

UNIVERSIDADE FEDERAL DE SÃO CARLOS
CENTRO DE CIÊNCIAS EXATAS E DE TECNOLOGIA
PROGRAMA DE PÓS-GRADUAÇÃO EM ENGENHARIA DE PRODUÇÃO



Two essays on Foreign Direct Investment and Financial Market Development

DIEGO SCARPA DE MELLO

DISSERTAÇÃO DE MESTRADO

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Defesa apresentada ao Programa de Pós-Graduação em Engenharia de Produção da Universidade Federal de São Carlos (UFSCar), como parte dos requisitos para obtenção do título de mestre em Engenharia de Produção.

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Dedicated to my family

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“I’ve found that nothing in life is worthwhile unless you take risks, nothing!”

Denzel Washington

ABSTRACT

Current literature states that Foreign Direct Investments (FDI) is able to induce regional entrepreneurship in the host country. However, few studies have evaluated the interplay among FDI and Financial Market Development (FMD) for the creation of firms within the scope of emerging economies. Thus, we present this study in two parts: (i) through a systematic literature review we analyze the relationship between FDI and FMD, to understand the evolution of scientific publications on the subject, in addition to presenting the main results found and suggestions for future work, (ii) by employing a unique database of FDI in Brazil between 2010 and 2014, our studies aim to shed light on aforementioned issue. We analyzed two relevant dimensions of the financial market: credit availability (depth) and banking branches (access) in the same period. Our findings indicate that regions that combine FDI, depth, and access present a higher, positive impact on the number of new firms, which is a relevant policy implication to encourage local business in emerging economies.

Keywords: Foreign Direct Investment, Financial Market Development, Firm Creation

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Introduction: Foreign Direct Investment and Financial Market Development in Brazil

Capital is a vital source for the development of countries. In particular, FDI can generate great benefits to host countries in terms of efficiency in resource allocation, technology transfer, risk diversification, incentives for financial market reforms in addition to others factors that contribute to economic development (DINÇ; GOKMEN, 2019).

In recent decades, Brazil has become the main recipient of FDI in Latin America (World Bank, 2021). This is partly motivated by the high volume of investments that the manufacturing industry started to receive, particularly in the automobile sector. It is estimated that between 1996 and 2001, the world automobile industry invested more than US\$20 billion in Brazil (DOCTOR, 2007), which consequently began to change the local manufacturing ecosystem, mainly in terms of productivity and efficiency (ALVES FILHO , NOGUEIRA and BENTO, 2014).

It is estimated that of the 500 largest multinationals in the world, 400 have invested in Brazil, therefore institutional and macroeconomic reforms such as “Plano Real”, privatization of state-owned companies and implementation of the free trade area in Mercosur are vital for attracting FDI to Brazil as well as becoming a fundamental part of the operating strategy for these companies (BAER; RANGEL, 2001).

Recent studies show that, in Brazil, certain levels of FDI are necessary for local companies to start capturing positive spillover effects in the presence of a low technological gap (MORALLES; MORENO, 2020). In this sense, FDI flows not only finance the operations of multinationals, but also act as a source of technology capable of being transferred to local companies that could end up increasing their levels of efficiency and productivity, which, in short, modify the entire regional ecosystem.

Figure 1 shows both the evolution of the FDI flow destined for Brazil and the accumulated credit balance between the periods 2000 and 2019. For comparison purposes, it is important to highlight that the Gross Domestic Product (GDP) of Brazil in 2020 reached USD 1.4 trillion (IBGE, 2020), that is, the credit balance came to represent 44% of GDP while FDI represented 5% in the same year. These numbers reinforce the importance of such variables in the Brazilian economy.

FDI and Balance of Credit (2000 - 2019) - USD billion

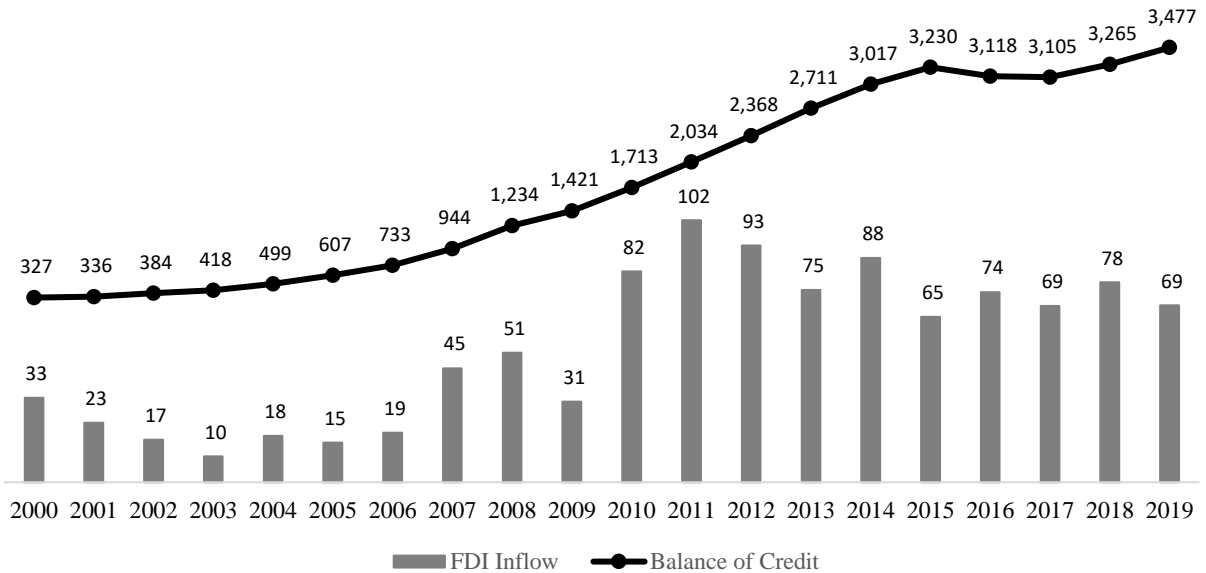


Figure 1 – FDI and Balance of Credit from 2000 to 2019
Source: World Bank and Brazilian Central Bank

The growth in the credit stock represents a great advance for the Brazilian financial market due to its importance for the proper function of economic activity (ALFARO et al., 2004, SOUMARÉ, 2015). In a similar window of time, there was a growth in the number of bank branches in Brazil, an important factor to measure the development of the financial market through financial inclusion (SVIRYDZENKA, 2016) which, presents itself as a relevant factor for the reduction of poverty and inequality in Brazil (POLLONI-SILVA; MORALLES; NETO ,2021).

Number of Bank Branches in Brazil (2005 - 2020) - Thousand

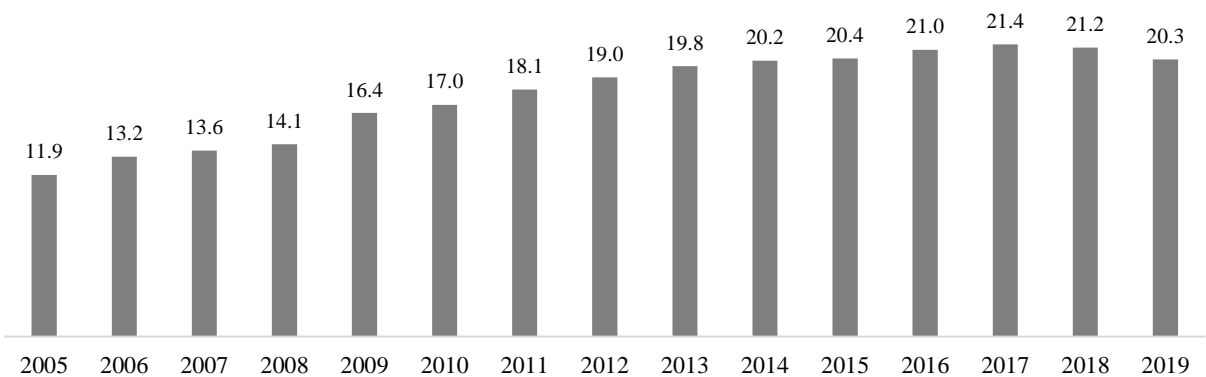


Figure 2 – Number of Bank Branches in Brazil from 2005 to 2000
Source: Brazilian Central Bank

To summarize, the relevant financial volume involving FDI and credit balance in Brazil, as well as the positive economic impacts caused by such variables, suggest that further research on the subject should be pursued in Brazil in order to understand their behavior. In this sense, the current work seeks to contribute to the literature with a systematic literature review punctuating the main relationships in FDI and the development of the financial market (FMD) as well as an article using a database with 640 Brazilian municipalities that analyzes the relationship between FDI, FMD and the creation of new companies.

Article I: FDI and Financial Market Development: a systematic literature review

1. INTRODUÇÃO

The increased volume of FDI was observed in emerging countries after several crises that occurred in the 1980s and the turbulent moments that these economies experienced during the 1990s (ALFARO et al., 2004). This is mainly due to trade opening, which expands world trade, causing significant increase in the volume of FDI in both developed and developing countries (SUNG; LAPAN, 2000).

Several studies have shown the relationship between economic growth and FDI, as well as the indirect effects that such investments cause in the economy, known as the spillover effect (ANWAR; NGUYEN, 2010; VOJTOVI, 2019). However, positive impacts of FDI on economic growth depend on the local conditions of countries receiving investments, for example countries with high absorption capacity and better economic policies are subject to greater FDI flows (SAMAD; AKHTARUZZAMAN, 2014).

Given the complexity and competitiveness of the global market, the exchange of information between corporations and their subsidiaries has become a critical point, especially considering the absorption capacity of subsidiaries. Headquarters, often located in developed countries, with greater capacity for productive and technical knowledge, transfer technologies faster and develop appropriate mechanisms in subsidiaries so that they become productive, and, consequently, more competitive (CENAMOR et al., 2017).

According to Sellarro et al. (2014), public policy makers should encourage the presence of FDI in order to foster economic growth in host countries. For example, the presence of foreign capital in Spain has generated significant technological advances in industries in the manufacturing sector. Such advances were a reflection of the positive spillovers and absorption capacity of local companies that started to deal with new technologies and more qualified employees.

In the financial sphere, Alfaro et al. (2004) examined the importance of local financial institutions in channeling FDI contributions to economic growth and identified that countries with less developed financial markets were not able to absorb the full potential of FDI's positive effects. In addition, it was possible to identify that the capital factor (physical or human capital) was not presented as the main channel through which countries benefit from FDI effects, and that countries

with more developed financial markets obtained greater FDI gains through improvements in Total Factor Productivity (TFP) (ALFARO; KALEMLI-OZCAN; SAYEK, 2009).

Analyzing FDI flows to Saudi Arabia in the last decade, it was verified that the Financial Market Development (FMD) had a positive impact on the country's economic growth, being considered one of the main determinants of FDI (MAHMOOD; ALKHATEEB, 2018) . Such effects may reflect the increased probability that companies involved in FDI activities will open their capital on local stock exchanges, and even influence companies and markets to become closer to regulations, making the capital market more developed (SOUMARÉ , 2015).

Azman-Saini et al. (2010) verified that spillover effects can be highlighted in an economy only after the development of local financial markets surpasses certain levels of maturity. This is due to the fact that developed markets promote access to external financing and indirectly support a country's economic activity, ensuring that the capacity of local firms is not impaired as soon as credit is allocated to multinational companies (DESBORDES ; WEI, 2017).

In fact, when countries face crises, asset prices lose value, especially if there is low availability of local credit (WEITZEL; KLING; GERRITSEN, 2014). The fire-sale FDI theory states that during crisis, assets are bought at low prices by international investors. However, no evidence was found that the number of acquisitions increased during periods of crisis or that foreign acquisitions are resold more often than domestic acquisitions (ALQUIST; MUKHERJEE; TESAR, 2013). In addition, such periods have shown to generate negative effects on FDI and Merge and Acquisition (M&A) flows (STODDARD; NOY, 2015).

Given the above, this article aims to analyze how FDI and FMD has contributed to the economic development through a systematic review of the literature. The systematic literature review will initially allow us to understand the evolution of scientific publications on the subject, in addition to presenting the main results found and suggestions for future work.

This dissertation will present in section 2 the theoretical framework on foreign direct investment and development of financial markets as well as their relationship with economic growth, section 3 presents the research methods adopted, section 4 presents the results of the systematic literature review and section 5 presents the final considerations of the work.

2. THEORETICAL FRAMEWORK

In this section, the concepts of Foreign Direct Investment and Financial Market Development will be presented, in addition to their relationship with economic growth.

2.1. Foreign Direct Investment and spillover effect

Several studies have demonstrated the importance of FDI's positive effects on the development of countries receiving foreign investments. In addition to direct financing from its suppliers, FDI can be a valuable source of technology and know-how, while fostering connection with local firms in order to generate economic growth. Thus, both developed and developing countries have constantly offered incentives for foreign firms to move their productive operations to their countries (ALFARO; KALEMLI-OZCAN; SAYEK, 2009).

