

FUNDAÇÃO GETULIO VARGAS
ESCOLA BRASILEIRA DE ADMINISTRAÇÃO PÚBLICA E
DE EMPRESAS
MESTRADO EXECUTIVO EM GESTÃO EMPRESARIAL



**Are returns on Foreign Direct Investment (FDI), FDI
determinants?**

**DISSERTAÇÃO APRESENTADA À ESCOLA BRASILEIRA DE ADMINISTRAÇÃO
PÚBLICA E DE EMPRESAS PARA OBTENÇÃO DO GRAU DE MESTRE**

LUIGI LANNUTTI
Rio de Janeiro - 2015

LUIGI LANNUTTI

ARE RETURNS ON FOREIGN DIRECT INVESTMENT (FDI), FDI
DETERMINANTS?

Master's thesis presented to Corporate International
Master's program, Escola Brasileira de Administração
Pública, Fundação Getúlio Vargas, as a requirement for
obtaining the title of Master in Business Management.

Prof. Mario Pinto

Rio de Janeiro

2015

LUIGI LANNUTTI

ARE RETURNS ON FOREIGN DIRECT INVESTMENT (FDI), FDI DETERMINANTS?

Dissertação apresentada ao Curso de Mestrado Profissional Executivo em Gestão Empresarial da Escola Brasileira de Administração Pública e de Empresas para obtenção do grau de Mestre em Administração.

Data da defesa: 28/10/2015.

ASSINATURA DOS MEMBROS DA BANCA EXAMINADORA



Mario Couto Soares Pinto
Orientador (a)



Helio Arthur Reis Irigaray



Luis Fernando Filardi Ferreira

Lannutti, Luigi

Are returns on Foreign Direct Investment (FDI), FDI determinants? /
Luigi Lannutti. – 2015.
119 f.

Dissertação (mestrado) - Escola Brasileira de Administração Pública e de
Empresas, Centro de Formação Acadêmica e Pesquisa.

Orientador: Mario Couto Soares Pinto.

Inclui bibliografia.

1. Administração financeira. 2. Empresas - Finanças. 3. Investimentos
estrangeiros. 3. Globalização. I. Pinto, Mario Couto Soares. II. Escola Brasileira de
Administração Pública e de Empresas. Centro de Formação Acadêmica e Pesquisa.
III. Título.

CDD – 658.15

ACKNOWLEDGEMENTS

This work required a big effort, which I would have not been able to make without the support of a group of incredible people around me.

First, the biggest support of all came from my family. My parents, who listened to me, gave me precious advice, understood and sustained me while I took the decision to take this additional step in my higher education. To keep weaving this *fil rouge*, I want to again extend my thanks to my smart and beautiful *fratelli dagli occhi blu* – including now a lawyer and a half-engineer. Congratulations to all! And my sponsor Gianluca: without him I would have never even thought of taking this path. His support has been invaluable in giving me the strength to overcome every obstacle, the motivation to never stop believing in what I was doing, a shoulder to rest on, a day to share.

I also want to thank Cecilia and Ivancho, who listened to all my complaints and, nevertheless, resisted and gave me constructive advice. Their presence has been so important, that without them I would have maybe written only the first 5 pages of this work... I am really thankful for sharing my lunches and coffees with them.

And I want to thank also the CIM 2 cohort, for being a happy and enriching company throughout the whole period of this Master's program. These people gave me not one, but many new perspectives and I am extremely thankful to be able to call them friends now. Each person of the CIM 2 cohort gave me something that I will always bring with me. And hopefully I will always have their friendship.

Thanks also to Georgetown University, ESADE Business School and Fundação Getulio Vargas for making all this happen.

TABLE OF CONTENTS

<u>1. INTRODUCTION AND OBJECTIVES</u>	<u>1</u>
<u>2. JUSTIFICATION</u>	<u>3</u>
<u>3. LITERATURE REVIEW</u>	<u>5</u>
3.1 PERFECT COMPETITION	5
3.2 IMPERFECT MARKETS	5
3.3 BILATERAL FDI RELATIONSHIPS	8
3.4 ADDITIONAL ISSUES RELATING TO FDI DETERMINANTS	9
3.5 VARIABLES TO BE ASSESSED AS FDI DETERMINANTS.....	10
<u>4. THE RESEARCH METHODOLOGY AND THE HYPOTHESES</u>	<u>13</u>
<u>5. DATA UNIVERSE AND SAMPLE</u>	<u>17</u>
<u>6. CONSTRUCTION OF THE DATASET</u>	<u>19</u>
6.1 REPORTING COUNTRIES.....	20
6.2 YEAR OF REFERENCE	21
6.3 PARTNER COUNTRIES.....	21
6.4 FDI RETURNS.....	21
6.5 FDI INWARD STOCK	21
6.6 GDP AND GDP <i>PER CAPITA</i>	22
6.7 TRADE OPENNESS	22
6.8 MAGNITUDE OF EXPORTS	23
6.9 EXPORTS OF RAW MATERIALS AS A PERCENTAGE OF TOTAL EXPORTS.....	23
6.10 BUSINESS ENVIRONMENT.....	23
6.11 GOVERNANCE SCORE	27
6.12 MONTHLY WAGE	28
6.13 HUMAN DEVELOPMENT SCORE.....	29
6.14 FINANCIAL RATINGS	30
6.15 GEOGRAPHICAL AND CULTURAL DISTANCE.....	33
6.16 BILATERAL FDI OUTFLOWS IN THE YEAR OF REFERENCE.....	33
6.17 LOGARITHMIC TRANSFORMATIONS	34
<u>7. ANALYSIS OF THE CORRELATION OF INPUT DATA AND MODEL DEVELOPMENT</u>	
<u>37</u>	

