

**ANALYSIS OF FOREIGN DIRECT INVESTMENT DETERMINANTS IN
COLOMBIA DURING 1970-2023**

Student

Jordan Alexander Ramirez Cadavid

Professor

PhD. Juan Camilo Galvis Ciro

Subject

Advanced Macroeconomics



**UNIVERSIDAD PONTIFICIA BOLIVARIANA
FACULTY OF ECONOMICS
MEDELLÍN, ANTIOQUIA**

2024 – 01

Analysis of Foreign Direct Investment Determinants in Colombia During 1970-2023

1. Introduction

In the global economic field, FDI has emerged as a critical driver of growth, prompting significant interest and scrutiny from scholars, policymakers and investors. Over the past decades, FDI inflows have been viewed as catalysts for economic development in host countries, underpinned by the belief that they bring about positive externalities such as knowledge transfer, technological diffusion and enhanced productivity; some countries that illustrate such case are: Singapore, South Korea, United States, Spain and Germany.

Colombia, with its strategic geographical location, abundant natural resources, and evolving economic policies, has positioned itself as a magnet for foreign investment in the Latin American region. In 1970, the country received USD 43 million, representing 3.42% of total FDI in the region. By 2022, this figure had risen to USD 17,182 million, accounting for 10.08% of FDI in Latin America. However, amidst the complexities and dynamics of the global economy, understanding the determinants of FDI in Colombia has become imperative. Against the backdrop of the period spanning from 1970 to 2023, this research aims to unravel the multifaceted factors shaping FDI inflows into Colombia.

Through empirical analysis and econometric modelling, multivariate linear regression is employed to offer evidence-based insights that can inform policymakers and stakeholders to comprehend better the behaviour of FDI and the main factors that influence such economic variable. It is expected to understand the reaction and correlation of FDI with structural variates including economics, institutionalism, international aspects and oil production.

In the case of Colombia FDI there has been a nexus between FDI and the nation's oil extraction endeavors. As Colombia's oil reserves and oil prices fluctuate amidst the shifting tides of global demand and supply, they serve as attractive factors of foreign capital and shaping investment decisions. The exploration and exploitation of oil reserves not only contribute to Colombia's economic output but also act as a catalyst for FDI inflows,

offering investors lucrative opportunities amidst the backdrop of volatile oil prices. The present research helps the understanding of this relation and the examination of other variables in the FDI inflows towards Colombia.

The research suggests that institutional factors are instrumental in attracting FDI by providing a more favorable and stable legal framework for foreign enterprises. Notably, the revisions to the Free Trade Zone System in 1970 and 2005 led to a substantial uptick in foreign investment. Likewise, FDI tends to increase alongside Colombia's GDP growth and oil production revenue intensification. Conversely, FDI is adversely affected by inflation and the volatility of international oil prices, as both factors indicate macroeconomic and oil market instability, posing a risk and threat to the profitability of international businesses.

The findings hold significant value for a diverse range of stakeholders. Policymakers can leverage these findings to formulate and develop economic policies that effectively attract FDI, diversifying its destination in sectors different from oil while fostering sustainable economic growth. Investors stand to gain from a nuanced comprehension of the factors influencing FDI in Colombia, enabling more informed decision-making concerning capital allocation and risk management. Furthermore, scholars and researchers will have access to comprehensive data and analysis, facilitating further exploration into FDI determinants and their implications for developing economies. In sum, this research offers a detailed perspective on the elements propelling FDI in Colombia, yielding noteworthy contributions to the field.

2. Theoretical Framework

Foreign Direct Investment

According to OCDE (2008), this is a form of cross-border investment undertaken by a resident of one economy (the direct investor) to establish a lasting interest in an enterprise (the direct investment enterprise) resident in an economy different from that of the direct investor. The direct investor's motivation is to establish a long-term strategic relationship with the direct investment enterprise to ensure a significant level of influence by the

investor in the management of the direct investment enterprise. Ownership of at least 10% of the voting power of the direct investment enterprise is considered sufficient evidence of such "lasting interest" (OCDE, 2008). The present author emphasizes that FDI differs from portfolio investment, through which investors typically do not expect to influence the management of the enterprise.

Authors such as Urbano, Jaramillo, Uribe, & Reyes (2008) raise concern about the multiple forms that FDI can be executed, establishing a series of mechanisms including *Joint Ventures*, where domestic and foreign companies collaborate to combine market knowledge and specialized skills, resulting in the creation of a new enterprise. Another approach is the Establishment and Operation of *Foreign Subsidiaries*. In this scenario, investors establish and manage their businesses in foreign markets, facilitating the expansion of their commercial operations. *Franchising* is also prevalent, where foreign entities grant brand rights, technology, and operational expertise to domestic partners, enabling them to operate under established brands. Additionally, *Acquisitions* are significant in FDI, with foreign investors purchasing total assets of existing companies, gaining control over their operations. Moreover, FDI often leads to *Mergers*, where two entities combine their assets to form a new company or where one entity absorbs the other, resulting in substantial changes in the business landscape (Urbano, Jaramillo, Uribe, & Reyes, 2008).

Besides, Johanson & Vahlne (1977) state that the mentioned above manners of FDI are part of the internationalization process of an enterprise. Firms typically expand internationally through incremental steps rather than large, sudden investments. Initially, firms enter a foreign market by exporting through an agent, then establish a sales subsidiary, and eventually, in some cases, begin local production. This gradual approach is influenced by the psychic distance between the home and host countries, which encompasses factors such as language, culture, and business practices that hinder information flow. These findings highlight a pattern where sales via an agent precede the establishment of sales subsidiaries, and local production is typically preceded by these subsidiaries. This stepwise internationalization strategy underscores the importance of minimizing risk and building market knowledge progressively (Johanson & Vahlne, 1977).

Transnational Enterprise and Eclectic Theory

Following Vera & Romero (2014) transnational enterprises can be defined as dynamic entities that transcend national borders to conduct business operations on a global scale. These corporations establish their presence in multiple countries, leveraging a variety of strategies, including foreign direct investments. Several factors drive the decision to expand internationally, each playing a crucial role in shaping the corporation's global strategy. These factors include access to vital resources such as raw materials and talent, the availability of cost-effective labor, favorable legal and regulatory frameworks, stable macroeconomic conditions, advantageous currency exchange rates, the size and growth potential of foreign markets, and strategic considerations aimed at gaining competitive advantages over rivals (Vera & Romero, 2014).