According to Arbeláez and Ruiz (2013), the opening of world economies not only led to the expansion of trade, but also to an increase in FDI both in developed and developing countries, particularly in Latin America. Furthermore, this increase tends to continue due to the expansion strategy of multinational companies into new markets in search of more profitable opportunities in the international market.

However, developing countries do not have the know-how to exploit the benefits of natural resources, due to the lack of skilled labor, lack of physical capital and adequate technologies for manufacturing. In this sense, FDI can offer significant advantages, mainly by providing the recipient country with stable flows of financial funds, increased production capacity, job creation and incentives for local and international trade (IAMSIRAROJ; ULUBAŞOĞLU, 2015).

Among developed countries, Branstetter (2006) identified that the subsidiaries of Japanese companies, located in the United States, configured a channel through which investing companies and local companies benefit from spillover effects, especially through Research and Development (R&D) and from the installation industrial centers, which aim to absorb knowledge of local markets.

When multinationals establish themselves outside their countries of origin, they take with them technologies capable of competing equally with local companies that have knowledge of the regional market, such as consumer preferences and business practices. Thus, causing imbalances in the market, forcing local companies to take actions that protect their market share and profits. Such changes are reflections of different types of spillover effects such as increased productivity

in local firms and technology transfer, which occur mainly due to increased competition and employee turnover (BLOMSTRO, 1999).

In this sense, governments in developing countries try to encourage increase in FDI, since positive spillover effects of these investments increase the productivity and efficiency of domestic companies, given the transfer of technology, which is conditioned to the absorption capacity of the companies (KIM, 2015).

Absorption capacity (ABC) was introduced by Wesley Cohen and Daniel Levinthal in 1989 and gained attention in academic research. The term refers to one of the main learning processes of companies: the ability to identify, assimilate and explore knowledge of the environment in which it operates. Over time, this skill has become essential for a company's survival in the long term, since developing and maintaining absorptive capacity allows companies to reinvent themselves over time (LANE; KOKA; PATHAK, 2006).

Regarding the relationship between FDI and increased productivity, Girma (2005) analyzed a group of British industries and identified that TFP benefited from the increase in FDI through ABC up to a certain level of investment, after investments exceeded a certain volume, the company no longer absorbed all the available knowledge. Additionally, the author identified that a minimum level of absorptive capacity was necessary so that the spillover effect would not be negative.

Given the above, a connection can be made that technology transfer and increased productivity strongly contribute to the occurrence of positive spillovers. Authors such as Zhang et al. (2010) argue that investment coming from different countries can increase the productivity of local industries by providing greater exposure to new technologies and different management techniques, and that companies with intermediate levels of knowledge have greater absorption capacity compared to small companies and multinationals.

Also, in the financial market, several studies analyze the effects caused in the real sector. Alfaro et al. (2010) identified that developed financial markets allow FDI to promote economic growth, especially in host countries, enabling better communication between multinationals and national companies and, consequently, generating a positive spillover to the rest of the economy.

However, a study by Chen (2011) states that several developing countries have faced an increase in income inequality during the globalization process, as is the case of China, where it was possible to identify changes in wage levels due to the presence of FDI. While acknowledging the importance of FDI for economic growth, the author noted that the increased flow of FDI has

worsened the wage gap in the Chinese economy, worsening income inequality.

In this sense, it is noted that the change in wage levels may be a reflection of the competitiveness between local and multinational companies. Brandt and Thun (2010) corroborate this point in their studies, showing that while Chinese domestic industries are increasing their production capacities through technology, multinationals compete to increase market share, through the reduction of product prices, which causes imbalances in local markets.

2.2. Financial Market Development

Regarding the factors that determined FDI flows in recent years, it is clear that FMD and market size were the main variables that influenced the inflow of funds in Malaysia between 1991 and 2010 (SOLOMON; ISLAM; BAKAR, 2015) and that FMD plays a moderator role between the impacts of FDI and economic growth, since the positive effects become evident in an economy only when financial markets exceed certain levels of development (AZMAN-SAINI; LAW; AHMAD, 2010).

Analyzing the causal relationship between FDI and FMD on the African continent, a positive bidirectional relationship between the two variables was evidenced, that is, while FMD facilitates the entry of investments in the country, FDI is attracted by more developed financial markets, and, in addition, a positive impact of FMD on the economic growth of countries was noted, possibly due to the financial reforms that took place on the continent (OTCHERE; SOUMARÉ; YOUROUGOU, 2016). However, despite the abundance of cheap labor, minerals and natural resources such as oil, the African continent is not able to attract or capture the maximum benefits that FDI can provide due to the still underdeveloped financial markets (MAKONI, 2014).

Such effects can be seen in China, despite the large volume of FDI that the country showed between 1999 and 2006, such investments were not accompanied by strong economic growth as found in several other countries, since the weak financial intermediation inhibit the potential benefits of FDI for economic growth (XU, 2012).

Greater FDI flows increase the probability that national companies involved in such investments will open their capital on local stock exchanges and end up influencing companies and markets to come closer to regulations, especially with regards to investor protection and better market practices, thus making the most developed stock markets. It is in this sense that

governments are suggested to encourage the receipt of foreign investment (SOUMARÉ; TCHANA TCHANA, 2015).

In short, the lack of development of local financial markets can limit the benefits of FDI, since such deficiencies can mean that a country is unable to deal with short-term capital flows and that long-term flows also end up being harmed (ALFARO et al., 2004) due to the lack of economies of scale and low levels of liquidity that guarantee the safety of long-term investments (OTCHERE; SOUMARÉ; YOUROUGOU, 2016).

3. METHOD

In this item, the methodological procedures used to conduct the research will be presented.

3.1. Procedure for Systematic Literature Review

To conduct this study, the research method called Systematic Literature Review (SLR) was chosen. In Operation Management, SLR must follow a clear guideline to ensure more transparency, reliability and reproducibility of the results found (THOMÉ; SCAVARDA; SCAVARDA, 2016). For Tranfield, Denyer and Smart (2003), the aim of systematic review is to provide a broad understanding through theoretical synthesis between areas and subfields, since the systematic review process increases methodological rigor among academics and also helps to develop credible knowledge bases generated through a wide variety of studies.

This research had three main stages as proposed by Tranfield, Denyer and Smart (2003) and foreseen by (SCHMEISSER, 2013):

(1) Planning the review with a precise definition of the objective and research question that will be addressed;

(2) Conducting a rigorous review identifying the relevance of the literature, using explicit and reproducible criteria for the inclusion and exclusion of articles, and supported by an assessment of the quality of the studies reviewed and the importance of the findings;

(3) Communication and dissemination of results.

The databases chosen to search for publications were the Web of Science and Scopus. Subsequently, a sophisticated search algorithm consisting of two axes and Boolean operators was

applied, the first axis being composed, in the TITLE field, by the strings "FDI" or "Foreign Direct Investment*" representing the international investment flow, and the second axis, referring to the development of financial markets, was composed, in the TITLE-ABS-KEY field, by the string "Financial Market Development". Thus, the search for publications was performed in both databases as follows (TITLE ("FDI" OR "Foreign Direct Investment*") AND TITLE-ABS-KEY ("Financial Market Development")).

The first visit to the databases took place on May 30, 2019. The search result was exported in BibTeX format and imported into the Mendeley 1.19.4 software, where the repeated publications were automatically merged and later the software helped in managing the articles so that titles and abstracts could be read. It is noteworthy that throughout the research process, all publications were in the "paper" format, thus, it was not necessary to exclude any publication given the type of document. See Figure 3 for a breakdown of the entire article selection and analysis process.

After the complete reading of the 23 selected articles, 4 articles were excluded, leaving 19 articles to be part of the complete analysis. For acceptance of the articles, only empirical articles that analyzed in a macroeconomic way the relationship between the variables FDI, FDM, economic growth and the possible spillover effects that may occur were considered.

A second visit to the databases took place on June 13, 2019 and the articles selected for the final review were exported in BibTeX and Plain Text (TXT) formats.

Later, the files were used in RStudio 1.1.1335 and VOSviewer 1.6.11 software for analysis and creation of networks. The first software was used for bibliometric analysis of final articles through the Bibliometrix package. According to Aria and Cucurullo (2017), scientific mapping has become an essential activity for all areas of research and few specialized software are capable of applying more advanced analysis for this type of content. Thus, Bibliometrix is an open tool developed in R for the execution and understanding of scientific maps in a flexible and integrated way. To analyze the network of interactions between the articles, the VOSviewer was used, and, finally, the Microsoft Excel 2010 software was used for the development of tables and graphs.

For the purpose of updating the SLR, on August 24, 2021, there was a third query to the databases, where all procedures were redone in order to find new publications. However, no other publication fit the systematization used in this research.

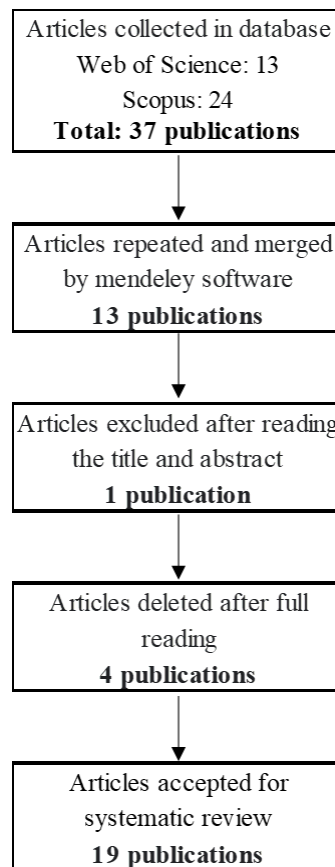


Figure 3 – Search process for systematic analysis
Source: elaborated by the author

4. RESULTS

This section presents the result of the systematic literature review. In order to answer the question previously defined, the results were separated into two steps. In the first stage, the evolution of scientific research supported by bibliometric analysis will be presented. In the second stage, a literature review will be presented, pointing out the main results found by the articles, as well as suggestions for future work.

4.1. Evolution of scientific production

To understand the behavior of published articles and describe the scientific panorama of the topic analyzed - Foreign Direct Investment and Financial Market Development - a bibliometric analysis was developed in order to investigate the evolution in the number of publications along the topic. Additionally, the analysis provided a bibliometric summary of the sorted and selected articles, as well as the most relevant publications and their respective keywords.

Figure 4 illustrates the evolution of scientific publications of the final articles selected for analysis.

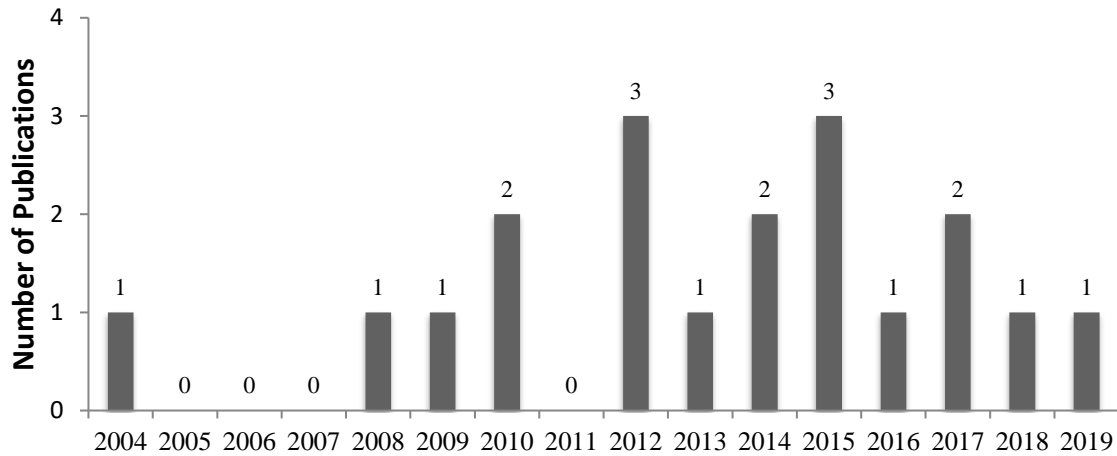


Figura 4 – Number of Publications
Source: elaborated by the author

Despite the importance of the creation of consistent public policies, generation of economic growth, in addition to several other positive effects that such investments can bring to a society, this subject is still little explored. The period between 2012 and 2015 are the years that generated the most publications.

Table 1 presents a bibliometric summary of the articles selected for analysis. In general, it can be seen that the articles were published between 2004 and 2019, and that all articles were published in different journals, which reflects the interest of the topic in different areas. In addition, each article has an average of 52 citations and 37 authors were involved in the research.

Table 1 - Bibliometric summary of articles selected for analysis (continued)

Item	Description
Publications	19
Source (<i>Journals</i>)	19
Key words	67
Period	2004 - 2019
Average citations per article	52,16
Authors	37
Articles by author	0,5114
Authors by article	1,95

Source: elaborated by the author

Table 2 shows the ten main publications that contributed to the development of the theme according to the number of citations. Within the table, there is a significant difference in the number of citations between the most cited publication and the other publications, which is the work of Alfaro et al. (2010) with 656 citations. This work was a pioneer in identifying the importance of financial markets for economic growth. Overall, the authors investigated the relationship between FDI and economic growth, and were able to identify which countries with more developed financial markets were more exposed to economic growth given the increase in investment flows. Regarding the other publications, all present studies that analyze the relationship between the two study focus variables.

