.76234*
CONR	*0.175336*	*0.16065*
CLEN	*0.192769*	*0.07517**
CCHI	*-0.275605*	*0.00684***
CREL	*0.612339*	*2.00E-16****
Constant	*4.610935*	*0.13599*
R Squared	*0.336126*	
F-statistic	*843.3077*	
p-value (F-statistic)	*2.00E-16*	

*Note: Significance levels *0.1 **0.05 ***0.01*

The Poisson Maximum Likelihood estimation identified the following variables as statistically significant for the model: destination country GDP, origin country GDP, bilateral distance, import levels, common language, common colonial history, and common religion. In contrast, export levels, economic freedom, lending interest rate, corporate tax rate, control of corruption index and country risk were not found to be statistically significant. Once the significant variables have been identified, a second estimation was conducted to obtain the final coefficients, obtaining the results shown on table 2:

Table 2

Estimation of the gravity model using Poisson Maximum Likelihood (PPML)

Variables	Coefficient	P value
GDPD	*-0.32795*	*0.00391****
GDPO	*0.49303*	*2.00E-16****
DIST	*-0.35472*	*4.73E-16****
IMP	*0.09967*	*7.69E -09****
CLEN	*0.19815*	*0.06598**
CCHI	*-0.27626*	*0.00667****
CREL	*0.61212*	*2.00E-16****
Constant	*1.21032*	*0.35132*
R Squared	*0.335166*	
F-statistic	*844.1693*	
p-value (F-statistic)	*2.00E-16*	

*Note: Significance levels *0.1 **0.05 ***0.01*

The results presented allow for the formulation of equation 4, which models the flow of FDI to Ecuador.

$$lnFDI_{ijt} = 1.21 - 0.33lnGDPD_{it} + 0.49lnGDPO_{jt} - 0.35lnDIST_{ij} + 0.09lnIMP_{ijt} + 0.19CLEN_{ij} - 0.28CCHI_{ij} + 0.61CREL_{ij} \quad (4)$$

$$R^2 = 33.51\% \quad (5)$$

The coefficient of determination (R^2), stated on equation 5, indicates that 33.51% of the variability in the flow of FDI to Ecuador is explained by the significant independent variables included in the model. Regarding the interpretation of the estimated coefficients, the following results were obtained:

The Gross Domestic Product of Ecuador is statistically significant at the 1 % level and exerts a negative effect on FDI inflows: a 1 % increase in domestic output, ceteris paribus, corresponds to a 0.33 % decrease in FDI, indicating an inelastic response. In contrast, the GDP of the origin country is also significant at the 1 % level and has a positive impact on investment flows:

a 1 % rise, ceteris paribus, results in a 0.49 % increase in FDI to Ecuador, likewise reflecting inelasticity.

Bilateral distance is statistically significant at the 1 % level and exhibits an inverse relationship with investment flows: a 1 % increase, ceteris paribus, corresponds to a 0.35 % decline in FDI, indicating an inelastic effect. Import levels are statistically significant at the 1 % level and exert a positive effect on FDI: a 1 % increase in import levels, ceteris paribus, is associated with a 0.09 % rise in investment flows, indicating inelasticity.

Regarding the dummy variables, common language and common religion both have positive impacts on FDI, with significance levels of 10 % and 1 % respectively, the existence of a shared language increases investment flows by 21.91 %, while a shared religion raises them by 84.43 %. Meanwhile, the dummy for shared colonial history is significant at the 1 % level and has a negative effect, reducing FDI flows by 24.14 %, ceteris paribus.

Using the Poisson Maximum Likelihood estimator within the gravity model framework, the influence of various economic, political, and social variables on FDI is assessed. However, these findings must be compared with the previous literature, such a comparison is necessary to evaluate the consistency of these results and, if inconsistencies are found, explain the reasons behind them.

First, the applied methodology must be examined, studies such as those by Ali (2021) and Belgibayeva & Plekhanov (2019) have employed the POOL method, however, other studies, such as those by Bengoa et al. (2020) and Lacaza (2024), have pointed out that this method has shortcomings in correctly estimating investment flows. Therefore, these researchers argue that the Poisson Pseudo-Maximum Likelihood (PPML) estimator is more suitable for analyzing these flows, as it addresses these limitations and yields more robust and consistent model results.