In this sense, Eclectic Theory of International Production developed by Dunning (1980) studies the determinants of the internationalization process of an enterprise, categorizing them into Ownership, Location, and Internalization advantages. The author states that, ownership advantages are crucial for firms to compete in foreign markets and include factors like access to productive knowledge, economies of scale and investment opportunities. Specific determinants such as the skilled labor ratio, R&D expenditure, and enterprise size highlight the importance of internal resources and capabilities (Dunning, 1980).

Meanwhile, location advantages pertain to the host country's conditions, such as lower production costs, energy and material costs, favorable tax rates, political stability, and manageable transfer costs like tariffs and transportation expenses. These factors collectively influence the attractiveness of a country for foreign investments (Dunning, 1980; Vera & Romero, 2014). This theoretical approach not only enhances the understanding of FDI dynamics but also offers a structured method to evaluate Colombia's competitiveness in attracting foreign capital.

Global Value Chain

According to CEPAL (2014) the Global Value Chain (GVC) refers to the interconnected series of activities involved in the design, production, marketing, distribution, and support of goods and services until they reach the final consumer. These activities can be carried out within a single firm or spread across multiple firms located in different countries, reflecting the increasingly global nature of production and trade. GVCs depict the fragmentation of production processes across different countries. They link geographically dispersed activities within a single industry, shedding light on evolving patterns of trade and production (CEPAL, 2014).

Sectors such as oil, minerals, and agricultural products play a significant role in Latin America's participation in GVCs, with the extraction of resources and production of commodities linking the country to global supply chains. The domestic oil industry is integrated into global markets through extraction, refining, and export activities, contributing to GVCs in the energy sector (CEPAL, 2014).

3. FDI in Colombia

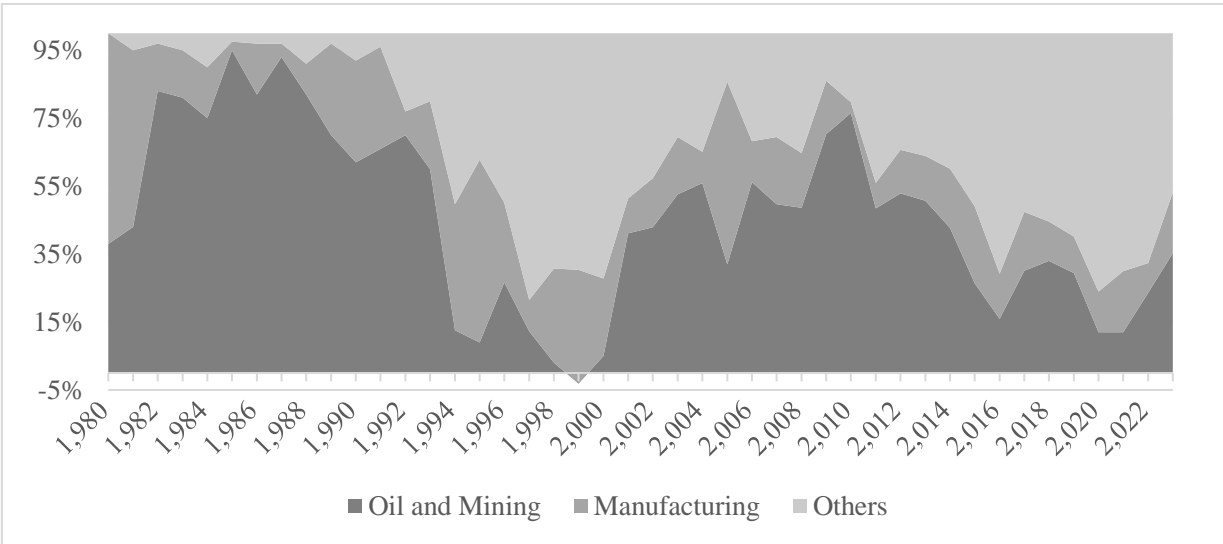
FDI leads to increases in employment, greater diversity of goods and services produced in the host country, dissemination of knowledge to improve production schemes, and distribution of capital in sectors with comparative advantages or potential for global integration through horizontal or vertical investment. In 1970, the country received USD 43 million, representing 3.42% of total FDI in the region. By 2022, this figure had risen to USD 17,182 million, accounting for 10.08% of FDI in Latin America (World Bank, 2024).

As a flow, FDI represents approximately 3.6% of Colombia's GDP during this period. This share appears low when considering that total Gross Fixed Capital Formation (GFCF) in Colombia accounted for 20.1% of GDP in 2010, indicating that the majority of capital investment is made by nationals. Additionally, Bernal indicates that 45.9% of FDI is directed towards the mining and oil extraction sectors, resulting in a limited contribution to the country's technological development and value-added (Bernal, 2012).

Historically, oil has been a major export commodity for Colombia, with its share in total exports experiencing substantial growth over the years. For instance, in 1926, the oil sector comprised 8.6% of Colombia's total exports. However, by 2023, this figure had surged to an impressive 31.82%, highlighting the sector's increasing prominence in Colombia's export profile (DANE, 2023). This remarkable growth underscores the strategic importance of the oil industry in driving Colombia's external trade dynamics and its overall economic development (Garavito, Iregui, & Ramírez, 2013).

The mentioned above authors have described the sectorial distribution of FDI in Colombia since 1980 to 2023, finding that the oil production has been primarily the main activity attracting FDI reaching more than 50% of the total investment in several years, however sectors such as manufacturing and services (included in others) have experienced serious increase in the attraction of FDI recently. In the current years there is a less concentrated distribution of funds among sectors, with oil and mining experiencing a reduction in their participation, the next graph illustrates this scenario:

Graph 1 - Sectorial Distribution of FDI in Colombia



Source: (Banco de la República de Colombia, 2023; Garavito, Iregui, & Ramírez, 2013)

During 1980 and 1992 FDI remained relatively low and was primarily focused on the oil and mining sectors, with some limited involvement in certain industrial activities. This trend aligns with a regulatory framework that restricted capital inflows, reflecting the prevalent import substitution development model. This model perceived foreign investment as a threat to national sovereignty, undermining the country's bargaining power and fostering monopolistic tendencies (Bernal, 2012).

After 1990 the increased influx of FDI into various sectors of the national economy was a consequence of more favorable regulations for external capital, aligned with the new development model. This model encompassed economic liberalization, privatization policies, and labor market flexibility, among other structural reforms. The new investment regime ensured equality between foreign and domestic investors, allowing unrestricted entry of FDI into most sectors of the economy, facilitating access to domestic credit, and removing restrictions on profit repatriation and capital refunds (Cerquera & Velásquez, 2020).