Table 2 - Ten most cited publications (continued)

Position	Reference	Source (<i>Journal</i>)	Title	Citations	Average Citation (year)
1	Alfaro et al. (2004)	<i>Journal of International Economics</i>	<i>FDI and economic growth: the role of local financial markets</i>	656	43,73
2	Herzer et al. (2008)	<i>Economic Modelling</i>	<i>In search of FDI-led growth in developing countries: The way forward</i>	114	10,36
3	Anwar e Nguyen (2010)	<i>Asia Pacific Business Review</i>	<i>Foreign direct investment and economic growth in Vietnam</i>	76	8,44
4	Azman-Saini et al.(2010)	<i>Economics Letters</i>	<i>FDI and economic growth: New evidence on the role of financial markets</i>	74	8,22
5	Agbloyor et al. (2013)	<i>Research in International Business and Finance</i>	<i>Exploring the causality links between financial markets and foreign direct investment in Africa</i>	23	3,83
6	Al Nasser e Gomez (2009)	<i>International Research Journal of Finance and Economics</i>	<i>Do well-functioning financial systems affect the FDI flows to latin america?</i>	16	1,60
7	Otchere et al. (2016)	<i>World Economy</i>	<i>FDI and Financial Market Development in Africa</i>	7	2,33
8	Soumaré (2015)	<i>Applied Economics</i>	<i>Does FDI improve economic development in North African countries?</i>	5	1,25
9	Soumaré e Tchana (2015)	<i>World Bank Economic Review</i>	<i>Causality and external validity: Causality between FDI and financial market development: Evidence from emerging markets</i>	4	1,00

10	Xu (2012)	<i>China Finance Review International</i>	<i>How does financial system efficiency affect the growth impact of FDI in China?: Evidence from provincial data 1999-2006</i>	4	0,57
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Source: elaborated by the author

For the construction of the keyword co-occurrence network, all 67 keywords used by the authors in their publications were included. In Figure 5, it is possible to verify that the main keywords used in the construction of the theme are “Foreign Direct Investment”, “Economic Growth”, “FDI”, “Financial Markets”, “Economic Development” and “Financial Development”. Such interactions demonstrate the strong relationship of FDI both with economic growth and with the development of financial markets.

In Figure 6, it is possible to verify the occurrence of co-citations of the 19 articles analyzed and to identify the main works that contributed to the theme. Despite the large amount of articles presented, two articles were found to be the central point among them all, which are: Hermes et al. (2003) and King and Levine (1993).

In summary, Hermes et al. (2003) showed that FDI can provide economic growth in countries, despite depending on the circumstances of each host country. In fact, one of the main circumstances for these effects to be evidenced is the development of markets and local financial institutions (KING; LEVINE, 1993).

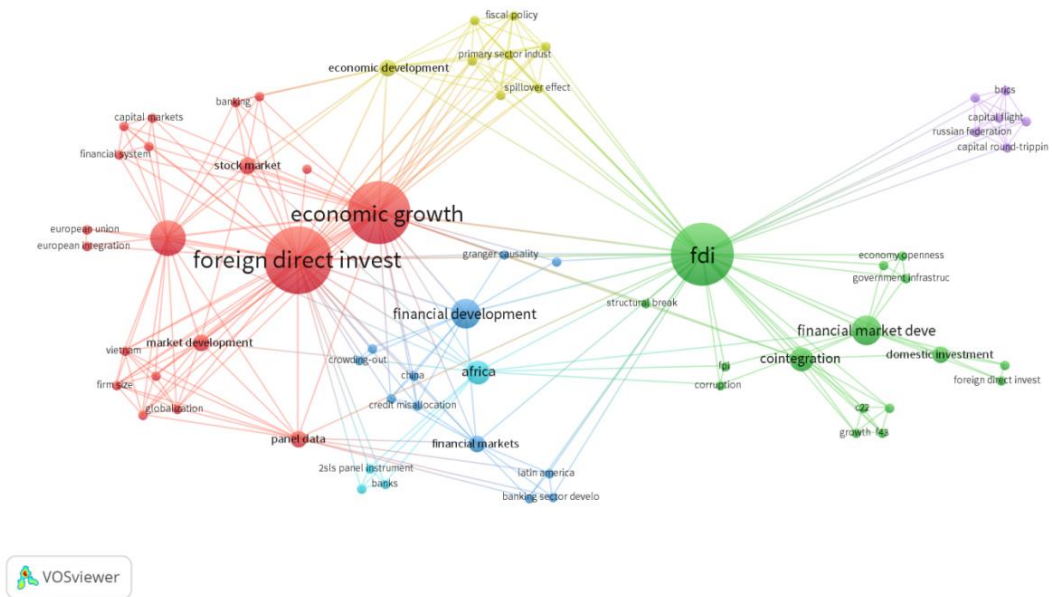


Figure 5 – Keyword co-occurrence network
Source: elaborated by the author via VOSviewer.

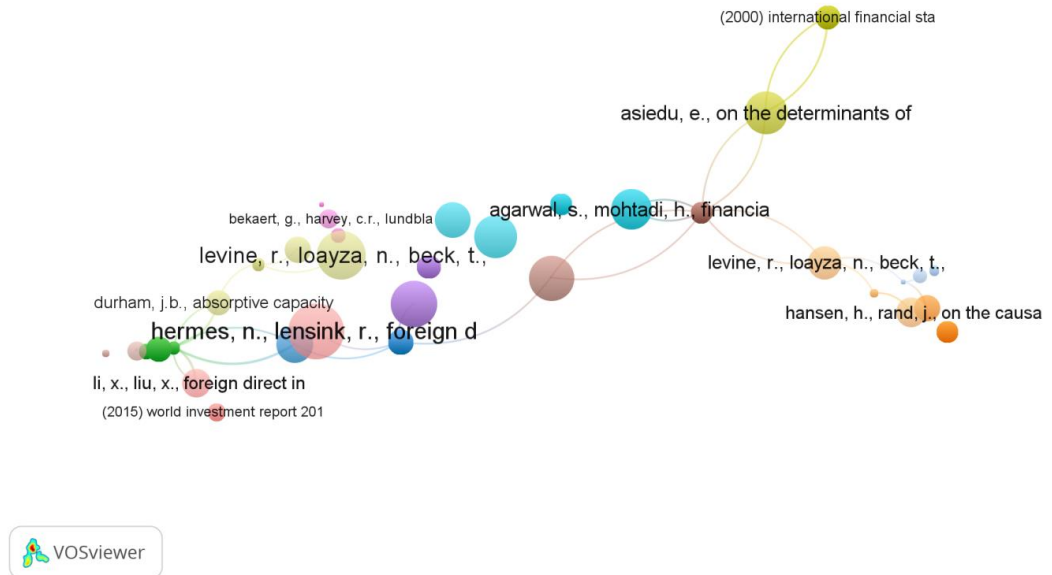


Figure 6 - Co-citation network
Source: elaborated by the author via VOSviewer.

4.2. Literature Review

After a complete reading of the 19 publications resulting from the systematic review, the most relevant information from each publication was systematized and organized by (i) author(s)/year; (ii) objective, (iii) variables and (iv) main results, as shown in Table 3.

Table 3 – Results found in the systematic review

Author/Year	Objective	Variables	Results
Vojtovič (2019)	Examine the links between FDI and economic growth in 11 Central and Eastern European (CEE) countries.	GDP; FDI; proxy for the development of the financial market from the banking sector or the stock market; and, control variables.	The results suggest that the relative size of economic growth indicators affects the FDI of ECO countries. This result is valid for contemporary and outdated relationships. FDI has an impact on economic growth, and this effect is strengthened by the development of the financial market. ECO countries' efforts increase economic growth and the beneficial effects of FDI on local economies should focus on supporting the development of local financial markets.
Mahmood and Alkhateeb (2018)	Highlight the factors that contribute to FDI flows in Saudi Arabia applying the autoregressive distributive delay cointegration methodology.	FDI; GDP growth rate (proxy for market size or income); financial market development measured by banks' total credit in relation to GDP; oil price; and, domestic investment in Saudi Arabia calculated by subtracting foreign investments from total investments (formation of gross capital).	The results affirm that the oil price and financial market development are positively affecting FDI flows. However, the increase in domestic investment is considered responsible for the decrease in FDI flows. Therefore, domestic investment can be considered as a substitute for FDI flows.
Tang (2017)	Analyze whether financial market development in Central and Eastern European Countries can explain FDI in Europe	FDI; trade opening (exports and imports of goods and services); labor cost (wage difference between Central and Eastern European Countries and EU countries); relative factor endowment (measured by the difference in labor investments of Central and Eastern European Countries and EU countries); loan rate (bank loan rate that can meet the short- and medium-term financing needs of the private sector); inflation rate (measured by the consumer price index); geographical distance between the capital cities of the Central and Eastern European Countries and the EU countries; tax variable (refers to taxes on income, profits and capital gains that are levied on actual or presumed net income of individuals, corporate profits and capital gains on assets); bank credit to the private sector as part of the countries' GDP; total value of shares traded as a percentage of countries' GDP during the study period; GDP per capita; labor force education variable (refers to the proportion of the labor force that has a secondary education as a percentage of the total labor force); and, spending on research and development (R&D).	The results state that higher bank credit flows had a positive effect on FDI from 2005 to 2012. This can be attributed to the main reforms in the banking sector undertaken before the accession of Central and Eastern European countries to the EU. Another point is that the size of the stock market had a positive effect from 1997 to 2004. This is due to the fact that the announcement of EU membership facilitated deeper integration of the stock market. The country's higher income, in interaction with a greater flow of bank credit, had only a small positive effect in the period 2005–2012. Higher-income CEECs sought much deeper banking liberalization through large-scale privatization of state-owned banks. It can be said that the country's higher income, in interaction with a larger stock market size, had a negative effect in the period 2005–2012. One possible reason for this is that EU countries have started to shift their new FDI to non-EU countries.

Munemo (2016)	Analyze whether financial market development has an impact on the relationship between FDI and business start-ups.	Number of new business; FDI; internal credit to the private sector; Interaction between FDI and internal credit to the private sector; and, control variables (measures of the regulatory environment for business creation; and, per capita GDP growth).	The results state that FDI's ability to start new businesses depends significantly on the development of the financial market in the host economy. Based on the results, there is a financial market development threshold above which FDI dominates new businesses. Improving financial conditions in developing countries where they are unfavorable is therefore an important precondition for facilitating the externalities of FDI flows that encourage entrepreneurship. The results also support policy recommendations that a good regulatory environment and higher growth in income per capita are important for improving entrepreneurship.
Otchere et al. (2016)	Study the direct causal relationship between Financial Market Development and FDI in Africa.	Variables on FDI: FDI on GDP; FDI on gross capital formation; - Variables on Financial Market Development: ratio of total stock market capitalization to GDP (measures the relative size of the stock market and, more specifically, the depth of the financial market); stock market turnover rate (total value of domestic shares traded divided by market capitalization); total market value traded as a percentage of GDP; total credit granted by financial intermediaries to the private sector in relation to GDP; financial system net liabilities (currency plus demand deposits and interest-earning liabilities of banks and non-bank financial intermediaries) divided by GDP; ratio between commercial bank assets divided by commercial bank and central bank assets; -Control variables: GDP; education level.	Based on Granger causality tests and multivariate analysis, a positive bidirectional relationship between FDI and Financial Market Development was identified. It can be seen that FDI positively and significantly impacts economic growth in Africa when the simultaneous effects of FDI and Financial Market Development are controlled. The results imply that studies involving both FDI and Financial Market Development should explain the potential issue of endogeneity. This article provides further evidence that Financial Market Development facilitates the flow of FDI and significantly contributes to economic growth.
Soumaré and Tchana (2015)	Study the causal relationship between FDI and Financial Market Development using panel data from emerging markets.	Variables on FDI: FDI on GDP; - Variables on Financial Market Development: Stock market capitalization/GDP; Value negotiated as a percentage of GDP; Total credit from financial intermediaries to the private sector/GDP; Financial system net liabilities (currency plus demand and interest-earning liabilities of banks and non-bank financial intermediaries)/GDP; and, commercial bank/commercial bank assets plus central bank assets); - Economic and political variables: Percentage change in the GDP deflator; Number of telephones per thousand inhabitants; (Import and	The results shows a bidirectional causality between FDI and stock market development indicators. For banking sector development indicators, the relationship is ambiguous and inconclusive. Therefore, care must be taken when analyzing the relationship between Financial Market Development and FDI, as the results may depend on the Financial Market Development variables used to assess the causality of stock market or banking sector development indicators.