8. RESULTS	47
8.1 MODEL DISSECTION INTO INCOME LEVELS	47
8.2 DISCUSSION OF THE RESULTS	49
8.2.1 HIGH INCOME TO HIGH INCOME	50
8.2.2 HIGH INCOME TO MIDDLE INCOME	51
8.2.3 HIGH INCOME TO LOW INCOME	52
8.2.4 MIDDLE INCOME TO HIGH INCOME	53
8.2.5 MIDDLE INCOME TO MIDDLE INCOME	54
8.2.6 MIDDLE INCOME TO LOW INCOME	54
9. CONCLUSIONS	57
10. RECOMMENDATIONS	59
10.1 PRIVATE SECTOR	59
10.2 PUBLIC SECTOR	59
10.3 FURTHER RESEARCH	60
11. ANNEXES	63
11.1 WDR COUNTRIES	63
11.2 FIRST RUN OF THE MODEL	64
11.3 SECOND RUN OF THE MODEL	65
11.4 THIRD RUN OF THE MODEL	66
11.5 MODEL RESULTS: FDI FROM HIGH INCOME COUNTRIES TO HIGH INCOME COUNTRIES	67
11.6 MODEL RESULTS: FDI FROM HIGH INCOME COUNTRIES TO MIDDLE INCOME COUNTRIES	68
11.7 MODEL RESULTS: FDI FROM HIGH INCOME COUNTRIES TO LOW INCOME COUNTRIES	69
11.8 MODEL RESULTS: FDI FROM MIDDLE INCOME COUNTRIES TO HIGH INCOME COUNTRIES	70
11.9 MODEL RESULTS: FDI FROM MIDDLE INCOME COUNTRIES TO MIDDLE INCOME COUNTRIES	71
11.10 MODEL RESULTS: FDI FROM MIDDLE INCOME COUNTRIES TO LOW INCOME COUNTRIES	72
11.11 CORRELATION MATRIX BETWEEN DOING BUSINESS AND THE RULE OF LAW VARIABLES OF THE GOVERNANCE INDICATOR	73
11.12 CORRELATION MATRIX AMONG GDP PER CAPITA OF THE HOME AND HOST COUNTRIES AND THEIR SUM AND DIFFERENCE	74
11.13 CORRELATION AMONG LEVEL OF IMPORTS, MARKET OPENNESS, GDP AND MARKET OPENNESS DIFFERENCE	75
11.14 CORRELATION BETWEEN THE RESOURCE AVAILABILITY IN THE HOST COUNTRY AND THE DIFFERENCE BETWEEN THE HOME AND HOST COUNTRY	77
11.15 CORRELATION AMONG THE BUSINESS ENVIRONMENT DIFFERENCE AND THE BUSINESS ENVIRONMENT SCORE IN HOME AND HOST COUNTRIES	78
11.16 CORRELATION AMONG THE GOVERNANCE SCORE DIFFERENCE AND THE GOVERNANCE SCORE IN HOME AND HOST COUNTRIES	79
11.17 CORRELATION AMONG THE HDI DIFFERENCE AND THE HDI IN HOME AND HOST COUNTRIES	80
11.18 CORRELATION AMONG THE FINANCIAL RATING DIFFERENCE AND THE FINANCIAL RATING IN HOME AND HOST COUNTRIES	81

11.19	CORRELATION BETWEEN MONTHLY WAGE AND GDP PER CAPITA IN REPORTING COUNTRY	82
11.20	CORRELATION BETWEEN GOVERNANCE SCORE DISTANCE AND SCORE OF THE HOST COUNTRY	83
11.21	CORRELATION BETWEEN HDI DISTANCE AND HDI OF THE HOST COUNTRY	84
11.22	CORRELATION BETWEEN FINANCIAL RATING DISTANCE AND FINANCIAL RATING OF THE HOST COUNTRY.....	85
11.23	CORRELATION MATRIX AMONG SEVERAL VARIABLES THAT WERE LEFT WITH A HIGH VIF IN THE SECOND RUN AND FOR WHICH WE SUSPECTED A MULTICOLLINEARITY.....	86
11.24	FDI RETURNS AS THE DEPENDENT VARIABLE	87
11.25	CORRELATION MATRIX BETWEEN FDI RETURNS AND OTHER VARIABLES IN THE MODEL	88
11.26	BRAZIL'S BALANCE OF PAYMENTS	89
12.27	FINAL LIST OF PARTNER COUNTRIES USED IN THE MODEL	99