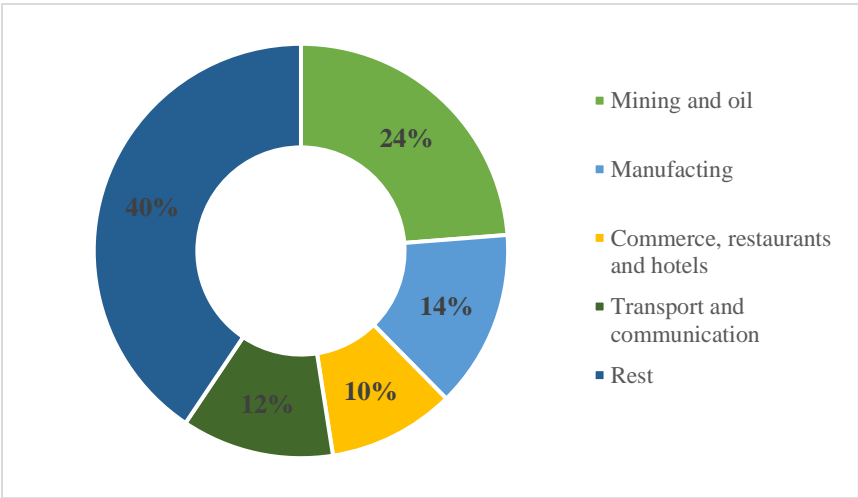
Diverse institutional efforts have been deployed towards the attraction of FDI, to illustrate, in March 1997, Bogotá Free Trade Zone was established in Fontibón, covering 64 hectares. This free trade zone has become a significant driver of economic growth, attracting around 400 companies and creating over 30,000 direct jobs, enhancing the capital's and the country's economic development. By offering tax and customs incentives, adapting to technological changes, and maintaining international quality standards, the Bogotá Free Trade Zone has created a competitive business ecosystem that integrates companies into global value chains. It has been recognized as one of the best free zones in the Americas by FDI Intelligence and the most important Free Trade Zone by its potential to export (Zona Franca de Bogotá, 2019; La República, 2018).

Furthermore, in 2005 there was another significant institutional event that affected positively FDI flow towards Colombia. With the creation of the Law 1004 of 2005 it was modified the special regime to stimulate investment and established provisions related to Free Trade Zones system. By streamlining bureaucratic hurdles and solidifying special

economic benefits within these zones, the law likely made Colombia a more attractive proposition for foreign companies. The clearer legal framework provided by the law could have instilled greater confidence in investors. This potentially led to a surge of foreign investment in FTZs, which in turn could have created jobs and boosted Colombian exports through the focus on export-oriented businesses within the zones (Función Pública, 2005).

In the recent decades, according to Banco de la República de Colombia (2023), from 2000 to 2015 the mining and petroleum industries notably benefited from FDI flows, accounting for 47% of the total accumulated investment during this period. Subsequently, as the boom in mineral and energy prices subsided, the significance of FDI inflows to this sector also declined. From that point onward, the FDI landscape illustrates a trend where activities involved in providing goods and services for the domestic market have gained increasing importance as recipients of such investments. Specifically, non-mining and non-energy economic activities captured 76% of the total capital inflows from this investment type during the cumulative period of 2015-2022 (Banco de la República de Colombia, 2023).

Graph 2 - FDI Accumulated 2015-2022



Source: (Banco de la República de Colombia, 2023)

4. Literature Review

- Vallejo's (2017) study represents an initial exploration into Foreign Direct Investment (FDI), leveraging a comprehensive database covering numerous companies across the country. It characterizes FDI-receiving firms, contrasting them with non-recipients, and conducts two econometric exercises to estimate the determinants of FDI probability and foreign ownership in companies. Findings suggest that larger firms with well-established structures, engaged in foreign trade and capital-intensive activities, tend to attract FDI. Moreover, the likelihood of FDI decreases for firms registered outside Bogotá and those operating in sectors other than petroleum. (Vallejo, 2017).
- In a study presented by Banco Interamericano de Desarrollo, it was found that the determinants influencing foreign direct investment (FDI) can be categorized into three primary domains: general economic conditions, political-institutional factors, and instruments designed to shape investment decisions. Within the realm of economic conditions, critical aspects encompass the scale and growth trajectory of the domestic market, the stability of macroeconomic indicators, the accessibility and cost-effectiveness of production factors such as natural resources and labor of various skill levels, the presence of economies of agglomeration fostering productivity enhancements, the development of transportation and communication infrastructure, and the technological and innovative capacities inherent within the local environment (García & López, 2020).
- According to Cerquera & Velásquez (2020) both FDI and local investment contribute positively to Colombia's economic growth, but the impact of FDI is not huge. On the flip side, when the economy grows, it tends to attract more FDI and FBC. The reason why FDI doesn't have a massive impact on economic growth could be because Colombia is not fully equipped to make the most of foreign investment yet. This could be explained because of unstable economy, underdeveloped financial markets, lack of investment in education and skills, and weak institutions. Colombia might still need to improve these areas to fully benefit from technology, knowledge, and other advantages that come with foreign investment (Cerquera & Velásquez, 2020).

- According to Urbano, Jaramillo, Uribe, & Reyes (2008) foreign businesses can make it easier for host countries to engage in global trade in two main ways: by helping local products and services reach international markets and by introducing new activities that capitalize on the host country's strengths. Boosting exports brings various benefits like gaining new technology, enjoying cost savings through larger production, improving competitiveness, and understanding market trends better. However, there are concerns about loss of control over economic decisions, especially in smaller economies. Large multinational companies, with their significant influence, could potentially shape laws and regulations to favor their own interests over those of the host country. (Urbano, Jaramillo, Uribe, & Reyes, 2008).
- Garavito, Iregui, & Ramírez (2013) state that the development of strategic policies to attract foreign direct investment (FDI) should focus not only on the quantity but also on the quality of the investment they induce. International principles governing FDI stress the need for institutional reforms to create a more attractive investment environment, both for domestic and foreign investors. This entails reducing uncertainty among stakeholders and thereby lowering transaction costs, which in turn provides additional location advantages beyond those inherent to the country. They conclude that, while FDI alone doesn't guarantee development, if it's long-term, productive, and technology-driven, it can serve as a significant source of economic dynamism. (Garavito, Iregui, & Ramírez, 2013).

5. Methodology

The econometric estimation includes the following variables that according to economic theory can influence FDI attraction in Colombia:

$\sigma GDP_{(-1)}$: The lagged GDP real growth rate represents the economic performance of the country in previous period. Sustained GDP real growth rates indicate a robust and expanding economy, which can be attractive to foreign investors looking for opportunities in growing markets. By using the lagged value, the model captures the momentum of economic growth, as investors often look at past performance to gauge future potential.