To validate the results obtained through PPML, the individual impact of each variable was examined, comparing the effects found with those of previous studies. The Destination Country's GDP negative coefficient contrasts with Manocha's (2023) positive findings, though both confirm statistical significance, however, it aligns with Abreo (2024) who attributes this inverse relationship to the structuration of the panel data structure, as a single host country is linked to multiple investors, affecting independent variable estimation. In the case of the Source Country's GDP the statistically significant positive relationship aligns with Ajit (2021), Bengoa et al. (2020), and Dorakh (2020), where a higher source country GDP increases FDI flows.

For the Geographical distance there is a statistical significance and a negative impact on FDI found, which aligns with Quang (2024), where greater distances reduce investment flows. As for the imports, there is a positive relationship with statistical significance, contradicting Abreo (2024) and Duong et al. (2021), this divergence may be due to Ecuador's high reliance on imported goods, which betters international relationship with investors (Banco Central del Ecuador, 2024).

The Exports lack of statistical significance contrasts with Singagerda et al. (2023), the difference could be explained by the FDI concentration in Ecuador's mining and transport sectors, while the main export sector of the country is agriculture, making the variable less relevant

(Ministerio de Producción, Comercio Exterior, Inversiones y Pesca (2024). While the Country Risk is statistically insignificant and no prior studies have examined this relationship.

The Economic Freedom´s non significance contradicts Mariev et al. (2016), this divergence may be caused by the fact that investors may prioritize sector specific indicators over aggregate economic indexes. The results of a lack of significance on the Interest Rate aligns with Mishra & Jena (2019) but diverges from Korsita et al. (2023), an explanation may be the investor's preference for external financing at lower rates or the preference to finance with their own capital (Sarango, 2021).

The Corporate Taxes were found non-significant, which proves consistency with Esteller-Moré et al. (2021), while Lacaza (2024) results found it significant and with a negative impact, The differential relevance may be caused by economic development disparities, corporate taxes may have a bigger impact on developed economies, while other macroeconomic factors, such as GDP, are more relevant on emerging markets (Castañeda & Villabona, 2020). As for the Corruption Control´s lack of statistical significance, the results disagree with Belgibayeva & Plekhanov (2019), this difference may be due to the investor's tolerance to certain levels of corruption if it yields operational or economic benefits (Pantigoso, 2021).

For the dummy variables Common Language and Religion, the significance and positive effect are consistent with Anderson et al. (2017), Golesorkhi et al. (2024), Feng et al. (2019) and Musabeh (2023). While the Shared Colonial History results showed significance and a negative impact, differing from Ali (2021) and Luckstead (2024) who report a favorable effect.

Conclusions

This study achieves its objective by examining the determinants of foreign direct investment (FDI) in Ecuador and their degree of influence, using an adjusted gravity model with annual data (2002-2023). The PPML estimator was employed, proving to be effective in providing precise estimates of exogenous variables' impact.

Findings reveal positive effects of the origin country's GDP (0.49%) and imports (0.09%) on FDI, while Ecuador's GDP (-0.33%) and geographic distance (-0.35%) show negative correlations. Cultural factors like shared language (21.91%) or religion (84.43%) encourage investment, contrasting with a shared colonial history (-24.14%). Local economic and political variables such as exports, corporate tax rate, interest rate, economic freedom, corruption control, and country risk showed no statistical significance.

Despite its contributions, the study faces limitations, missing data from certain countries, reduced precision, and an R^2 of 33% suggests unanalyzed factors explain much of FDI variation. Discrepancies with prior research also exist regarding significant variables. Future analyses should explore why local economic and political factors lack influence on investment decisions.

For Ecuadorian public policy managers, this study offers practical utility as the detected influencing factors on FDI supply key insights for designing more successful initiatives to attract foreign investment. This is particularly significant given that such investment drives Ecuador's growth and constitutes a vital element of its GDP

Funding

This research was funded by the authors.

Conflicts of Interest

The authors declare that they have no conflict of interest.

Authors' Contributions

José Daniel Solís Picón: conceptualization, data curation, formal analysis, research, methodology, validation, visualization writing

Luis Bernardo Tonon Ordóñez: conceptualization, methodology, project administration, supervision, validation, writing, review and editing.

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