12. BIBLIOGRAPHY **103**

LIST OF ILLUSTRATIONS

FIGURE 1: THE HUMAN DEVELOPMENT INDEX (HDI)	30
TABLE 1: INDEPENDENT VARIABLES AND THEIR EXPECTED RELATIONS WITH THE DEPENDENT VARIABLE, BASED ON THE LITERATURE REVIEW	13
TABLE 2: LIST OF ALL THE COUNTRIES AND VARIABLES INCLUDED IN THE WORK.....	18
TABLE 3: DOING BUSINESS DISTANCE TO FRONTIER INDICATORS.....	25
TABLE 4: VARIABLES ATTRIBUTED TO EACH WORLDWIDE GOVERNANCE INDICATOR	27
TABLE 5: INTERNATIONAL RATING AGENCIES' RATING CORRESPONDENCES	32
TABLE 6: QUANTIFICATION MATRIX FOR S&P RATINGS.....	32
TABLE 7: VARIABLE WITH HIGH VIF AND CORRESPONDING CORRECTION ACTIONS, DURING THE FIRST RUN OF THE MODEL.....	39
TABLE 8: VARIABLE WITH HIGH VIF AND CORRESPONDING CORRECTION ACTIONS, DURING THE SECOND RUN OF THE MODEL.....	44
TABLE 9: COUPLES USED IN THE MODEL DISSECTION BY COUNTRIES' INCOME LEVELS	47
TABLE 10: RESULTS FOR EACH COUPLE USED IN THE MODEL DISSECTION BY COUNTRIES' INCOME LEVELS	48
EQUATION 1: EXAMPLE OF A LOGARITHM OF THE GDP PER CAPITA VARIABLE.....	34
EQUATION 2: GENERAL FORMULA OF THE LOGARITHM OF A VARIABLE THAT ASSUMES NEGATIVE VALUES	35
EQUATION 3: REGRESSION FORMULA OF THE FIRST MODEL	37
EQUATION 4: REGRESSION FORMULA OF THE LAST MODEL	46

LIST OF ACRONYMS AND ABBREVIATIONS

BLS	Bureau of Labour Statistics
BoP	Balance of Payments
DTF	Distance to Frontier
EU	European Union
FDI	Foreign Direct Investment
FTA	Free Trade Agreement
GDP	Gross Domestic Product
GVC	Global Value Chain
HDI	Human Development Index
HS	Harmonized System
IDB	Inter-American Development Bank
IDP	Investment Development Path
ILO	International Labour Organization
IMF	International Monetary Fund
IPA	Investment Promotion Agency
ITC	International Trade Centre
ITIA	International Trade and Investment Agreement
M&A	Mergers and Acquisitions
MNC	MultiNational Corporation
NAFTA	North-America Free Trade Agreement
OECD	Organization of Economic Cooperation and Development
TPO	Trade Support Institution
UNCTAD	United Nations Conference on Trade and Development
WTO	World Trade Organization
UNDP	United Nations Development Program
VAT	Value Added Tax
WB	World Bank
WDR	World Development Report
WGI	World Governance Indicator

ABSTRACT

Foreign Direct Investments (FDI) acquired an important role in the development process of the global economy. FDI inward stock was equivalent to an average of 32% of GDP for OECD countries in 2013. However, FDI affects a country's Balance of Payments (BoP) in two ways: FDI flows are recorded in the BoP financial account while returns on FDI affect the BoP current account. Therefore, part of the positive contribution of inward FDI to a country on its financial account could be potentially offset by a negative contribution of FDI returns on the current account.

The intent of this work is to complement the research on FDI determinants by introducing FDI returns as a variable in a gravity model where bilateral FDI outflows are the dependent variable. Moreover, using outward FDI flows as the dependent variable, the work allows looking at the behavior of Multinational Corporations (MNC) investing abroad.

The results show that MNCs repatriate returns generating from the investments they make abroad. This is particularly true when high-income countries are involved: MNCs from high-income countries repatriate returns to their home countries from FDI made anywhere, while MNCs from middle-income countries repatriate returns from FDI in high-income countries.

Repatriated returns are a relevant variable determining the value of FDI that a country makes in another country. The information on FDI returns is starting to become available to the public. This allows MNCs to sharpen their investment location decision models and national IPAs to better assess the two-fold BoP effects of promoting FDI.