INF: The inflation rate is a critical macroeconomic indicator reflecting the stability of a country's currency and the purchasing power within the economy. High inflation can erode the real value of returns on investment, making a country less appealing to foreign investors. Conversely, low and stable inflation rates suggest a predictable economic environment, which can attract FDI by ensuring that investors' returns are not significantly diminished by rising prices.

Dummy1997: This variable captures the impact of the Free Trade Zone (FTZ) established in Bogotá in 1997. The approach of numerous international funds in the FTZ is an example of how institutional frameworks, such as trade policies and regulatory incentives, can create favorable conditions for foreign investors. These institutional measures reduce barriers to entry, provide financial benefits, and enhance logistical efficiency, making investment more attractive.

Dummy2005: The dummy variable for 2005 captures the interventions and reforms related to the Free Trade Zones System that positively impacted FDI inflows to Colombia. These interventions included policy changes, regulatory improvements, and enhanced incentives for foreign investors. Institutional frameworks that simplify procedures, ensure legal protections, and provide economic benefits directly contribute to increased FDI by creating a more predictable and supportive investment environment.

σP_{OIL} : The variation in international oil prices can significantly influence FDI, particularly in countries heavily reliant on oil exports or imports. High volatility in oil prices can create economic uncertainty, affecting the profitability of investments in oil-dependent sectors. Including this variable helps capture the impact of fluctuating oil prices on investment decisions, acknowledging that stable oil prices can create a more favorable environment for FDI in energy-intensive economies.

$\frac{OILRents}{GDP}$: A high proportion of oil rents indicates a heavy dependence on the oil sector. Including this variable allows the model to assess how the significance of the oil sector in the economy influences FDI considering that this sector has been the main receptor of FDI

in Colombia during the analyzed period. When an economy is heavily reliant on oil rents, it attracts foreign investors to the lucrative oil industry due to established infrastructure, abundant natural resources and high potential returns.

The proposed model is the following:

$$\frac{FDI}{GDP} = C + \beta_1 \sigma GDP_{(-1)} + \beta_2 INF + \beta_3 Dummy1997 + \beta_4 Dummy2005 + \beta_5 \sigma P_OIL + \beta_6 \frac{OILRents}{GDP} + \varepsilon_t$$

The description and source of each variable is presented in the next table:

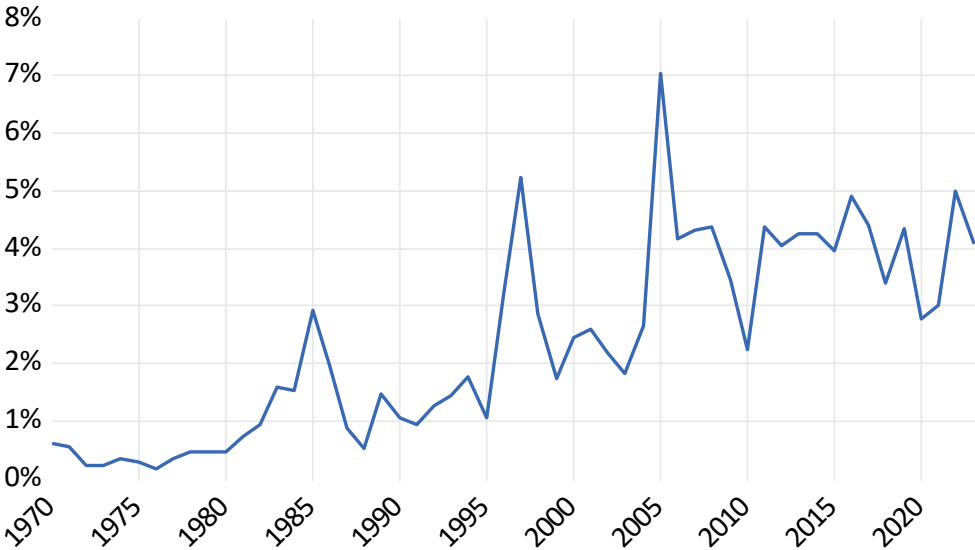
Table 1 – Description of Variables and Sources

Variable	Description	Source
$\frac{FDI}{GDP}$	The ratio of Foreign Direct Investment (FDI) to the Gross Domestic Product of Colombia.	World Bank https://datos.bancomundial.org/indicador/BX.KLT.DINV.WD.GD.ZS?locations=CO
$\sigma GDP_{(-1)}$	The real GDP growth rate in the previous period with constant prices of 2015. This variable captures the economic growth momentum from the prior period, indicating how the economy performed recently.	World Bank https://datos.bancomundial.org/indicador/NY.GDP.MKTP.KD.ZG?locations=CO
INF	This variable measures the percentage change in the general price level of goods and services during a specific period, reflecting the rate at which the purchasing power of the currency is eroded.	DANE https://www.dane.gov.co/index.php/estadisticas-por-tema/precios-y-costos/indice-de-precios-al-consumidor-ipc/ipc-historico

Dummy 1997	Institutional variable that captures the impact of the Free Trade Zone in Bogotá on FDI. Its strategic location, near major transport routes and tax incentives attracted nearly 400 enterprises.	Zona Franca de Bogotá https://zonafrancabogota.com/noticias/articulo/zonafrancabogota-cumple-22-anos-contribuyendo-al-desarrollo-del-pais/#:~:text=En%20marzo%20de%201997%20fue,la%20capital%20y%20del%20pa%C3%ADs.
Dummy 2005	This variable that captures the interventions related to Free Trade Zones System that occurred in that specific year, which positively impacts FDI inflows to Colombia.	Función Pública https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=18704
σP_{OIL}	This variable reflects the variation of the prevailing market price of crude oil in the global market compared to the previous year, which can influence Colombia's oil-related revenues and economic performance.	Elaborated based on U.S. Energy Information Administration https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=RCLC1&f=A
$\frac{OILRents}{GDP}$	Represents the proportion of oil rents relative to Colombia's GDP. It indicates the significance of oil revenue in the economy, reflecting economic dependency on the oil sector, government revenue sources and attractiveness for foreign investment in oil-related activities.	World Bank https://datos.bancomundial.org/indicador/NY.GDP.PETR.RT.ZS?locations=CO