		Export)/GDP; lagged real GDP; Fuel and mineral share in exports; Exchange rate; Current account balance/GDP; Interest rate on loans adjusted for inflation measured by the GDP deflator; Gross enrollment rate for all levels of education; - Governance and institutional quality variables: Voice and responsibility; political stability and absence of violence; regulatory quality; Government effectiveness; Rule of law; and, Control of corruption.	
Soumaré (2015)	Examine the relationship between FDI flows and improved social welfare in North African countries.	Well-being variables: Human Development Index (HDI); GDP; - Variables on FDI: FDI on GDP; FDI on Gross Capital Formation; - Economic and political variables: Total debt by GDP; Government consumption by GDP; Percentage change in GDP deflator; Miles of paved road per 100 inhabitants; (Import and Export)/GDP; Gross enrollment rate for all levels of education; - Political risk and institutional quality variables: Credit by financial intermediaries to the private sector/GDP; Classification of political rights; and, classification of civil liberties.	The results confirm a positive and strongly significant relationship between FDI flows and improved welfare in North Africa, despite finding significant differences across countries in the region. Thus, at the aggregate level, FDI contributes to economic growth in North Africa, generating additional revenue for governments and populations in the region through fiscal policies and job creation. It was also analyzed that the FDI received by countries in the region is mainly concentrated in a few industries (particularly extractive oil, services and tourism, construction and public services). This lack of diversification of FDI received in the region's economies partly explains the observed differences in the link between FDI and well-being in these countries. Therefore, it is essential that governments continue to invest in social infrastructure, improving the quality of their institutions and their governance; this will likely help to avoid the kind of restlessness that you have recently identified.
Solomon et al. (2015)	Alleviate the determinants of FDI flows in Malaysia.	FDI; GDP; financial market development; market size of the economy; government infrastructure expenditures; opening of the economy; real exchange rate; corporate tax; and, inflation rate.	The results demonstrate that FDI inflows have positive and significant relationships with the development of the financial market and the market size of the economy. However, FDI flows are negatively related to corporate tax. Therefore, the Malaysian government has to take certain steps to increase financial market developments and the market size of the economy, and also reduce or stabilize its corporate tax to encourage more FDI inflows into Malaysia.
Makoni (2014)	Identify and examine the main factors that determine whether African economies are attractive enough to take advantage of FDI flows.	Financial market development; institutional quality; natural resource deposits; unskilled cheap labor; previous experience with international trade in goods and services.	The evidence gathered shows that financial market development, institutional quality, deposits of natural resources, unskilled cheap labor, as well as previous experience with international trade in goods and services, increase the likelihood of African economies receiving FDI entries. To attract foreign investment, African economies need to liberalize their capital accounts. This

			requires strong regulation of financial markets and traded instruments. As a result, domestic financial markets become wider, thus opening up alternative sources of capital (equity and bonds) for local firms. It is therefore recommended that African governments strengthen not only their competitiveness in the import and export market, but also their foreign policies to complement domestic policies for additional investment, which results in economic growth and job creation.
Samad and Akhtaruzzaman (2014)	This article empirically investigates the causal relationship - short term and long term - between FDI, financial development and economic growth in ten countries in East Asia and Southeast Asia.	FDI; Financial market development.	The results show that, in Singapore, Malaysia and China, GDP growth affects FDI. On the other hand, financial market development affects FDI in Singapore, Malaysia and Sri Lanka. Bidirectional causality between GDP and FDI is observed in Indonesia and India. FDI did not affect economic growth in the ten countries studied during 1980–2010. It suggests that FDI follows economic growth or financial market development in these countries.
Agbloyor et al. (2013)	Explore the causal links between financial markets and FDI in Africa.	FDI; Bank credit; Private credit; market capitalization; Stock market turnover; Gross Domestic Product; Investment rate; Savings rate; Infrastructure Index; openness to trade; Financial access (capital account); Inflation; Deposit interest rate; Loan rate; Interest rate; Export of fuels / export of goods; Ores and metal exports / export of goods; and, Institutions (civil liberties index).	The results suggest that a more advanced banking system could lead to more FDI flows. Also greater FDI flows can lead to the development of the domestic banking system. Countries with more developed stock markets are likely to attract more FDI. It was also found that FDI flows can lead to the development of the domestic stock market. The results imply significant complementarities and feedbacks between financial markets and FDI in Africa.
Mahmood and Chaudhary (2012)	Study the relationship between FDI and domestic investment in Pakistan.	Domestic investment as a percentage of GDP; FDI as a percentage of GDP; Domestic credit to the private sector as a percentage of GDP (proxy for Financial Market Development); GDP growth;	The study concludes that both long-term and short-term relationships exist in the model. FDI, financial market development and economic growth have a positive and significant impact on domestic investment. Thus, the results prove that FDI has a complementary effect on domestic investment in Pakistan. Financial market development and economic growth play a positive role in improving domestic investment.
Xu (2012)	Test whether weak financial market development can account for the relatively low benefits of FDI on growth in China.	GDP per capita; FDI per capita (FDI/Economically active population); Total loans per capita; Total deposits per capita; Real credits for companies in the municipality/working age population; private credit per capita; foreign credits per capita; Ratio of investment in fixed assets to nominal GDP; Human capital; Population growth (rate); government	The results indicate that poor financial intermediation actually limits the transmission of FDI benefits within the Chinese economy. In addition, the study reveals preliminary evidence that bank credits to unproductive state-owned enterprises constitute deficient financial intermediation with negative implications for growth. In contrast, loans to small private companies are associated with a positive impact of FDI on growth.

		expenditures relative to nominal GDP; Real value of exports and imports/working age population.	
Anwar and Nguyen (2010)	Examine the link between Foreign Direct Investment and economic growth in Vietnam.	Provinces economic growth rate; GDP per capita; FDI stock per capita; Government expenditures in relation to GDP; Exports of goods and services per capita; Ratio of exports to GDP; Number of university and university students per thousand people; Domestic investment in relation to GDP; Domestic investment per capita; Number of telephones per thousand people; Learning by doing (annual manufacturing value added as a percentage of GDP is used as a proxy); real exchange rate; Percentage of skilled labor in the total workforce; Average monthly salary of the employee; job growth rate (% annual); Dummy = 1 if cities and provinces are located in major economic regions; zero if otherwise.	The results suggest that the impact of Foreign Direct Investment on Vietnam's economic growth will be greater if resources are invested in education and training, financial market development and in reducing the technological gap between foreign and local companies. While the direct effect of FDI on economic growth in Vietnam is positive, the indirect effect of the economy's absorptive capacity (measured by factors such as the level of financial market development, education and training expenditures, and the extent of the technological deficit) is negative.
Azman-Saini et al. (2010)	Examine the role that local financial markets play in mediating the effects of FDI on output growth in 91 countries.	GDP growth rate; FDI; population growth rate; investment-GDP ratio; human capital (defined as the average years of secondary education); government expenditures in relation to GDP; Financial market indicator.	The results shows that the positive effect of FDI on growth "only starts" after the development of financial markets exceeds a threshold level. This finding underscores the importance of the government emphasizing the diffusion aspect in the formulation of FDI policies, as the diffusion of knowledge is not supported in the field of social welfare. Therefore, policies aimed at attracting FDI must be accompanied, not preceded by policies aimed at promoting the evolution of the financial market.
Nasser and Gomez (2009)	Examine the effects of financial market development on FDI flows by studying the link between FDI and the degree of development of the stock market and banking system of 15 Latin American countries.	FDI; GDP; GDP growth rate; Inflation rate; openness to trade; Education level; Number of telephones for every 1000 people; stock market development indicator; Value traded on the stock market; Stock market turnover; Bank assets; Net Liabilities in the banking sector; private credit in the banking sector.	The article concludes that FDI is positively correlated with trading volume, an important variable that reflects the development of the stock market. FDI is significantly and positively correlated with the level of private credit offered by the banking sector. The effect of the volume of trading and private credit is incremental in relation to control variables, such as inflation, the opening of the economy to foreign trade, the technological deficit and the level of infrastructure. These results suggest that FDI is directed towards countries that are financially developed and institutionally strong.

Herzer et al. (2008)	Identify problems in empirical works in the literature and verify the effects that FDI have on economic growth.	FDI flow; GDP; Years of education; Import and Export; and, Domestic credit for the private sector.	Little evidence was found that FDI can influence GDP growth in countries. In most cases, no evidence of these effects in the short or long term was found when analyzing the level of education, the level of market opening and the development of financial markets in developing countries.
Alfaro et al. (2004)	Examine whether economies with more developed financial markets are able to better benefit from the effects of FDI and promote economic growth.	Net liabilities of the financial system; commercial bank assets; private sector credit; Bank credit; stock market liquidity; stock market capitalization; Gross Domestic Product (GDP); Country Risk; Openness to international trade; Years of education; government consumption; population growth and FDI flow.	Despite several policies that countries have adhered to in order to attract FDI, local conditions can limit the benefits that FDI can provide, as is the case with the role of financial markets. Countries with less developed financial markets are unable to deal with short-term capital flows and also long-term flows end up not being realized in these economies.

Source: elaborated by the author

After analyzing the main results of each article, it was found that FDI has strongly impacted the economic growth of countries, however, particularities of countries such as the development of financial markets or the banking system can restrict this growth (VOJTOVI, 2019; MAHMOOD; CHAUDHARY, 2012; XU, 2012). In fact, the impact of FDI can be evidenced in these economies only after the development of financial markets exceeds a certain threshold (AZMAN-SAINI; LAW; AHMAD, 2010).

Over the last few decades, countries have adhered to several strategies in order to attract more FDI to their economies. However, many countries end up not benefiting from all possible growth opportunities due to the fact that their financial markets are less developed (ALFARO et al., 2004). Such results emphasize the importance of public policies that are capable of developing financial markets, since it presents itself as an intermediary between FDI and economic growth, which will consequently attract more foreign investment.

In fact, a positive bidirectional relationship was identified between FDI and FMD (OTCHERE; SOUMARÉ; YOUROUGOU, 2016), that is, the results suggest that a more advanced banking system can lead to greater FDI flows, while larger FDI flows can lead to the development of the domestic banking system (AGBLOYOR et al., 2013). Even greater credit flows had a positive effect on FDI in 2005–2012. This can be attributed to the main financial sector reforms taking place in countries (TANG, 2017).

As a consequence of the relationship between FMD and FDI, a positive and highly significant relationship was found between net FDI flows and improved well-being in North Africa (SOUMARÉ, 2015). Also, for a continuous improvement in the results of African countries, such countries need to liberalize their capital accounts. This requires strong regulation of financial markets and trading instruments. As a result, domestic financial markets become broader, thus opening up alternative sources of financing (equity and bonds) for local companies (MAKONI, 2014).

FDI's ability to start new businesses depends significantly on financial market development in the host economy. Based on the results found, there is a financial market development threshold above which FDI dominates new businesses. Improving financial conditions in developing countries where they are unfavorable is, therefore, an important precondition to facilitate the externalities of FDI flows that stimulate entrepreneurship (MUNEMO, 2017) and consequently activate the trigger of economic growth and development of new business.

Overall, the articles show that FDI has a fundamental role in the development of financial markets acting as an intermediary between FDI and economic growth. As they become more dynamic and regulated, which consequently increase investor confidence, the flow of investments allows the financing of local companies through the credit available in the banking system. Furthermore, while FDI provides the development of financial markets, such developments also attract more FDI, thus making it a dynamic and efficient market.

Although the articles show the importance of this bidirectional cycle between FDI and FDM for several groups of countries, including European and African ones, it was noticed that there are few studies that analyzed the behavior of these investments and their relationships within the financial markets in Latin America countries. The importance of studies that understand the economic development of these countries is reinforced by the idea that these countries lack effective policies to face the residues left over from the various economic crises that this continent has experienced in recent decades. The importance of these studies is also used to encourage the attraction of FDI, as there is a lack of technology generation in this region.

Based on the studies analyzed, a possible gap was found, which could generate the following question: would it be possible to develop the financial markets of Latin American countries through FDI in order to encourage economic growth and provide more business in these countries?

This question can be answered through econometric models containing variables such as FDI flows from Latin American countries, country growth rates, FMD levels, including access to the financial system by local companies and availability of credit in the banking system, as well as the number of companies that have capitalized on stock exchanges in order to measure how such changes in the market have encouraged business among local companies.

5. CONCLUSION

The main objective of this paper is to present a systematic literature review on the impacts of FDI on the development of financial markets, given a growing flow of investment mainly in developing economies.

For this, the main publications were systematically analyzed and their main results presented and discussed. In general, the increase in the flow of foreign investments worldwide has strongly contributed to the growth of economies, however, certain countries' particularities, such as the

levels of development of their financial markets, may limit the ability of countries to benefit from the positive effects that such investments can lead to.

A bidirectional relationship between FDI and FMD was also noted, since greater investment flows have provided the development of local financial markets and such developments have attracted the confidence of more foreign investors, generating a cycle of development and investments.

Although several studies show a positive relationship between FDI, FMD and economic growth, as well as a positive bidirectional relationship between FDI and FMD, there are few studies that analyze how FDI has contributed to FMD, especially in developing economies, as is the case with Latin America, the question arises whether it would be possible to develop such financial markets through FDI in order to encourage economic growth and provide more business for these countries.