1. Introduction and objectives

Foreign Direct Investment (FDI) is defined as an investment made by a multinational corporation (MNC) or entity based in one country, into a company or entity based in another country. Entities making FDI typically have a significant degree of influence and control over the company into which the investment is made. In fact, the accepted threshold for an FDI relationship, as defined by the OECD-IMF, is 10%. That is, the foreign investor must own at least 10% or more of the voting stock or ordinary shares of the investee company¹. The investing company may make its overseas investment in a number of ways – either by setting up a subsidiary or associate company in the foreign country (greenfield investment) or by acquiring shares of an overseas company or through a M&A or joint venture (brownfield investment).

FDI returns cover payments of direct investment income, which consist of income on equity (dividends and branch profits²) and income on the intercompany debt (interest), i.e. those returns on FDI that the MNC repatriates from its affiliates abroad. It is possible to break down the information on FDI returns by partner country, i.e. it is possible to observe how much income country A is receiving from the FDI made in countries B, C, D, etc. Data on FDI returns is relatively new and only a small set of countries reports this statistical information. Not much research exists, therefore, on FDI returns statistics.

The general objective of this thesis is to analyze the contribution that FDI returns can provide private sector to improve, inform and influence its decision-making process in determining an investment location abroad. Data on FDI returns is new, and only a few countries have recently started to report and publish the details of this type of information. This data might be of help to shed new light on the dimensions and determinants of FDI, i.e. on what drives MNCs to invest abroad.

To fulfill this objective, this work starts with a literature review of the FDI theories developed over time, their points of strengths and their caveats. This study also reviews the literature on FDI

¹ Investments below 10% are referred to as portfolio investments.

² Some consider also reinvested earnings among FDI returns. However, if the earnings generated by a foreign affiliate are reinvested locally, these cannot be considered returns to the mother company. Statistics on FDI returns do not cover reinvested earnings.

determinants that have been so far identified. Finally, it explores how and if data on FDI returns can be integrated into the literature to help support one or more theories. This work provides a first example of how to use statistical detailed information on FDI returns and creates a first empirical link between FDI trends and FDI returns.

This work uses outward FDI flows as the dependent variable. Only seldom outward FDI is used to assess the determinants of FDI. In fact, FDI research generally tries to assess a country's attractiveness to FDI, therefore using inward FDI. Using outward FDI helps the research to look at the behavior of MNCs investing abroad.

In conclusion, this work provides an original contribution to FDI research for three reasons:

- From a content perspective, FDI returns are new data, and no research on FDI returns as a FDI determinant exists;
- Again from a content perspective, outward FDI was rarely used in FDI research. This ensures the assessment of the MNC perspective, as explained above;
- From a methodological perspective, bilateral FDI was rarely used in FDI research. FDI bilateral data refers to the statistics covering the FDI flowing between two specific countries. Generally, FDI research is based on the total FDI flowing to a country, no matter where it comes from. This work uses the data reported by countries that specify the destination countries for their outward FDI. This has specific implications on the statistical model, which needs to take into account characteristics that describe relationships between the two countries under analysis.

2. Justification

Analytical research on FDI determinants is relevant to a number of stakeholders ranging from private to public sector entities. FDI is acquiring more and more an important role in the development process of the global economy and its main actors:

- FDI has increased its importance as a catalyst for production and trade expansion (WEF, 2013), mostly due to a major expansion in the scope of global value chains (Farole and Winkler, 2012). Moreover, intra-firm trade is estimated to represent a high percentage of total international trade – according to the OECD, intra-firm transactions represented 48% of imports and 30% of exports of the United States in 2009;
- governments need to make sure that investments happen in their countries to sustain development, and FDI is a very important source of private capitals. FDI inward stock was equivalent to an average of 32% of GDP for OECD countries in 2013. Therefore, it is extremely relevant for governments to understand what are the determinants of FDI in order to shape their policies to attract more and better private capitals;
- MNCs need to understand the link between country- and/or sector-specific conditions and the efficiency of their investments abroad. To make more efficient investments overseas, MNCs have to be able to identify those factors that make a country more attractive to receiving their investments;
- Finally, understanding the determinants of FDI helps statistical agencies refine the provision of adequate and relevant statistical data.

In addition, studying the analytical links existing between FDI and FDI returns can help various stakeholders further understand why MNCs invest abroad. More specifically, this research paper can help provide some initial answers to the following questions:

1. How can FDI returns data be used to complement the research on FDI determinants? What kind of data is available and how can it be included in this broader research field?
2. If it is true that FDI returns determine future FDI, it might be interesting to explore how MNCs actually identify those countries with the highest FDI returns. When undertaking an investment abroad, what is the importance associated with FDI returns maximization (mainly, the possibility of repatriating funds)?

3. From a policy perspective, what national Investment Promotion Agencies (IPA) and other governmental agencies should do to make their country more attractive as an FDI destination? Should they focus on creating a sound private-public dialogue on reforms that could make the business environment more MNC-friendly (like FDI returns repatriation) or should they focus on enhancing the enabling environment to help MNCs settle in their country?