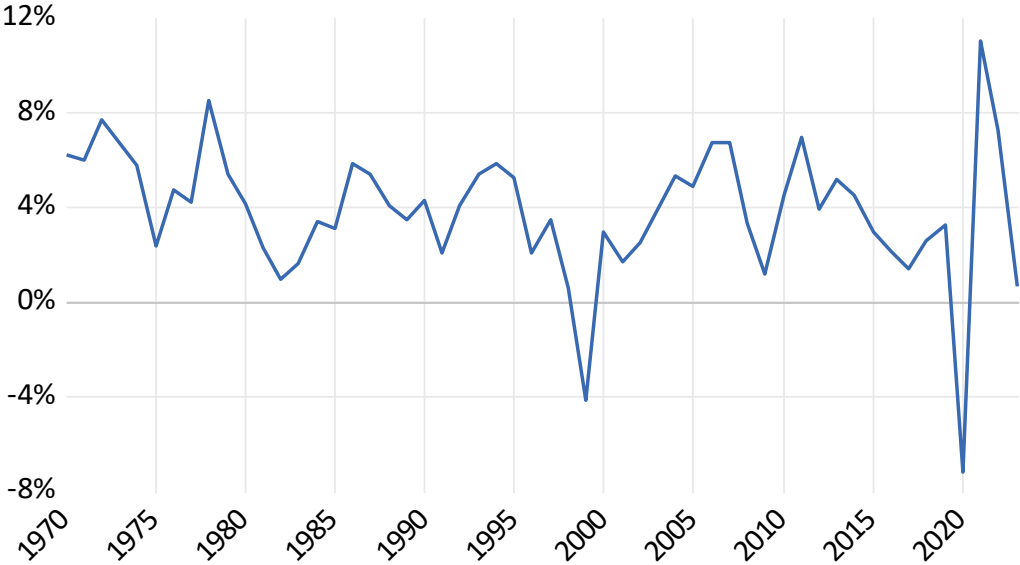
The respective graphs of each variable employed in the present econometric model are now presented. Below are presented the mean, median, maximum value, minimum value and variation through years. This will help comprehend the behaviour of the variables since 1970 until 2023 and preliminary tendency evaluations that will be tested.

Graph 3 – FDI as Proportion of Colombian GDP



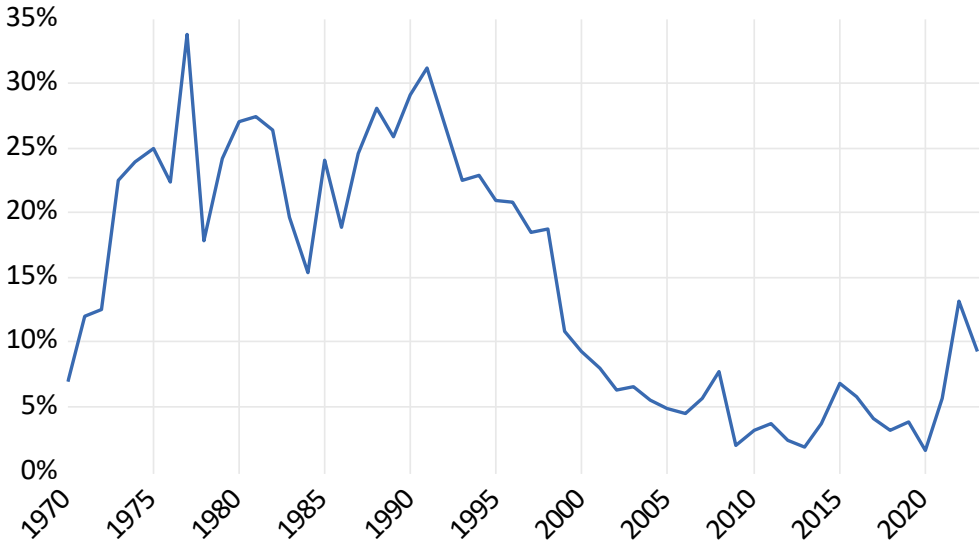
This graph depicts the different rates of FDI as a proportion of Colombian GDP during the analyzed period. Its average rate is 2.35%, median is 2.05%, maximum value is 7.02% in 2005 the year of the modification of the Free Trade Zone System, minimum value is 0.16% in 1976.

Graph 4 – Colombian Gross Domestic Product Real Growth Rates



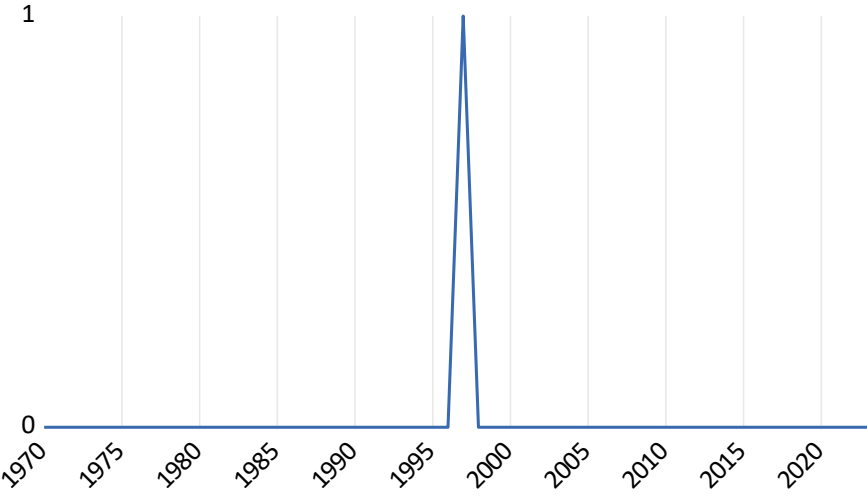
This graph depicts the different GDP Real Growth Rates in the Colombian economy during the analyzed period. Its average rate is 3.8%, median is 4.05%, maximum value is 11.01% in 2021 the year post-covid 19, minimum value is -7.25% in 2020 the year when Covid 19 pandemic occurred.

Graph 5 – Colombian Inflation Rate

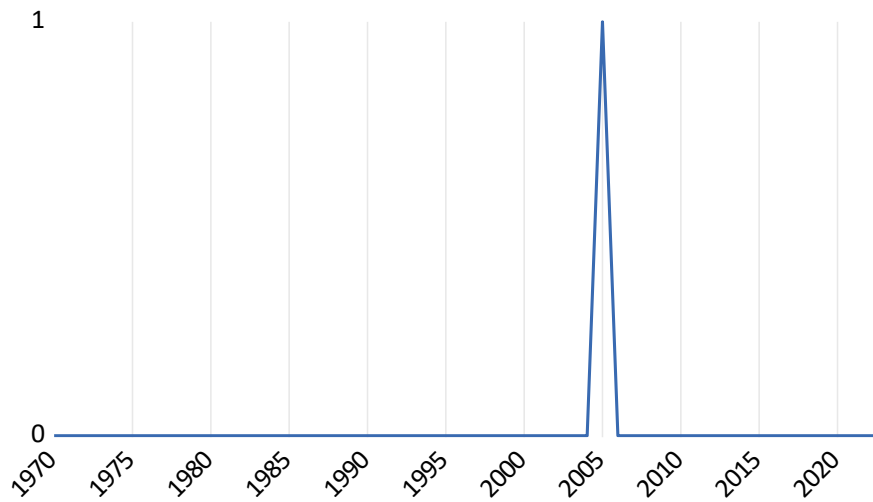


This graph depicts the different Inflation Rates during the analyzed period. Its average rate is 14.60%, median is 12.78%, maximum value is 33.80% in 1977, minimum value is 1.61% in 2020 the year when Covid 19 pandemic occurred.