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Article 2: The regional interplay between Foreign Direct Investment and Financial Market Development: two driving forces for manufacturing-based entrepreneurship in Brazil

1. INTRODUCTION

Current literature considers Foreign Direct Investment (FDI) a valuable source of technology transfer and know-how, creating links with local firms and driving economic growth (ALFARO; KALEMLI-OZCAN; SAYEK, 2009). Indeed, a significant increase in FDI has been evidenced in Latin American countries, especially following the 1990s crises.

Despite its direct effects on employment and the host region insertion within international trade flows, FDI also presents indirect effects in host countries known as spillovers, which are able to provide economic, social, and environmental benefits (Moralles & Moreno, 2020; Polloni-Silva, Ferraz, Camiato, Rebelatto, & Moralles, 2021; Polloni-Silva, Moralles, Rebelatto, & Hartmann, 2021; Ubeda & Pérez-Hernández, 2017).

Although studies argue that FDI does not generally stimulate entrepreneurship (Gallego & Maroto, 2015; Hong, Robert Reed, Tian, Wu, & Chen, 2021) it was verified that the presence of industrial clusters are essential for explaining innovation, productivity, and high-skilled labor in domestic firms, which increase the local market potential (Wang; Wu, 2015). In fact, it is supposed that the presence of FDI via multinational corporations is able to create a productive ecosystem composed of both foreign and domestic firms that encourage local productivity given the increased demand of products and services from multinationals, that, consequently, attracts and creates more firms in the region.

Studies have shown the relationship between FDI, economic growth, and its indirect effects on economies (ALFARO et al., 2010; OTCHERE; SOUMARÉ; YUROUGOU, 2016; SÁNCHEZ-SELLERO; ROSELL-MARTÍNEZ; GARCÍA-VÁZQUEZ, 2014, 2014; TANG, 2017). However, FDI-related positive spillovers on economic growth depends on local conditions of host countries since economies with low levels of Financial Market Development (FMD) limit the benefits of FDI (ALFARO et al., 2004). In addition, Azman-Saini et al. (2010) argue that countries must present a certain level of financial development to achieve positive spillover effects.

The importance of the financial market on economic growth can be verified by several factors (OTCHERE; SOUMARÉ; YUROUGOU, 2016; SOLOMON; ISLAM; BAKAR, 2015; XU,

2012). FMD promotes access to external finances and indirectly supports the overall economic activity, ensuring local firms' ability to obtain external credit (DESBORDES; WEI, 2017). In this sense, the case of deregulatory reforms in the American banking sector showed that increased competition between banks favored small and new businesses by increasing credit offers with lower interest rates (BLACK; STRAHAN, 2002), which indicated that a mature financial system may boost economic activity by fostering entrepreneurial activities. In fact, a developed financial system can also increase overall productivity by choosing the best entrepreneurship projects, mobilize external finance, and providing products to diversify the investor's risk in innovative activities, which promotes economic growth and increases productivity rates (KING; LEVINE, 1993).

Financial Development Indexes measure some dimensions of financial development that, among other issues, tries to compute the financial depth that represents the availability of private credit and access, which measures the ease of access to finance (SVIRYDZENKA, 2016).

Access to finance is an important issue for innovation activities and their ability to benefit from inward FDI. Also, firms with good access to domestic bank loans tend to be more innovative than others (GIRMA; GONG; GÖRG, 2008), while the lack of credit (depth) is indicated as a barrier to entry, innovation, productivity, and growth, which can limit the performance of the real sector of an economy (LEVINE, 2004).

In this context, an adequate environment is essential to the creation of new firms, such as the level of FMD and the absorptive capacity. These aspects are relevant to boost entrepreneurial activities (MUNEMO 2018).

To summarize, FDI can boost economic growth on many fronts, mainly by providing technology transfer and management techniques capable of improving the productivity of local firms. This includes when financial markets go through development processes, increasing the likelihood of local businesses having access to credit to finance their operations, becoming more efficient and even internationalized.

In the late 1990s, important political measures and economic plans led Brazil to a new era of economic stability during the following decades, especially in terms of inflation, interest, and exchange rates. During this period of increased personal credit availability, the resumption of internal consumption was a significant determinant in encouraging FDI into Brazil (ANGELO; EUNNI; FOUTO, 2010).

Even though Brazil was the primary recipient of FDI in Latin America in the first two decades of the 21st century, studies analyzing these effects in emerging economies are scarce, particularly in Brazil, where there is no evidence of the interplay among FDI and FMD on the entrepreneurial activities of local economies. Therefore, the main objective of this paper is to evaluate whether the regional concentration of FDI can be a valuable resource to boost business opportunities in the manufacturing sector, ensuring the creation of firms if the region is endowed with an adequate level of FMD.

In addition to having advanced technologies, when multinationals settle in host economies they create demands to supply their operations, increasing the productivity of local firms as well as allowing these companies to capture new technologies (BLOMSTROM, 1986; GORG, 2004; KIM, 2015).

Creation of new demands is an important factor for the increase of local economic activity, in fact, spillovers effect from FDI can be seen in a host economy through firm creation once it generates employment opportunities and innovation (ESTRIN et al., 2014). Entrepreneurial activities are recognized as drivers of economic growth since new firms are associated with job creation, wealth creation, innovation and productivity (ACS et al., 2009; AGARWAL; AUDRETSCH; SARKAR, 2010; AGHION et al., 2009; WENNEKERS; THURIK, 1999; SCHUMPETER, 1939).

The results of this paper have empirical effects on policy recommendations. Through econometric models, we can understand which factors most affect the creation of firms in Brazil. Thus, policymakers might focus their efforts on the most important determinants to develop new business and encourage the local economic development.

2. LITERATURE REVIEW

2.1 Foreign Direct Investment, Spillovers, Manufacturing Ecosystem, and Economic Growth

An increase in the level of FDI was observed in emerging economies after several crises and turbulent moments during the 1980s (ALFARO et al., 2004). This effect resulted from several measures of opening borders to trade that significantly expanded the international business and the

flow of FDI in developed and developing economies (SUNG; LAPAN, 2000). Latin American countries were notably the leading destination of these investments since multinationals looking to expand their operations found more profitable opportunities in this region (ARBELÁEZ; RUIZ, 2013).

The World Bank (2021) showed that Brazil received 4.18% (USD 404.3 billion) of the total amount of FDI inflows in the world (USD 10.53 trillion) from 2010 to 2014. Over the years, Brazil has become more attractive to international investors due to several regulatory changes, including better interactions between foreign investors and Brazilian government agencies (World Bank, 2018).

The importance given by governments to foreign investment is owed to the fact that multinationals companies, in most cases, have advanced technologies and best market practices that, when present in a developing market, end up being transferred to local firms which benefit from these effects, resulting in productivity and efficiency (GORG, 2004). Indeed, flows of FDI to developing countries have played an essential role in the development of emergent economies by providing high levels of productivity as long as there are minimum levels of human capital and abilities to absorb advanced technologies that become readily available (BORENSZTEIN; GREGORIO; LEE, 1998).

Several authors have highlighted the relationship between FDI and economic growth and the indirect effects that these investments cause in the economy, also known as spillover effects (ANWAR; NGUYEN, 2010; VOJTOVI, 2019). However, the positive impact of FDI on economic growth depends on the local conditions of host countries. For example, countries with high absorptive capacity and better economic policies are more conducive to receiving significant FDI flows (SAMAD; AKHTARUZZAMAN, 2014).

In addition to direct financing of its suppliers, FDI can be a valuable source of technology and know-how while fostering a direct connection with local firms. In this scenario, both developed and developing economies have continuously offered incentives to attract foreign firms' productive operations to their countries (ALFARO; KALEMLI-OZCAN; SAYEK, 2009).

In developing economies that do not have the know-how to explore natural resources mainly due to lack of workers with the required skills, absence of physical capital, and suitable technologies for production, FDI can offer significant advantages to the host country including stabilizing financing flows, increasing productive capacity, job creation, and also encouraging local

and international trade (IAMSIRAROJ; ULUBAŞOĞLU, 2015). Host countries receive advantages from FDI through technology transfer, exposure to new manufacturing models, and managerial skills that increase productivity to local firms. In other words, this effect can contribute to the development of the host country via physical and human capital accumulation (ALFARO; KALEMLI-OZCAN; SAYEK, 2009).

When multinationals settle outside their countries of origin, they take technologies capable of equally competing with local firms familiar with the regional market, such as consumer preferences and business practices. This level of competition causes imbalances in the local market and forces local firms to protect their market share and profits. These events result in different types of spillover effects like technology transfer and high productivity that occur because of competition in the market and employee turnover (BLOMSTROM, 1986).

In this sense, governments should encourage FDI to their countries since spillover effects can increase the productivity of local firms through technology transfer that is conditioned by the absorptive capacity of these firms (KIM, 2015). The term absorptive capacity was first mentioned by Wesley Cohen and Daniel Levinthal in 1989 and it refers to one of the main learning processes in a firm: the ability to identify, assimilate, and explore knowledge from the environment. Over time this ability became fundamental for the long-term survival of firms, once they develop and maintain the absorptive capacity it allows firms to reinvent themselves in the long run (LANE; KOKA; PATHAK, 2006).

Based on the relationship between FDI and increased productivity, Girma (2005) analyzed a group of English industries and identified that the Total Factor Productivity (TFP) used to benefit from FDI through absorptive capacity only works until a certain level of investment, after that level, the firm could not absorb the whole knowledge available in the environment. Additionally, a minimum level of FDI was necessary in order to prevent a negative spillover effect.

Furthermore, previous research showed that foreign investment coming from different origins could increase the productivity of local industries by providing greater exposure to new technologies and management techniques. Also, companies with intermediate knowledge levels have a greater capacity to absorb knowledge than small firms and multinationals (ZHANG et al., 2010).

Inflow of FDI has a high influence on productivity levels, mainly because this category of investment is usually highly concentrated in the manufacturing industry, consequently

strengthening the supply chain ecosystem in terms of technology and know-how due to spillover effects. A study in India showed that investment in R&D motivated by FDI allows firms to have potential gains from innovations and helps them develop capabilities that are critical for assimilating international technology spillover (BHATTACHARYA, 2021).

Research disaggregating FDI into manufacturing and services flows has shown that FDI related to industry can enhance economic growth in countries with a large manufacturing base. In contrast, service FDI is not always growth-enhancing, for example, it can lead to deindustrialization in some specific economies. Therefore, decisions concerning different types of FDI should be based on the level of the development of the economy, the share of manufacturing and service industries, and the geographical location of the country (Doytch, 2011). Such arguments corroborate with the actual scenario of the São Paulo state located in Brazil, the focus of this study. The manufacturing sector is predominant and the leading revenue generator in the country, which emphasizes the need to attract investments in strategic regions to promote regional economic development.

Similar benefits of FDI in the manufacturing industry could be seen in a sample of 12 Asian economies throughout 1987 to 1997 where FDI played a significant role in enhancing economic growth but did not do so in the nonmanufacturing sector, which emphasizes the importance of the real impacts of attracting FDI for specific regions (Wang, 2009).

Indeed, it is a large number of countries that pay subsidies to attract FDI with the justification that social returns exceed the private returns. This fact could be verified when analyzing manufacturing plants in the United Kingdom (UK). Results showed a significant positive correlation between the productivity of domestic plants and foreign share of employment in the same plant (Haskel, 2007), which reinforces the importance of qualified employees. Specifically, their ability to transform the local ecosystem through technology transfer and in the future, potentially open their own firms.

2.2 Positive and Negative Spillover Effects

When a firm invests or acquires a plant overseas, they expect to realize a higher rate of return than a home country firm does. Thus, advanced technologies are highly connected to this kind of investment since the only way domestic firms can gain from external benefits is if some form of

technology transfer takes place. Imitation, skills acquisition, competition, and exports are channels through which spillovers might boost productivity in the host country (GÖRG; GREENAWAY, 2004).

Javorcik (2004), pointed out that spillover effects of productivity have been strongly evidenced in the relationship between foreign and local firms, indicating that such effects may be the result of project sharing between these firms. This point is reinforced by Xu & Sheng (2012), who used Chinese manufacturing census data to present evidence of positive spillovers for the productivity of domestic firms confined to specific regions and sectors. That is, domestic firms benefit more from spillover effects if they are located in the same sector and industry that foreign firms are allocated.

The same positive effect has been seen in Spain where the presence of foreign capital provided technological advancements in the manufacturing sector through absorptive capacity and skilled labor (SÁNCHEZ-SELLERO; ROSELL-MARTÍNEZ; GARCÍA-VÁZQUEZ, 2014).

In this sense, the complexity and competitiveness of the international market has made the exchange of information between headquarters and subsidiaries a critical point. A fast communication allows headquarters to transfer technologies and develop appropriate mechanisms to make subsidiaries more productive (CENAMOR et al., 2017).

Although FDI can be a great source to boost economic growth, a study has concluded that the presence of FDI in China has changed wage levels inducing social inequality over time (CHEN, 2016). Thus, it is suggested that the changing in wage levels can be a result of high competitiveness between local firms and multinationals. According to Brandt and Thun, (2010), Chinese firms are increasing their production capacities through technology, whereas multinationals in China are competing for market share by reducing prices, causing inequality in the local market.