On such basis, while research on FDI determinants is useful to international organizations, governmental agencies and private companies to understand the underpinning reasons of FDI, research on FDI returns offers an additional, specific and innovative perspective on the decision-making process determining the location of an investment.

3. Literature review

3.1 Perfect competition

Early FDI theory is rooted in the assumption of perfectly competitive markets. Several authors initially try to understand why FDI occurs and base their work on perfectly competitive markets. Among these authors, there are MacDougall (1958), Simpson (1962), Kemp (1964) and Caves (1996). These first authors find that, in a two-country model and prices of capital being equal to its marginal productivity, when there is free movement of capital from an investing country to a host country, the marginal productivity of capital tend to be equalized between the two countries. After investment, the output of the investing country falls without any decrease in the national income of the country. This is because, in the long-term, the investing country gets higher income from its investment abroad.

However, FDI would not exist in a perfectly competitive world (Kindleberger, 1969). Hymer (1976) develops his theory on an imperfect market setup and finds that some distortion to perfect competition has to exist to make FDI occur. Other authors follow his theory.

3.2 Imperfect markets

Hymer (1976)'s theory states that firms operating abroad compete with domestic firms that are in an advantageous position³; therefore, any disadvantages that the foreign firm may face must be offset. The firm-specific advantages that a foreign firm may have are in the form of patents, brand, specific skills, economies of scale and cheaper finance sources. Moreover, following Hymer's theory, these advantages can be spread from a firm's unit to another, regardless of the location of the units (Caves, 1996). Since the market is imperfect, firms are able to leverage these advantages to make their investment abroad profitable. Various authors backed up Hymer's theory. Sodersten (1970), for example, argued that willingness to increase profits by taking advantage of technological superiority or superior organizational structure was among the main reasons for FDI. Although attempting to explain why FDI occurs, Hymer's theory does not explain where and when.

³ In terms of culture, language, legal system, consumers' preferences and foreign exchange risk.

Kindleberger (1969) builds up on Hymer's theory and argues that firm-specific advantages encourage a firm to invest abroad in order to fully exploit them instead of sharing them with potential competitors in the foreign market. The greater the chances of earning monopoly profits, the higher will be the encouragement among firms to invest directly.

Later on, Buckley and Casson (1976) shift the focus from country-specific to industry- and firm-specific determinants of FDI. The internationalization theory they develop is based on three main pillars:

1. Firms maximize profits in a market that is imperfect;
2. When markets in intermediate products are imperfect, there is an incentive to bypass them by creating internal markets;
3. Internalization of markets across the world leads to MNCs.

A firm may choose to internalize certain stages of production through backward and forward linkages⁴. This translates into FDI when internalization involves abroad operations.

In 1973, Knickerbocker add a third dimension to the generally accepted economic literature that identify two main motives for a firm to spot a particular country for its FDI. The three motives are:

1. firms seek increased access to the host country's market;
2. firms seek access to factors available in the foreign country;
3. firms invest in a country to imitate competitors. Knickerbocker's added this criterion as an FDI determinant because he thought that a firm wants to offset the risk of a competitor setting up facilities in a country where the original firm is exporting.

However, Knickerbocker's theory does not explain why the first firm undertakes FDI.

Dunning (2001) develop a highly comprehensive theory, which adds a further dimension to the oligopolistic and internalization theories described above. His theory is known as location theory and is used to identify the determinants influencing locations of MNC affiliates. Among others,

⁴ Hirschman's theory (1962) of unbalanced growth studied the relationships between firms along the supply chain. Backward linkages describe the process of how a company purchases its goods, products, or supplies (inputs) from a company in a different sector. Forward linkages describe the process of how a company sells its goods, products, or supplies (outputs) to a company in a different sector. Backward linkages exist when investments in an industry profit from inputs and forward linkages exist when investments in an industry profit from outputs.

factors that could influence MNC location decisions are host country policies, economic fundamentals, firm strategy and agglomeration economies.

Dunning's theories evolve over the years and are followed by the Investment Development Path (IDP) theory, which suggests a link between a country's economic development, measured in GDP per capita, and its stock of FDI. The IDP theory sees a dynamic interaction between economic development and FDI and, for the first time, introduces the role of the government that can influence the country's economic development and therefore MNCs' decisions of investing in one country or another.

Some researchers, such as Aliber (1970), relate FDI flows to a currency strength, suggesting that countries with weaker currencies have a higher capacity to attract FDI from countries with stronger currencies. The currency-based theories, however, do not find strong support in the economic research, as they fail to explain investments between countries with equally strong currencies or even FDI originating from countries with weaker currencies and directed toward countries with strong currencies.

Newer theories assume a direct link between FDI and international trade. If, in the past, FDI was driven by trade⁵, in today's context of global value chains, trade flows are also shaped by FDI. FDI has become by some extents even more important than international trade (Graham, 1996, and Helpman et al., 2003). About one third of total international trade occurs between the firms (UNCTAD, 2004) and intra-firm transactions represented 48% of imports and 30% of exports in 2009 in the United States (OECD, 2011).