Graph 6 – Dummy 1997

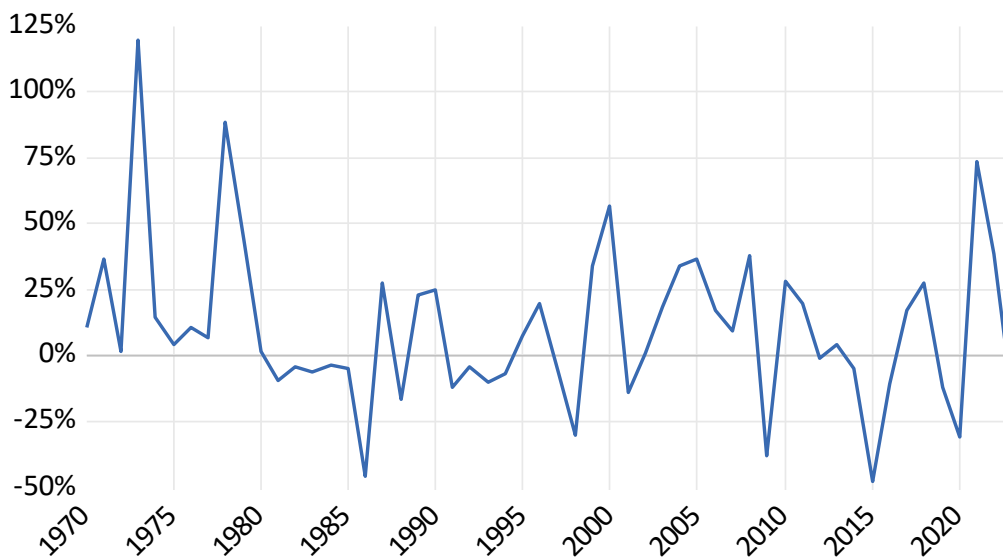


Graph 7 – Dummy 2005



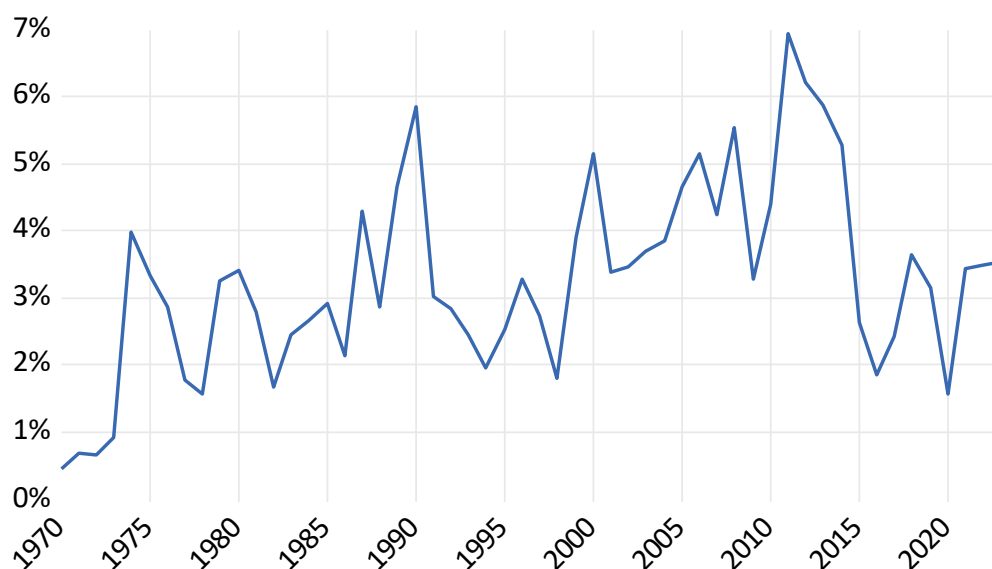
Graphs 6 and 7 represent the years when each event occurred, the establishment of Free Trade Zone in Bogotá (1997) and the modification of the Free Trade Zone System (2005) respectively.

Graph 8 – Variation Rate of Oil International Price



This graph depicts the different variation rates of oil international price during the analyzed period. Its average rate is 10.23%, median is 5.52%, maximum variation rate is 119.77% in 1973 and minimum variation rate is -47.48% in 2015.

Graph 9 – Proportion of Oil Rents in Colombian GDP



This graph depicts the different proportion rates of oil rents in Colombian GDP during the analyzed period. Its average rate is 3.268%, median is 3.260%, maximum value is 6.93% in 2011 and minimum value is 0.45% in 1970.

The descriptive statistics of each variable is below presented in Table 2:

Table 2 – Descriptive Statistics of the Variables

Variable	Mean	Median	Maximum	Minimum	Std. Dev.
$\frac{FDI}{GDP}$	2.35%	2.05%	7.02%	0.16%	1.68%
$\sigma GDP_{(-1)}$	3.84%	4.05%	11.01%	-7.25%	2.85%
<i>INF</i>	14.60%	12.78%	33.80%	1.61%	9.69%
σP_{OIL}	10.23%	5.52%	119.77%	-47.48%	30.70%
$\frac{OILRents}{GDP}$	3.268%	3.260%	6.93%	0.45%	1.43%

In the context of time series analysis, one of the critical steps is to ensure that the series under investigation do not exhibit a unit root, as this condition can lead to misleading and

unreliable regression results. To address this, the KPSS (Kwiatkowski-Phillips-Schmidt-Shin) test was employed.

The KPSS test operates by evaluating two competing hypotheses. The null hypothesis (H0) posits that the time series is stationary, this means that mean and variance are constant over time. Conversely, the alternative hypothesis (H1) suggests that the time series is not stationary, implying that its statistical properties change over time. In the context of time series analysis, accepting the null hypothesis (H0) is preferable, as it confirms that the series is stable and suitable for further analysis without the risk of spurious regressions. All variables are stationary since Hypothesis (H0) is accepted in each case.