The net effects of FDI can vary according to each country. In Brazil for example, foreign-owned firms have become a key driver in the economy. Besides being more productive, more capital-intensive and having more skilled labor, on average these companies pay 280% more and also employ almost 500% more than local firms (HIJZEN et al., 2013).

Fosfuri, Motta and Rønde (2001) have evidenced that, in most cases, a multinational company transfers superior technology to a subsidiary only after the local worker has been trained. Once trained, the worker can be hired by a local firm, initiating the process of technological spillover. Even when the technological spillover does not occur, the host economy can benefit from

welfare improvement since multinationals start pay at a high wage to prevent the worker from moving to a local firm. On the other hand, there is a tradeoff between low and high salaries since individuals with more assets are more likely to become self-employed (BLACK; STRAHAN, 2002).

Additionally, firms which are managed by owners who had previously worked for multinationals in the same sector tend to have a higher productivity levels than other firms. This implies that these entrepreneurs bring with them knowledge and technologies built up in multinationals and apply them in domestic firms (GORG; STROBL, 2005).

Another important driving factor in diffusing spillover effects to local firms is the level of human capital or the level of education that is capable of increasing the absorptive capacity of a local firm, making it possible for MNCs to outsource activities in the local market. Thus, when MNCs outsource their need for intermediate goods and services to local firms, FDI can have a positive impact in the environment inclining their employees to start their own business, especially in regions with high levels of education (BERRILL; O'HAGAN-LUFF; VAN STEL, 2018).

Indeed, when MNCs set higher product and service quality requirements, local firms may obtain high technical capacities to supply these companies, improving their production process, as well as their management skills (ESTRIN et al., 2014), making labor mobility another important mechanism through which technology, skills and know-how may diffuse to local firms (FOSFURI; MOTTA; RØNDE, 2001).

2.3 Financial Market Development

Although FDI contributes to the development of economies, local conditions of each country may restrict these effects. Hermes and Lensink (2003), have pointed out that the development of local financial systems is an important precondition for FDI to have a positive impact on economic growth. In addition to this, several others studies have argued the importance of the development of financial markets for economic growth (OTCHERE; SOUMARÉ; YOUROUGOU, 2016; SOLOMON; ISLAM; BAKAR, 2015; XU, 2012).

The lack of local financial development may limit the benefits of FDI. This lack of development can show that a country cannot deal with short-term capital flow, which hampers long-term flows (ALFARO et al., 2004) due to a lack of economies of scale and low liquidity levels

that guarantee the security of long-term investments (OTCHERE; SOUMARÉ; YOUROUGOU, 2016).

Given the above, liquidity is an important attribute of FMD since liquid markets theoretically improve the allocation of capital and enhance prospects of long-term economic growth, in addition to the ease of buying and selling securities, considering time and cost to settle a trade (DEMIRGUC-KUNT; LEVINE, 1995).

When countries are facing crises, asset price may lose value especially if there is low credit availability. However, this trend performed differently in Europe compared to the crises observed in East Asia and Latin America (WEITZEL; KLING; GERRITSEN, 2014). The Fire-Sale Theory states that during crises assets are bought at lower prices by international investors but there is no evidence that the number of acquisitions increased during periods of crises or that foreign acquisitions are sold more frequently than the domestic ones (ALQUIST; MUKHERJEE; TESAR, 2013). Additionally, such periods showed negative effects on FDI flows and Merge and Acquisition (M&A) (STODDARD; NOY, 2015).

A study estimating the presence of financing constraints for Chinese domestic firms and the impact of ongoing financial sector reforms designed to improve the efficiency of capital allocation, has verified that FDI inflows do seem to reduce the imperfections faced by private domestic firms when dealing with financial markets (HÉRICOURT; PONCET, 2009). In the same sense, the access to finance is an important issue for firm's innovation activity and their ability to benefit from inward FDI, including, firms with foreign capital participation or good access to domestic bank loans tend to be more innovative than others (GIRMA; GONG; GÖRG, 2008).

When analyzing the exports performances of companies in China, it was evidenced that multinationals and joint ventures had a better performance than private domestic companies, this increased performance was especially high in sectors that require more external finance, highlighting the importance of credit conditions to financing activities (MANOVA; WEI; ZHANG, 2009).

In fact, when analyzing small and medium firms, financial institutions and innovative financial instruments are important conditions to boost economic growth. In competitive business environments, access to finance is a facilitating component for the entry, growth and exit of a firm since tools such as leasing and factoring enables companies at different levels to do business together (BECK; DEMIRGUC-KUNT, 2006).

Such results corroborate with Xu (2012) who identified that despite the large volume of investments evidenced between 1999 and 2006, such investments were not accompanied by strong economic growth, which was seen in other countries, since Chinese financial institutions were not able to mediate this effect and inhibited the positive impacts of FDI on economic growth.

Although small firms generate more jobs than large firms, their contributions to productivity growth are still low. Delivering growth and increased productivity requires policies that address potential obstacles ranging from difficulties in accessing financing to corporate training and low levels of corruption. Thus, encouraging entrepreneurship tends to yield quick results especially in developing economies as new companies tend to be highly productive (AYYAGARI; DEMIRGUC-KUNT; MAKSIMOVIC, 2011).

From the same point of view, Klapper and Love (2011) and Javorcik (2004) have pointed out the tendency of new firms to be more efficient given the competition they exert over other firms, boosting productivity and economic growth. Just like Munemo (2018) which verified the impact of entrepreneurship to develop African countries given the increased FDI flows and the development of financial markets that allowed broad access to financial system.

Analyzing the causal relation between FDI and FMD in Africa, it was possible to observe a positive bidirectional relationship between the two variables, that is, while FMD facilitates the inflow of investments in a country, FDI is attracted to countries where financial markets are developed. Additionally, it was noticed a positive impact of FMD on economic growth, possibly related to financial reforms that occurred in the continent (OTCHERE; SOUMARÉ; YOUIROUGOU, 2016).

From the Financial Market view, higher FDI flows increase the likelihood that local firms involved with such investments will open their capital on local stock exchanges, influencing companies and markets to get closer to regulations, especially those that protect investors and approaches to the best market practices. In this sense, governments are increasingly encouraging foreign investments to their countries (SOUMARÉ; TCHANA TCHANA, 2015). To summarize, when FDI is directed to a country, financial resources concentrate in the financial systems which contribute to the development of financial markets advancing the creation of credit, diversity of financial products, regulations and improving liquidity. All these factors encourage a virtuous cycle once high credit volume in an economy increases aggregate demand that requires increases in

production levels and consequently encourages the creation of new companies since the market is demanding new products and services.

2.4 Creation of Firms

In Schumpeter's economic development theory, the entrepreneur occupies a central role in the environment besides driving economic development through periods of discontinuity to higher levels of prosperity and welfare. The entrepreneur is also defined as the person who creates combinations, and new combinations are called innovation. Thus, there are five major types of innovation: (I) a new source of raw material, (II) a new method of production, (III) a new product, (IV) a new market, and (V) a new organization (SCHUMPETER, 1934).

Schumpeter (1934) also emphasizes the importance of the financial system to financing raw material, means of production, collaborators, and workers. In fact, in many countries, small and medium-sized enterprises (SMEs) constitute a significant part of total employment but are not yet able to impact economic growth once they face several growth constraints, including limited access to finance (BECK; DEMIRGUC-KUNT, 2006).

In the same way, King and Levine (1993) have evidenced that financial systems affect the entrepreneurial activities that lead to increased productivity in four ways: (i) evaluating, prospecting, and choosing promising projects, (ii) mobilizing resources to finance promising projects, (iii) allowing the investor to diversify risks associated with innovative activities, and (iv) revealing potential projects to engage in innovation. In other words, financial markets create a competitive environment capable of selecting the most profitable projects, accelerating the rate of productivity enhancement.

Even though measures to attract FDI may harm domestic entrepreneurship in the short run, specific programs can maximize the linkages between foreign and domestic firms and make them complementary in the long run (BACKER; SLEUWAEGEN, 2003). Negative impacts on the new firm's creation and economic growth can also be seen during crises, especially in countries with higher levels of financial development (KLAPPER; LOVE, 2011).

Such results reinforce the importance of financing for new firms and are also a reflection of the so-called business cycle of Schumpeter (1934), where a successful business can attract other businessman who imitate the successful innovation and result in falling profits, and eventually

causing speculation and overinvestment, leading to a significant rising in the economy and then to a downturn.

Entrepreneurship has been shown to be essential for the modern market economy since a robust entry rate of new firms can foster competition and innovation (KLAPPER; LOVE, 2011). The spillover effects from FDI can be seen in a host economy through new firms' entry lens once it generates employment opportunities and innovation (ESTRIN et al., 2014). As previously mentioned, spillover effects can be a valuable source of knowledge and innovation, in fact, research has shown that successful entrepreneurship calls for sophisticated information management (CASSON, 2005).

In general, several studies have shown the importance of entrepreneurship in boosting economic and technological advances in an economy. According to Beck, Demirguc-kunt and Levine (2005), at the very least new firms are associated with job creation, wealth creation and innovation. Thus, a strong small business sector and entrepreneurship are generally linked to a strong economy. Additionally, entrepreneurial activities have been recognized as drivers of economic growth, especially when talking about innovation and productivity (ACS et al., 2009; AGARWAL; AUDRETSCH; SARKAR, 2010; AGHION et al., 2009; WENNEKERS; THURIK, 1999; SCHUMPETER, 1939).

In short, several studies have shown the importance of entrepreneurship for economic development, especially in terms of technology transfer, job creation and increased income. The fact is that governments should reproduce the good practices used by countries to induce economic growth through entrepreneurship and vigilantly looking for key factors that led to such development.

In this sense, it is valid to note that the principal mechanism by which host economies benefit in terms of technology, human capital, and managerial skills might be from foreign-owned-firms (ESTRIN et al., 2014) and since the SME sector is based on the premise that it is the engine of economic development, market and institutional failures hamper their growth and justifies government interventions (BECK; DEMIRGUC-KUNT, 2006).

Poor business environment may affect the SME's sector performance since restrictions and market imperfections dampen competition and slow firm growth. Also, the lack of financial efficiency can slow down the economic growth (BECK; DEMIRGUC-KUNT, 2006).

In China, for example, there is a bigger chance of the entrepreneur's reinvestment of their profits if they are more confident about property rights and access to credit. Additionally, corruption and governments' decisions towards entrepreneurship can affect the decision to open a new firm (BECK; DEMIRGUC-KUNT, 2006).

The importance given by authors to FMD and credit corroborates with several studies on this theme. The inflow of FDI in a country can lead to an increase in employment opportunities and higher levels of output for domestic firms (NXAZONKE; VAN WYK, 2019) but the lack of FMD can limited the growth since SMEs were evidenced to be more financially constrained than large firms and less likely to have access to finance, especially in developing economies where finance from friends and families play an important role in financing entrepreneurs (BECK; DEMIRGUC-KUNT, 2006).

To summarize, despite the importance of entrepreneurship to provide high levels of technology, employment and economic growth in an economy, several factors can impact the creation of new firms. Especially FMD, which provides great access to finance and also the transparency of institutions since foreign investors, who are the biggest resource providers, may retract investments in countries with a high level of corruption.

3 METHOD AND DATA

This study employed panel data on the 640 municipalities in São Paulo state/Brazil ranging from 2010 to 2014. According to Polloni-Silva et al. (2021), São Paulo is an adequate case study because the state receives 39% of FDI in Brazil, while it presented the highest GDP in 2016, being the richest region in Brazil (Brazilian Central Bank, 2018; IBGE, 2021). Thus, São Paulo state is relevant to receive a more in-depth evaluation due to the possibility to provide straightforward policy recommendations.

Following the aforementioned objectives, the number of newly crated manufacturing firms (FIRMS variable) is set as the proxy for the creation of manufacturing environments, while our key independent variables are the regional intensity of FDI, the volume of credit available (DEPTH), and the number of banking branches (ACCESS).

The dependent variable employs the regional creation of manufacturing-based firms according to the Brazilian business activity code, also known as CNAE (Classificação Nacional de

Atividade Econômicas). The CNAE has a very complex structure that covers all the economic activities of companies and is managed by the Brazilian Federal Government. It is important to highlight that the data collected from IBGE Database (Instituto Brasileiro de Geografia e Estatística) reflects the exact year that a firm was founded since this business registration code is required to have commercial operations in Brazil.

The variables related to the FMD were obtained in the Brazilian Central Bank Database (BACEN). The variable, depth, is an important measure to the stock of credit in a region, and access, shows the number of financial branches according to each region. Which is also a measure of how banks and financial institutions are spreading across the state and bringing more financial inclusion to the population especially in the countryside and rural areas through financial products as credit.