Vernon (1966) develop the product life cycle theory, which argues that FDI occurs when a product is mature and a foreign market becomes large enough to support local production. Although this theory fails to identify when it is profitable to invest internationally, it gives a hint to other researchers to integrate trade and FDI theories.

For example, Kojima (1973, 1975, and 1985) identify resources, labor and market orientation as the three main FDI determinants. Other theories, instead, focus on the modes of FDI, which could be vertical or horizontal. Horizontal FDI, where multi-plant firms duplicate the same activities in multiple countries, is different from vertical FDI, where firms locate different stages of production in different countries. As an example, Helpman (1984) argues that firms choose cost-minimizing

⁵ FDI was initially mainly seen as a means to substitute imports in a country or to create a platform for tariff-jumping intra-regional trade.

locations to maximize their profits. This theory, specifically, also explains FDI as a way to circumvent impediments to trade such as tariff (tariff-jumping FDI).

Finally, some theories suggest that a motive for FDI has to be found in International Trade and Investment Agreements (ITIA). ITIAs are meant to facilitate economic integration among countries by eliminating obstacles to and offsetting risks arising from international trade and investment (Markusen, 1984). In the past few decades, ITIAs have proliferated together with flows of production factors across nations. For this reason, the existence of ITIAs may represent a locational determinant for FDI. The European Union is a major example of economic integration; the North American Free Trade Agreement (NAFTA) is one in the Americas. Theories that link FDI and ITIAs result, however, in different outcomes and specifically this issue is the object of Salike (2010)'s study. Salike notes that, in order to identify and assess the connections between ITIAs and FDI, it is essential to consider the motives and modes of FDI from the intraregional and interregional perspectives. Salike identify two important motives of FDI, tariff jump and internalization, and two channels of FDI, vertical and horizontal. Salike theorizes that the combined effects on FDI depend on the intensity and mix of investment coming from inside and outside the region. In other words, if interregional investment is predominant, ITIAs will boost investment; if intraregional FDI is dominant, the effect could be negative. Salike also noted that countries with relatively higher education levels and financial stability have a tendency to attract a larger share of FDI at the cost of other ITIAs members.

3.3 Bilateral FDI relationships

The above literature refers to models that try to analyze the determinants of total inward FDI received by the host country, or better said, of the amount of total inward FDI that the host country has managed to attract. These models are extremely useful to understand what determinants make a country more attractive to FDI. This work, however, also tries to look at the other side of the medal, i.e. at what are the determinants that make a MNC choose a country over another as its FDI destination. For this reason, this work uses outward FDI data broken down by host country – and home country at the same time.

Bilateral FDI is used in other research to measure certain specific aspects of FDI. Models using bilateral FDI are generally gravity models, where FDI bilateral flows or stocks depend on GDP or population in the source and/or the host country, and on the geographic distance between both

countries. Gravity models essentially include variables that are expressed as the distance between the home and the host country. Distance in these models could be geographic, institutional, economical, development-related, etc.

Gravity models have been generally used to assess what drives trade between two countries. In fact, studies of bilateral FDI flows are behind the parallel trade literature. As with trade flows, a gravity specification actually fits cross-country data on FDI well (Bénassy-Quéré et al, 2005). However, contrary to trade literature, there is no paper that hypothesizes gravity variables (variables relative to the distance between the two countries) as the sole determinants of FDI. Intuition and theory suggests that MNC and FDI behavior is likely more complicated to model than trade flows.

MNC theories suggest different distinct motivations for FDI: such as to access markets in the face of trade frictions (horizontal FDI) or to access low wages for part of the production process (vertical FDI). Another relevant possibility is export-platform FDI, where a MNC places FDI into a host country to serve as a production platform for exports to a group of (neighboring) host countries. A further possibility is a more complicated vertical interaction (or fragmentation), where affiliates of an MNC in a variety of hosts are shipping intermediate goods between them for further processing before shipping a (more) finished product back to their parent country.

The FDI aspects assessed through gravity models are therefore very diverse, and include, among others, regionalism (Eaton, Tamura, 1994), quality of institutions (Bénassy-Quéré et al., 2005) and psychic closeness (Zurawicki and Zabib, 2010).

3.4 Additional issues relating to FDI determinants

The theories examined above do not take into account some aspects of FDI. It is, in fact, important to underline the following items:

- The political situation of a country can influence its FDI attractiveness. For example, the signing of trade agreements indicates to potential investors that a more welcoming investment climate exists. Furthermore, as Buckley and Casson (1976) first acknowledge, the risk of host government intervention can be higher in highly-regulated industries such as electricity and telecommunications.
- FDI can take the form of Mergers and Acquisitions (M&A) and greenfield investment. M&As occur when firms buy and sell corporate assets, while greenfield FDI comprises the

construction of a new production capacity abroad. Firms may use one or the other FDI mode, depending on different characteristics. For example, factor price differences between countries would lead to greenfield FDI (from the high-cost to low-cost country) and to cross-border acquisitions, while cross-country differences in entrepreneurial abilities would only give rise to M&As.