Table 2 – Stationarity Test KPSS

Variable	Type of Test	Test Value	Critical Value (5%)
$\frac{FDI}{GDP}$	T, I	0.079382	0.146000
$\sigma GDP_{(-1)}$	I	0.226828	0.463000
<i>INF</i>	T, I	0.141601	0.146000
σP_{OIL}	I	0.193289	0.463000
$\frac{OILRents}{GDP}$	T, I	0.111842	0.146000

Note: I (Intercept) and T (Tendency)

Due the test value and critical value of the variable *INF* are relatively close, a new test is performed and the result is the same: the variable is stationary.

Table 3 – Augmented Dickey-Fuller Unit Root Test

Variable	Type of Test	Test Value	Critical Value (5%)
<i>INF</i>	T, I	-3.563518	-3.496960

Note: I (Intercept) and T (Tendency)

Here the Null Hypothesis (H1) is that the variable has a unit root, this is rejected and the Alternative Hypothesis (H0) is accepted, the variable does not have a unit root.

The results generated by the proposed model are presented in Table 3.

Table 4 – Model Estimates

Dependent Variable $\frac{FDI}{GDP}$	Ordinary Least Squares Method Covariance Matrix (HAC Newey West)
<i>C</i>	2.875305***
	(0.652987)
	[4.403308]
$\sigma GDP_{(-1)}$	0.064468
	(0.048547)
	[1.327938]
<i>INF</i>	-0.109996***
	(0.016415)
	[-6.700997]
<i>Dummy1997</i>	3.483874***
	(0.182296)
	[19.11109]
<i>Dummy2005</i>	3.500844***
	(0.309670)
	[11.30507]
σP_OIL	-0.009335**
	(0.003609)
	[-2.586367]
$\frac{OILRents}{GDP}$	0.254438**
	(0.116304)
	[2.187693]
R^2_{adj}	0.700142
F-Stat	0.785144
P(F-Stat)	0.000000
P(LM)	0.0531
P(B-P-G)	0.1472

Note: The marginal significance levels are as follows: (***) denotes 0.01%, (**) denotes 0.05% and (*) denotes 0.1%. Standard errors are shown in parentheses, and t-statistics are in brackets. F-stat indicates the F value of the regression's statistical significance.

To ensure the validity of these estimates, it was conducted several diagnostic tests on the error term. First, it was performed the B-P-G test to check for heteroscedasticity, which examines whether the variance of the errors is constant across observations. Second, it was executed the LM test to detect autocorrelation, which assesses whether the residuals from the model are correlated with one another. The results of these tests indicate that the model does not suffer from issues related to heteroscedasticity or autocorrelation, the estimates are reliable and are the following:

$$\frac{FDI}{GDP} = 2.875305 + 0 * \sigma GDP_{(-1)} - 0.109996 * INF + 3.483874 * Dummy1997 + 3.500844 * Dummy2005 - 0.009335 * \sigma P_{OIL} + 0.254438 * \frac{OILRents}{GDP} + \varepsilon_t$$

The intercept of the model (C), with a coefficient of 2.875305, is highly significant at the 0.01% level. This suggests that when all other variables are held constant, the baseline proportion of FDI to GDP is approximately 2.88%. This constant term captures the inherent attractiveness of the Colombian economy to foreign investors, independent of the other variables considered in the model.

Although the lagged GDP real growth rate was expected to have a significant positive impact on FDI, the regression results indicate that this variable is not statistically significant. This suggests that past economic growth alone does not robustly predict FDI inflows relative to GDP. One possible explanation is that foreign investors consider a multitude of factors beyond historical growth rates when making investment decisions. These factors might include political stability, regulatory frameworks, market size, and sector-specific opportunities. Moreover, short-term economic growth fluctuations might not provide a reliable signal of long-term economic stability or profitability. Therefore, while sustained economic performance is important, it is likely that investors weigh other elements more heavily when determining FDI commitments.

Inflation plays a critical role in shaping the attractiveness of a country for FDI. The negative coefficient of -0.109996 , significant at the 0.01% level, underscores the adverse impact of inflation on FDI as a proportion of GDP in Colombia. High inflation rates are often indicative of economic instability and uncertainty, factors that are highly undesirable for foreign investors seeking stable returns on their investments.

Additionally, high inflation tends to be associated with higher interest rates, as central banks may implement monetary tightening measures to curb inflationary pressures. These higher interest rates increase the cost of borrowing for businesses, reducing their profitability and potentially stifling investment activities. Moreover, increased costs of doing business, including higher wages and input costs, further diminish the attractiveness of the investment climate, particularly for foreign investors seeking competitive operational costs and favorable profit margins.

Furthermore, the highly significant positive coefficients of 3.483874 and 3.500844 for $Dummy_{1997}$ and $Dummy_{2005}$, respectively, both significant at the 0.01% level, indicate notable shifts in Colombia's attractiveness to foreign investors during these years. These variables effectively capture the structural changes and policy reforms enacted in 1997 and 2005, respectively, which aimed at bolstering the country's attractiveness to foreign investors. In 1997, the establishment of the Bogotá Free Trade Zone ushered in a new era of economic growth and investment opportunities, while in 2005, the enactment of Law 1004 streamlined bureaucratic processes and enhanced the regulatory framework, particularly within the Free Trade Zones System.

On the other hand, the negative coefficient associated with variations in the international price of oil -0.009335 and high significance at the 0.05% level illustrates that increased volatility in oil prices exerts a dampening effect on the dependent variable. When oil prices exhibit high volatility, it introduces a level of uncertainty and unpredictability into the economic environment that investors typically find unfavorable. This uncertainty manifests in various forms, including fluctuating revenue streams, increased investment risk and heightened macroeconomic instability. Consequently, Colombia may experience a decrease

in FDI inflows during periods of heightened oil price volatility, as investors adopt a cautious approach in allocating their resources.

Finally, the last variable ($\frac{OILRents}{GDP}$) with a positive coefficient (0.254438) and high significance at the 0.05% level, underscores foreign investors' perception of economies endowed with significant natural resources as favorable investment destinations. In this case, the stability and potential profitability associated with oil revenues serve as strong incentives for foreign capital inflows in the Colombian scenario. Countries with abundant oil resources are perceived as offering stable revenue streams, which can enhance investor confidence and provide a predictable investment environment. Additionally, the potential for high returns on investment in sectors related to oil extraction, transportation, and ancillary services further attracts foreign investors seeking profitable opportunities.