Moreover, all the variables employed are in natural logarithms in order to enable the coefficients in terms of elasticities. We also employ a set of control variables to capture general region-specific factors that may affect the firm creation such as: population density (a proxy for urbanization), the ratios of industry, agriculture, and service sector as proxies for local economic structure, the Financial Management Index (Índice FIRJAN de Gestão Fiscal – IFGF) as a proxy for local institution standards, the Firjan Education Index for Local Development (Índice FIRJAN de Desenvolvimento Municipal - IFDM) as a proxy for human capital, and GDP per capita (a proxy for economic growth). Table 1 presents the variable specification and data source.

Table 1. Variables

Variables	Specification	Data Source
New firms	Number of new firms per year.	RAIS/ME (2021)
FDI	Foreign Direct Investment of each municipality measured with the export data provided by the Brazilian Integrated Foreign Trade System (SISCOMEX).	Ferragina et al. (2016)
Depth	Depth represents the stock of credit taken in each region overtime.	Brazilian Central Bank (2021)
Access	Access represents the number of bank branches in each Brazilian region overtime.	Brazilian Central Bank (2021)
Population Density	The number of people per unit of area quoted per square kilometer (Km ²).	IBGE (2021)
Industry ratio	The industry sector participation (%) on the Gross Domestic Product of each municipality.	IBGE (2021)

Agro ratio	The agriculture sector participation (%) on the Gross Domestic Product of each municipality.	IBGE (2021)
Service ratio	The service sector participation (%) on the Gross Domestic Product of each municipality.	IBGE (2021)
IF Educ	The Firjan Education Index (IF Edu) measures the local development for education. An index closer to 1 means the greater the development of the location.	FIRJAN (2021)
IFGF	The IFGF analyzes the public accounts of Brazilian cities through four indicators (autonomy, liquidity, personnel expenses, and investments). An IFGF close to 1 means better fiscal management in the municipality.	FIRJAN (2021)
GDP per capita	The GDP per capita shows the region's economic output per person. It is calculated by dividing the local GDP by its population.	IBGE (2021)

Source: elaborated by the author

The literature background presented some studies analyzing the creation of new firms (KLAPPER; LOVE, 2011; (ESTRIN et al., 2014). However, there is a lack of studies investigating the impact of FDI and financial development in developing countries. Based on previous studies, we argue that foreign investments and adequate financial development (depth and access) might boost the creation of new firms (MUNEMO, 2018). Theoretically, foreign direct investment will encourage new firms by providing productive capital, new administrative routines, increased productivity, and create an adequate environment for new investments (ALFARO et al., 2010).

Furthermore, studies analyzing microregions or municipalities usually face a lack of information on foreign direct investment. This occurs especially in developing countries, where there is a need to explain the relevance of foreign investments and provide adequate policy recommendations. The following section presents a technique to measure the FDI in São Paulo municipalities to fill this gap.

3.1 Measuring Foreign Direct Investment

Brazilian economic databases lack information on regional foreign direct investment. For this reason, we proposed a proxy for FDI intensity based on export data, which was proposed in a previous study (FERRAGINA; MAZZOTTA, 2014, LIN; KWAN, 2016). The Brazilian Integrated Foreign Trade System (SISCOMEX) lists all exporting companies operating in the country during the research period (2010-2014) for 640 municipalities. The research group from Federal

University of Sao Carlos (UFSCar) manually checked nearly 40,000 companies' websites to verify if the companies had international origins through its headquarters' address.

$$FDI_{jt} = \sum_{i=1}^k W_{ijt} \left(\frac{MNC_{jt}}{T_{jt}} \right), \text{ for each region } j. \quad (1)$$

where MNC is the number of exporting multinational companies in the region “ j ”; T is the total number of exporting companies (domestic and foreign) in the region j ; W is the adjustment weight for each company i , and k is the total number of companies in each region.

Through the FDI index measured for this study (MORALLES; MORENO, 2020), this paper advances by providing new information to 640 regions in the state of São Paulo. This information is essential to provide straightforward policy recommendations, especially to encourage new firms among analyzed regions. In this sense, the following section provides our estimation strategy.

3.2 Model Specification and Estimation Strategy

This article evaluates the determinants for the creation of manufacturing-based firms in São Paulo municipalities. To examine more precisely the impact of FDI and FMD (depth and access) on the number of firms, the model presented in Equation (2) was estimated for the sample of Brazilian cities using annual data between 2010 and 2014, as seen in Munemo (2018).

$$\begin{aligned} NewFirms_{it} = & \beta_0 + \beta_1 FDI_{it} * \beta_2 DEPTH_{it} * \beta_3 ACCESS_{it} + \beta_4 POP_{DENSITY_{it}} + \\ & \beta_5 IND_{RATIO_{it}} + \beta_6 AGRO_{RATIO_{it}} + \beta_7 SERV_{RATIO_{it}} + \beta_8 IFEDUC_{it} + \beta_9 IFGF_{it} + \\ & \beta_{10} GDP_{PC_{it}} + a_i + e_{it} \end{aligned} \quad (2)$$

Where, FDI_{it} represents the natural logarithm of foreign direct investment during time t and region i , $DEPTH_{it}$ represents the stock of credit, $\beta_3 ACCESS_{it}$ represents the number of bank branches, $POP_{DENSITY_{it}}$ is the natural logarithm of population density, $IND_{RATIO_{it}}$ is the participation of the industry sector on GDP, $AGRO_{RATIO_{it}}$ is the participation of the agricultural sector on GDP, $SERV_{RATIO_{it}}$ is the participation of the service sector on GDP, $IFEDUC_{it}$ is the Firjan Index for Education as a proxy for human capital, $IFGF_{it}$ is the Firjan Index for Fiscal Management, and $GDP_{PC_{it}}$ is the Gross Domestic Product per capita. In equation (2), in addition

to the explanatory variables, a_i represents the time-invariant regional heterogeneity, while e_{it} is the stochastic disturbance.

We also developed three alternative econometric models. Equation (3) presents the interaction model between FDI and depth. Equation (4) measures the interaction term between FDI and access. Also, Equation (5) represents the model when regions combine FDI, depth, and access.

$$\begin{aligned} NewFirms_{it} = & \beta_0 + \beta_1 FDI_{it} * \beta_2 DEPTH_{it} * \beta_3 ACCESS_{it} + \beta_4 POP_{DENSITY_{it}} + \\ & \beta_5 IND_{RATIO_{it}} + \beta_6 AGRO_{RATIO_{it}} + \beta_7 SERV_{RATIO_{it}} + \beta_8 IFEDUC_{it} + \beta_9 IFGF_{it} + \\ & \beta_{10} GDP_{PC_{it}} + \beta_{11} FDI * DEPTH_{it} + a_i + e_{it} \end{aligned} \quad (3)$$

$$\begin{aligned} NewFirms_{it} = & \beta_0 + \beta_1 FDI_{it} * \beta_2 DEPTH_{it} * \beta_3 ACCESS_{it} + \beta_4 POP_{DENSITY_{it}} + \\ & \beta_5 IND_{RATIO_{it}} + \beta_6 AGRO_{RATIO_{it}} + \beta_7 SERV_{RATIO_{it}} + \beta_8 IFEDUC_{it} + \beta_9 IFGF_{it} + \\ & \beta_{10} GDP_{PC_{it}} + \beta_{11} FDI * ACCESS_{it} + a_i + e_{it} \end{aligned} \quad (4)$$

$$\begin{aligned} NewFirms_{it} = & \beta_0 + \beta_1 FDI_{it} * \beta_2 DEPTH_{it} * \beta_3 ACCESS_{it} + \beta_4 POP_{DENSITY_{it}} + \\ & \beta_5 IND_{RATIO_{it}} + \beta_6 AGRO_{RATIO_{it}} + \beta_7 SERV_{RATIO_{it}} + \beta_8 IFEDUC_{it} + \beta_9 IFGF_{it} + \\ & \beta_{10} GDP_{PC_{it}} + \beta_{11} FDI * DEPTH * ACCESS_{it} + a_i + e_{it} \end{aligned} \quad (5)$$

These models present interaction terms, which is essential to understand the interplay among FDI and FMD variables on local manufacturing firm creation. This information is valuable for policymakers because it reveals the importance of combining different aspects of our explanatory variables. For instance, the model presented in equation (3) can reveal the importance of combining FDI with the depth dimension of financial development. In other terms, this model might reveal that FDI is not enough to boost new firms but also requires some level of financial development. Note that these models require adequate econometric techniques to present panel data estimates and avoid econometric issues. For this reason, we follow several statistical and econometric techniques to achieve the best estimate.

First of all, we investigated possible multicollinearity issues using the Variance Inflation Factor (VIF). Next, we considered both random and fixed-effects estimators with heteroskedasticity-consistent (White) standard errors. Moreover, clustered random and fixed-

effects estimators were used for dealing with possible groups (clusters) dependence by allowing for intragroup correlation. However, possible non-spherical disturbances, such as heteroskedastic serial and cross-sectional correlation combined, can be a problem when dealing with panel data. For this reason, we used the Feasible Generalized Least Squares (FGLS), as presented by Parks (1967), to deal with the problems of heteroskedasticity and autocorrelation. Despite treating any non-spherical disturbances that would lead to biased or inconsistent estimators, the FGLS technique allows us to consider the autocorrelation process of each specific entity (panel-specific autoregressive process) (Croissant and Millo, 2008; Wooldridge, 2010). Thus, FGLS avoids the commonly employed assumption that each cross-sectional panel entity possesses the same autocorrelation coefficient (Morales & do Nascimento Rebelatto, 2016).

Finally, this study employs three other estimates using different econometric techniques: Panel-corrected standard errors (PCSE), Poisson Regression (RE POISSON), and System Generalized Method of Moments (Sys-GMM) models. We aim to present the robustness of the linear results by employing different estimation methods. The PCSE technique is important because it measures panel-corrected standard error estimates for linear cross-sectional time series models using the Prais–Winsten regression. This technique assumes that the disturbances are heteroskedastic and contemporaneously correlated across panels (Hoechle, 2007). These are important assumptions to treat the econometric issues faced by our models. In addition, we also estimated our models by using Poisson Regression, which is adequate for modeling count data. This is an adequate strategy because our dependent variable is the number of new firms. Moreover, we analyzed the RE POISSON model by adopting the `vce(robust)` option, presenting robust standard errors for the parameter estimates (Cameron and Trivedi, 2009). Finally, the Sys-GMM technique is also considered to accommodate unobserved panel-level effects correlated with the lags of the dependent variable with high persistency within the autoregressive process (Blundell & Bond, 1998). We aim to present the robustness of the linear results by employing different estimation methods through these techniques.

4 RESULTS AND DISCUSSION

As seen in Figure 2 where we employed the FGLS model that deals with heteroskedasticity and autocorrelation problems, we can see a positive and significant impact of FDI, access and depth

on the creation of manufacturing-based firms in Brazil. Similar results have shown the improvement of all the dimensions of financial markets were essential to support the entrepreneurship in Africa (MUNEMO, 2018). In addition, these results corroborate with Alfaro et al. (2004) and Moretti (2014) that had verified the importance of FDI to boost FMD in several economies and also the importance of such developments to link economic growth (AZMAN-SAINI et al.,2010) by encouraging business through access to finance and increase of credit availability thereby guaranteeing the creation of local firms.

Table 2. Feasible Generalized Least Squares

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pibpcreal	-0.00171 (0.00136)	-0.0105*** (0.00174)	-0.0160*** (0.00193)	-0.00452*** (0.00146)	-0.00420*** (0.00125)	-0.0130*** (0.00172)	-0.0175*** (0.00202)
Ifeduc	-0.00514*** (0.000412)	-0.0147*** (0.000674)	-0.0135*** (0.000725)	-0.00590*** (0.000450)	-0.00529*** (0.000407)	-0.0135*** (0.000700)	-0.0158*** (0.000700)
Ifgf	0.00224*** (0.000178)	0.00239*** (0.000184)	0.00239*** (0.000222)	0.00279*** (0.000179)	0.00198*** (0.000164)	0.00222*** (0.000177)	0.00234*** (0.000187)
Servratio	0.0123*** (0.000771)	0.0191*** (0.000828)	0.0200*** (0.00102)	0.0158*** (0.000766)	0.0119*** (0.000643)	0.0202*** (0.000924)	0.0212*** (0.000861)
Agrratio	0.00648*** (0.000517)	0.00988*** (0.000528)	0.0100*** (0.000731)	0.00914*** (0.000528)	0.00673*** (0.000434)	0.0104*** (0.000582)	0.0107*** (0.000634)
Indratio	0.00651*** (0.000812)	0.0210*** (0.00111)	0.0217*** (0.00133)	0.0107*** (0.000802)	0.00960*** (0.000706)	0.0252*** (0.00122)	0.0249*** (0.00125)
Dens	0.186*** (0.00792)	0.104*** (0.00557)	0.0936*** (0.00576)	0.174*** (0.00713)	0.186*** (0.00733)	0.0712*** (0.00415)	0.0702*** (0.00405)
L.wh_fdi	0.0564*** (0.00418)	-0.00930* (0.00482)			-0.0514*** (0.00999)	-0.00114 (0.00302)	
L.access_pop	0.000355*** (8.79e-05)	-7.61e-05 (0.000112)	-0.000263** (0.000124)			-0.00132*** (0.000128)	
L.depth_pop	3.40e-05 (3.06e-05)			4.14e-05 (3.84e-05)	2.93e-05 (2.79e-05)	-2.92e-06 (8.60e-06)	
L.FDIxDEPTHpop		0.666*** (0.0982)	0.770*** (0.0729)				
L.FDIxACCESSpop				0.116*** (0.00734)	0.164*** (0.0198)		
L.FDIxACCESSxDEPTHpop						0.840*** (0.0948)	0.947*** (0.0766)
Constant	-0.00614*** (0.000649)	-0.00630*** (0.000668)	-0.00763*** (0.000914)	-0.00932*** (0.000606)	-0.00663*** (0.000521)	-0.00850*** (0.000782)	-0.00739*** (0.000807)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The robustness of the results could be confirmed when we applied the PCSE technique that assumes the disturbances are heteroskedastic and contemporaneously correlated across panels (see Figure 3), the Poisson Regression that is adequate for modeling count data (see Figure 4) and Sys-GMM technique to accommodate unobserved panel-level effects correlated with the lags of the dependent variable with high persistency within the autoregressive process (see Figure 5).