Finally, there are methodological issues to consider, like multicollinearity, which is particularly important when using gravity models. For example, the level of development of a country is a likely determinant of inward FDI, for several reasons: if MNCs are mainly interested by market access, then they will be attracted by both the size of the host country and by the purchasing power of its inhabitants. For a given GDP in the host country, a MNC will be happier the higher the GDP per capita because high GDP per capita generally means some ground for higher profits. Finally, GDP per capita is also a measure of productivity and of real wages. To the extent that MNCs achieve higher productivity than local firms, low GDP per capita will entail low labour costs, which will act as an attraction factor. On the whole, there are many reasons to expect GDP per capita to matter, albeit with an ambiguous sign (Bénassy-Quéré et al., 2005). Multicollinearity might therefore be an issue also when using FDI returns as a determinant of FDI. In fact, the ability of a company to generate returns might be correlated with the level of development of that country, with its GDP and GDP per capita, and other economic and/or policy variables. Hence, a finding of a positive impact of FDI returns on FDI could in fact result from the positive impact of GDP or other variables. This issue exists, and this study addresses it by analyzing the collinearity between FDI returns and other variables in the model and by trying to include all possible variables in the assessment. However, additional research might want to create a model to study FDI returns as the dependent variable. This is not the scope of research of this paper, though.

3.5 Variables to be assessed as FDI determinants

Based on the literature described above, several variables are considered in the model to predict future FDI. In particular, the variables that could be considered based on the existing literature are:

- Imitative behavior;
- Market openness;
- Market size and Free Trade Agreements (FTA) that would make a market bigger;

- Resource abundance;
- Host country government's development policies and local business and political environment;
- Labor and market orientation;
- Education levels and financial stability;
- Development level and growth;
- Geographical distance, cultural distance, distance between the value of each of the above variables in the two countries of reference;
- FDI returns (the variable that this work wants to assess).

4. The research methodology and the hypotheses

The literature research allows attributing a hypothesis to each determinant. The hypothesis is that the determinant influence FDI flows either positively or negatively. Part of the research on the determinants includes understanding how to attribute a quantitative measure to each determinant. For example, a proxy for the independent variable imitative behavior could be previous FDI, i.e. the amount of FDI materialized in previous years in a specific country.

Another part of the research includes identifying the resources to estimate each variable.

Based on the literature review detailed in Chapter 3, Table 1: Independent variables and their expected relations with the dependent variable describes the sources of information used in this work and the hypothesized relation between the independent and dependent variables. The variables are those identified in the literature reviewed during the course of Chapter 3 and further discussion on the variables is then provided in Chapter 6.

Table 1: Independent variables and their expected relations with the dependent variable, based on the literature review

Variable	Resources	Relation with FDI flows
Imitative behavior we assume that a proxy for the imitative behavior is the previous FDI materialized in the country ⁶ ; the level of stock seems more significant than the level of flows in the previous year, although a country with a low stock might have been attractive in the most recent years; the level of flows in the previous years is not relevant in itself, because FDI flow is very volatile and relative to the size of the economy; for these reasons, the annual growth of the	United Nations Conference on Trade And Development FDI database	Positive if MNCs invest in a country, so should do competitors

⁶ One study published in the Pakistan Development Review (Çevis and Çamuradan, 2007) uses previous levels of FDI in the country as a pull factor for new FDI and finds that this is an important economic determinant.

inward stock over the medium term of 3 years is used as a proxy for imitative behavior		
Market size and openness a proxy for market size is the level of exports, while a proxy for market openness is the percentage of international trade over GDP	International Trade Centre (ITC) Trade Map, IMF World Economic Outlook	Positive a large market size and a broad market access should positively influence FDI flows to the host country (market-seeking FDI)
Resource abundance measured as the contribution of exports of raw materials to total exports	ITC Trade Map	Positive availability of raw materials should attract FDI (resource-seeking FDI)
Host country government's development policies and local business and political environment several variables have to be considered: policy effectiveness, level of corruption, business environment; these variables also reflect into the level of development of the host country, whose proxy is GDP per capita	World Bank World Governance Indicator, International Finance Corporation (IFC) Doing Business, IMF World Economic Outlook	Positive the higher the country is ranked in its governance and business environment performance, the higher FDI it should receive
Labor and market orientation labor cost is a proxy for this indicator	International Labour Organization (ILO) Global Wage Database and Eurostat for labour costs; other sources to fill in the gaps (publications)	Negative the higher the labor costs, the less attractive the country is expected to be for FDI