6. Conclusions

Within Colombia's economic landscape, the oil sector holds significant sway over FDI inflows, driven by the interplay of profitability, government incentives and broader market dynamics. The profitability of oil companies serves as a magnet for foreign investment, as multinational corporations are drawn to opportunities for lucrative returns in oil exploration, production and distribution. The allure of Colombia's oil reserves, coupled with favorable investment conditions, incentivizes foreign firms to allocate capital towards petroleum-related activities.

Conversely, an overreliance on extractive industries, such as mining and oil extraction, poses significant challenges to Colombia's economic diversification efforts. While these industries contribute substantial revenues in the short term, they often have limited local linkages and fail to stimulate broader economic development. Overemphasis on extractive sectors can hinder innovation, as resources and attention are diverted away from knowledge-intensive activities. Moreover, the boom-and-bust nature of commodity markets exposes the economy to volatility and undermines long-term stability. As a result,

Colombia risks falling into a pattern of sluggish growth and diminished productivity levels, impeding its ability to transition towards a more sustainable and resilient economic model.

Furthermore, propelling macroeconomic stability is a need in the FDI attraction, as evidenced by low inflation rates and robust real GDP growth. It is evident the negative effects associated with inflation rates on investor confidence and capital allocation decisions. High inflation rates erode the purchasing power, introduce uncertainty into the investment environment and deter foreign investors from committing resources to the country. On the contrary, low and stable inflation rates signal a conducive macroeconomic environment, instilling confidence in investors and enhancing Colombia's attractiveness as an investment destination. By fostering macroeconomic stability and promoting sustained economic growth, Colombia can bolster its appeal to foreign investors, spur capital inflows, and propel its path towards long-term prosperity and development.

Finally, the composition of FDI in Colombia plays a crucial role in shaping its economic development trajectory. Investments directed towards high-value-added sectors, such as technology, research and development (R&D) and advanced manufacturing are critical for propelling Colombia towards innovation-driven growth. Historically, this has not been the case, since much of Colombia's FDI has been concentrated in extractive industries, however, over the last decade there has been a notable shift towards more diversified areas. This shift indicates a growing interest in sectors beyond traditional extractive activities, which is a positive sign for the country's economic diversification, particularly towards commerce, finance, construction, manufacturing and services overall. This must be a priority for policymakers in order for Colombia to experience the positive externalities that follow FDI including technology transfer, human capital development, enhanced productivity, higher competitiveness and market access and integration to global value chains.

7. References

- Banco de la República de Colombia. (2023). *Inversión extranjera directa en sectores distintos a minería y petróleo*. Retrieved from [https://www.banrep.gov.co/es/blog/inversion-extranjera-directa-sectores-distintos-mineria-petroleo#:~:text=Tras%20una%20reducci%C3%B3n%20en%202020,del%20PIB%20\(Gr%C3%A1fico%201\)](https://www.banrep.gov.co/es/blog/inversion-extranjera-directa-sectores-distintos-mineria-petroleo#:~:text=Tras%20una%20reducci%C3%B3n%20en%202020,del%20PIB%20(Gr%C3%A1fico%201)).
- Bernal, H. (2012). *Inversión Extranjera Directa en Colombia en el siglo XX, énfasis en el sector petróleo*. Retrieved from <https://economia.uniandes.edu.co/sites/default/files/seminariocede//Inversion-Extranjera-Directa-en-Colombia-en-el-siglo-XX.pdf>
- CEPAL. (2014). Global value chains and world trade. Prospects and challenges for Latin America. *Economic Development*, 43-47.
- Cerquera, O., & Velásquez, L. (2020). Inversión extranjera directa y crecimiento económico en Colombia. *Revista Facultad de Ciencias Económicas: Investigación y Reflexión*.
- DANE. (2023). *Exportaciones*. Retrieved from <https://www.dane.gov.co/index.php/estadisticas-por-tema/comercio-internacional/exportaciones>
- Dunnig, J. H. (1980). Toward an Eclectic Theory of International Production: Some Empirical Tests. *Journal of International Business Studies*, Vol. 11, No. 1, 9-31.
- Función Pública. (2005). *Ley 1004 de 2005*. Retrieved from <https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=18704>
- Garavito, A., Iregui, A. M., & Ramírez, M. T. (2013). *Inversión extranjera directa en Colombia: Evolución, Indicadores y Determinantes por Firma*. Retrieved from <https://repositorio.banrep.gov.co/bitstream/handle/20.500.12134/6637/?sequence=2>
- García, P., & López, A. (2020). La Inversión Extranjera Directa. Definiciones, determinantes, impactos y políticas públicas. *Banco Interamericano de Desarrollo*.
- Johanson, J., & Vahlne, J. E. (1977). The Internationalization Process of the Firm: A Model of Knowledge Development and Increasing Foreign Market Commitments. *Journal of International Business Studies*, 23-32.
- La República. (2018). *Zonas Francas en Colombia generan 307.447 empleos*. Retrieved from <https://www.larepublica.co/especiales/el-regimen-de-zonas-francas/zonas-francas-en-colombia-generan-307-447-empleos-2727256>
- OCDE. (2008). OCDE Definición Marco de Inversión Extranjera Directa. *Cuarta Edición*, 4-10.

- Urbano, J., Jaramillo, L., Uribe, V., & Reyes, Y. (2008). *Inversión Extranjera en Colombia y su Relación con el PIB Colombiano*. Retrieved from https://repository.icesi.edu.co/biblioteca_digital/bitstream/10906/5488/1/1.pdf
- Vallejo, G. (2017). La Inversión Extranjera Directa en el marco de la economía global. *La inversión extranjera directa: estudio de casos y lecciones aprendidas para su aplicación en Colombia*, 11-45. Retrieved from <https://repository.ucatolica.edu.co/entities/publication/5921525d-1cb9-4892-bfb8-952d0e1d3bee>
- Vera, M., & Romero, A. (2014). Las empresas transnacionales y los países en desarrollo. *Revista de la Facultad de Ciencias. Universidad de Nariño*, 58-89.
- World Bank. (2024). *Inversión extranjera directa, entrada neta de capital (balanza de pagos, US\$ a precios actuales) - Latin America & Caribbean, Colombia*. Retrieved from <https://datos.bancomundial.org/indicador/BX.KLT.DINV.CD.WD?locations=ZJ-CO>
- Zona Franca de Bogotá. (2019). *La Zona Franca de Bogotá cumple 22 años contribuyendo al desarrollo del país*. Retrieved from <https://zonafrancabogota.com/noticias/articulo/zonafrancabogota-cumple-22-anos-contribuyendo-al-desarrollo-del-pais/#:~:text=En%20marzo%20de%201997%20fue,la%20capital%20y%20del%20pa%C3%ADs.>