Although the results showed that, FDI, access and depth have a positive and significant impact in the creation of manufacturing-based firms, interacting these three variables together showed an even greater relationship.

Moreover, results show that despite the presence of credit in an economy, limiting access to finance can be harmful to the number of firms. Indeed, this phenomenon can be seen in economies with higher banking concentration, especially in developing economies where several obstacles prevent firms from obtaining credit (BECK; DEMIRGÜÇ-KUNT; MAKSIMOVIC, 2004).

Table 3. Panel-Corrected Standard Errors

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pibpcreal	-0.0161*** (0.00622)	-0.0335*** (0.00797)	-0.0334*** (0.0117)	-0.0241** (0.00943)	-0.0206** (0.00829)	-0.0361*** (0.00888)	-0.0433*** (0.0114)
Ifeduc	-0.0196*** (0.00330)	-0.0283*** (0.00401)	-0.0283*** (0.00400)	-0.0226*** (0.00368)	-0.0281*** (0.00415)	-0.0305*** (0.00377)	-0.0303*** (0.00419)
Ifgf	0.00628** (0.00275)	0.00659*** (0.00222)	0.00650*** (0.00216)	0.00612** (0.00274)	0.00635** (0.00310)	0.00642*** (0.00191)	0.00645*** (0.00195)
Servratio	0.0401*** (0.00818)	0.0315*** (0.00458)	0.0324*** (0.00491)	0.0413*** (0.00796)	0.0393*** (0.00677)	0.0318*** (0.00452)	0.0303*** (0.00400)
Agroratio	0.0223*** (0.00532)	0.0155*** (0.00263)	0.0162*** (0.00290)	0.0242*** (0.00562)	0.0218*** (0.00476)	0.0149*** (0.00274)	0.0157*** (0.00245)
Indratio	0.0253*** (0.00543)	0.0365*** (0.00543)	0.0366*** (0.00616)	0.0313*** (0.00682)	0.0328*** (0.00691)	0.0418*** (0.00600)	0.0415*** (0.00531)
Dens	0.114*** (0.0160)	0.0530*** (0.0166)	0.0529*** (0.0162)	0.107*** (0.0146)	0.106*** (0.0148)	0.0392** (0.0153)	0.0396*** (0.0149)
L.wh_fdi	0.0990*** (0.0211)	-0.00762 (0.0182)			-0.139*** (0.0387)	-0.0189 (0.0141)	
L.access_pop	0.000772** (0.000367)	-0.000232 (0.000536)	-0.000280 (0.000469)			-0.00197** (0.000774)	

L.depth_pop	0.000137*			0.000148*	0.000133*	-3.45e-05	
	(7.34e-05)			(8.09e-05)	(7.37e-05)	(4.34e-05)	
L.FDIxDEPTHpop		1.056***	1.038***				
		(0.324)	(0.297)				
L.FDIxACCESSpop				0.199***	0.386***		
				(0.0466)	(0.0940)		
L.FDIxACCESSxDEPTHpop						1.526***	1.481***
						(0.355)	(0.345)
Constant	-0.0190***	-0.00832***	-0.00893**	-0.0190***	-0.0135***	-0.00712**	-0.00744***
	(0.00616)	(0.00298)	(0.00384)	(0.00599)	(0.00503)	(0.00278)	(0.00273)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4. Poisson Regression

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pibpcreal	-0.911	-2.072	-1.933	-1.092*	-1.089*	-0.543	-0.933
	(0.595)	(1.328)	(1.440)	(0.614)	(0.639)	(0.545)	(0.985)
lfeduc	-3.042***	-3.302***	-3.263***	-3.213***	-3.312***	-3.265***	-3.140***
	(0.440)	(0.398)	(0.392)	(0.425)	(0.425)	(0.392)	(0.391)
lfgf	1.902***	2.138***	2.620***	1.797***	1.951***	2.011***	2.473***
	(0.505)	(0.517)	(0.613)	(0.491)	(0.484)	(0.506)	(0.586)
Servratio	6.145***	4.353***	3.121***	6.012***	5.196***	4.515***	3.525***
	(1.630)	(1.065)	(1.157)	(1.179)	(0.943)	(1.017)	(1.122)
Agroratio	-3.133*	-5.267***	-7.235***	-3.316***	-4.307***	-5.034***	-6.768***
	(1.809)	(1.125)	(1.258)	(1.281)	(1.056)	(1.072)	(1.167)
Indratio	5.143***	4.237***	3.203**	5.520***	5.097***	3.900***	3.150**
	(1.659)	(1.326)	(1.393)	(1.365)	(1.155)	(1.217)	(1.403)
Dens	2.319***	1.476***	1.164**	1.999***	1.775***	1.681***	1.204**
	(0.571)	(0.445)	(0.479)	(0.424)	(0.389)	(0.425)	(0.481)
L.wh_fdi	3.063***	1.998***			-3.266**	1.593***	
	(0.761)	(0.610)			(1.382)	(0.485)	
L.access_pop	0.288	0.300	0.358			0.212	
	(0.206)	(0.207)	(0.221)			(0.186)	
L.depth_pop	-0.0480			-0.0173	-0.00685	-0.539**	
	(0.306)			(0.183)	(0.0887)	(0.268)	
L.FDIxDEPTHpop		4.838***	7.386***				
		(0.910)	(0.747)				
L.FDIxACCESSpop				4.551***	8.413***		
				(0.735)	(1.771)		

L.FDIxACCESSxDEPTHpop						6.155***	7.776***
						(1.000)	(0.749)
Constant firms	-9.651***	-7.890***	-6.899***	-9.314***	-8.581***	-7.839***	-7.001***
	(1.653)	(0.981)	(0.994)	(1.125)	(0.898)	(0.934)	(0.986)
/lnalpha	-15.38***	-15.39***	-15.33***	-15.67***	-15.46***	-15.71***	-15.20***
	(0.419)	(0.853)	(0.678)	(0.881)	(1.141)	(0.538)	(0.677)

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5. System GMM

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
L.firms	0.680***	0.642***	0.644***	0.673***	0.673***	0.636***	0.638***
	(0.119)	(0.102)	(0.0989)	(0.121)	(0.120)	(0.0972)	(0.0940)
Pibpcreal	0.00880*	0.00761**	0.00755**	0.00869*	0.00865*	0.00787**	0.00724**
	(0.00475)	(0.00386)	(0.00379)	(0.00479)	(0.00474)	(0.00397)	(0.00362)
lfeduc	0.0185	0.00732	0.00697	0.0171*	0.0172	0.00621	0.00629
	(0.0115)	(0.00496)	(0.00464)	(0.0102)	(0.0105)	(0.00438)	(0.00441)
lfgf	0.00165	0.00179	0.00178	0.00175	0.00174	0.00183	0.00174
	(0.00145)	(0.00135)	(0.00134)	(0.00148)	(0.00145)	(0.00137)	(0.00129)
Servratio	0.000954	-0.00240	-0.00275	0.00190	0.00186	-0.00251	-0.00243
	(0.0116)	(0.00971)	(0.00924)	(0.0122)	(0.0121)	(0.00954)	(0.00954)
Agroratio	-0.00213	-0.00456*	-0.00487**	-0.00191	-0.00190	-0.00477**	-0.00480**
	(0.00370)	(0.00248)	(0.00231)	(0.00375)	(0.00376)	(0.00240)	(0.00234)
Indratio	0.0157	0.0124	0.0122	0.0170	0.0169	0.0122	0.0121
	(0.0245)	(0.0220)	(0.0217)	(0.0253)	(0.0250)	(0.0219)	(0.0217)
Dens	0.205	0.192	0.199	0.200	0.200	0.191	0.198
	(0.140)	(0.131)	(0.142)	(0.136)	(0.136)	(0.129)	(0.141)
L.wh_fdi	0.0568	0.0238			0.00912	0.0239	
	(0.0477)	(0.0376)			(0.0303)	(0.0363)	
L.access_pop	0.00111	0.000956	0.00100			0.000837	
	(0.00122)	(0.00113)	(0.00120)			(0.00116)	
L.depth_pop	-2.95e-05			-3.06e-05	-3.04e-05	-3.21e-05	
	(2.36e-05)			(2.40e-05)	(2.36e-05)	(2.25e-05)	
L.FDIxDEPTHpop		0.177**	0.200***				
		(0.0706)	(0.0661)				
L.FDIxACCESSpop				0.0795	0.0690		
				(0.0633)	(0.0556)		
L.FDIxACCESSxDEPTHpop						0.197***	0.218***
						(0.0735)	(0.0692)
Constant	-0.0293	-0.0162	-0.0154	-0.0283	-0.0284	-0.0149	-0.0142

(0.0282) (0.0209) (0.0196) (0.0269) (0.0271) (0.0202) (0.0192)

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

De facto, the finance-related literature is showing a growing interest in the ‘access to finance services’ obstacle (*i.e.* financial inclusion). The lack of access to financial services represents a challenge to economic growth, poverty alleviation and many other economic issues (NEAIME; GAYSSET, 2018). This study demonstrated the importance of credit to firm creation in Brazil.

To summarize, the results suggest that according to our hypothesis, adequate levels of FDI along with FMD are capable of financing new business activities when (i) banks are expanding their operations through new branches and (ii) multinationals are demanding more supply of raw materials and services. This creates a mechanism for creating companies and stimulating industrial activities, which results in fostering local business.

We also argued that this issue is particularly worrisome in Brazil since as a developing economy, the country has a high degree of inequality, which may be intensified if credit is exclusively available to a few entrepreneurs/companies.

5 CONCLUSION

This study contributes to the existing literature by better understanding the roles of FDI spillover effects in developing economies (especially the understudied country of Brazil) in order to estimate the impacts that such flow of investments can cause in an economy, in terms of firm creation, as long as the region has adequate levels of financial development including financial inclusion and stock of credit. The scarcity of studies in developing economies, especially Brazil, make this research unique mainly through analyzing the creation of manufacturing-based firms as a consequence of higher flow of FDI and FMD.

Results indicated that the interaction between FDI, access and depth demonstrates an important synergy that supports the creation of manufacturing-based firms in Brazil. In this sense, we concluded that financial inclusion (meaning access to credit) is important, as is the democratization of financial services for increasing firm creation. Local policymakers should work towards increasing the credit availability, although facilitating access to such credit is of considerable importance and should be the focus of new policies. However, credit by itself has

limited effects since it is necessary to have a multidimensional view and analyze all the variables that can impact the local industrial ecosystem when attracting companies strategically. Attracting foreign investment seems to be a valuable tool to boost firm creation (and therefore job opportunities), as FDI displays a significant influence on the local economy (*i.e.* investing in suppliers, maintenance and other services).

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Final Conclusion

The results obtained from the studies, allowed in the first place, to understand in depth the context of the relationship between FDI and FMD through a systematic review of the literature and subsequently estimate the effects of these variables on the creation of firms in Brazil.

The systematic literature review presented in the first paper an analysis that allowed us to understand the impacts that FMD has on an economy since this development had occurred due to the increase in foreign investments. In addition to validating our hypotheses that FMD has a positive effect on economic development, the results showed that until 2021, no studies analyzing the relationship of these variables in Brazil were published, which raised an alert since the topic is extremely important for the country's development strategy.

In this context, the second article presents an analysis of the impact that FDI and FMD can generate in an economy in terms of firm creation. The results showed that between 2010 and 2014, Brazil benefited from the positive impacts of these variables. In fact, in terms of FMD, the variables credit and access were the main factor that contributed to this effect since in the Brazilian market, credit is scarce and there are several regions with no access to financial institutions.

As suggestion for future research, we suggest an analysis on the effects of FDI and FMD in the bankruptcy of firms in order to understand how Brazilian firms has behaved in terms of competitiveness, and beyond that, we suggest the inclusion of the new scenario of fintechs, which started to grow rapidly after 2015, to understand the new context of financial inclusion.