Education level measured through the UNDP Human Development Index, which includes the mean years of schooling and school expectancy (average duration of formal education in which a five-year-old child can expect to enroll over his or her lifetime)	United Nations Development Program (UNDP) Human Development Index	Positive the higher the education and human development level in a country, the higher its FDI attractiveness
Financial stability measured as the credit rating attributed to a country by international credit agencies at the moment of the investment	Fitch's country ratings (historical series) and complementary ratings from Moody's and S&P	Positive the higher the country's financial stability, the higher its FDI attractiveness
Simple distance indicators geographical distance, cultural distance measured through a dummy variable saying if the home and the host countries have a language in common	CEPII database	Depending on the variable negative for the geographical distance, positive for the cultural distance
Calculated distance indicators Measured as the distance between the value of each of the above variables in the two countries of reference	all databases used for the other variables to calculate the distance between their values in the home and host countries	Depending on the variable and the calculation e.g.: if the education level is higher in the home country, its relationship with FDI is expected to be negative; if the labour cost is higher in the home country, its relationship with FDI is expected to be positive
FDI returns	Eurostat	Positive

the variable that this specific work assesses: specifically it is the average of the FDI returns flowing from the host to the home country over the previous three years		the higher the past returns on FDI, the better should MNCs consider investing in the host country to generate and repatriate returns
--	--	--

Source 1: Author's descriptions of existing databases to be used as references for this work

The main hypothesis of this specific thesis proposal is that FDI returns have a positive influence on FDI, i.e. that the greater the FDI returns that a company repatriates from the host country, the greater FDI will the host country receive from the company's home country.

5. Data universe and sample

The universe of available data is vast, because FDI statistics may in principle cover all countries of the world. However, since the most important variable in this work is FDI returns, the data universe is restricted by the availability of this specific information. FDI returns statistics are currently available only for a handful of countries. Among the biggest economies, the United States and the European Union (EU) report this information. Some information is also available for Brazil.

The thesis work identifies a country or a set of countries for which the information on FDI returns is available and comparable. The dataset provided for EU countries through Eurostat is the most comprehensive, because it is harmonized and alone covers 35 countries. For this reason and to ensure data consistency, the data universe is limited to the information available in the Eurostat database, that homogeneously covers FDI and FDI returns statistics for 35 countries, and in particular the EU-28 countries, Iceland, Japan, Montenegro, Norway, Switzerland, Turkey and the United States.

The Eurostat database is therefore used to source all the data points for FDI and FDI returns statistics. In total, there are in this initial database around 26,000 observations, including all bilateral flows between the 35 countries of the Eurostat database and their partner country in the whole world over a 3 year period (better details are provided below). Some observations, however, are not meaningful but they contain null values for privacy reasons. Moreover, the dataset, at this point, is still lacking the information linked to all the other variables described in Table 1. It is very likely that a value cannot be attributed to all the variables for each observation (for example, the wage level for the Burkina Faso, one of the partner countries of the 35 Eurostat countries, might not be available for the 3 years of reference and for this reason this country is dropped out of the model). These are limitations that restrict the number of observations that can be actually used in the statistical model. Table 2: List of all the countries and variables included in the work shows the list of the reporting and partner countries finally used in the model, together with the dependent and independent variables.

The process of finding a value for all variables and dropping meaningless observations is better described in Chapter 6.

Table 2: List of all the countries and variables included in the work

Reporting countries	Partner countries	Dependent variable	Independent variable of interest to this study	Other independent variables	Measure for other independent variables
EU28 ⁷	All countries of the world. See Annex 12.27 for a final list of the 117 countries used in the final version of the model for which all necessary data was available	Bilateral FDI outflows between each couple of reporting and partner country	Past FDI returns	Imitative behaviour	Growth of inward FDI stock
Iceland				Development level	GDP
Japan					GDP per capita
Montenegro				Trade openness	(Exports + Imports) / GDP
Norway				Market size	Magnitude of exports
Switzerland				Resource abundance	Exports of raw materials / Total exports
Turkey				Business environment	Doing Business distance to frontier
United States				Governance	Worldwide Governance Indicators rank
				Workforce costs	Monthly wage
				Workforce quality	Human Development Index score
				Economic stability	Financial rating
				Geographical distance	Weighted geographical distance
					Contiguity
				Cultural distance	Common official language
					Common unofficial language

⁷ EU28 includes Austria, Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden and the United Kingdom.

6. Construction of the dataset

The dataset is composed of all variables used in the statistical model (the statistical model is described in Chapter 0), and comprises the statistical data in the combinations of all variables included in the model and described in Table 1 in Chapter 4. It includes the dependent variable of FDI flows, the independent variables (including the FDI returns and all others described in Table 1) and the control variables, i.e. the reporting country, the partner country and the year of reference. For each variable, a dataset is constructed (for example, a dataset for the financial stability of each partner country in the reference year is constructed). All these datasets (one per variable) feed then into a single dataset of 25.924 observations, which is finally cleaned to include only meaningful observations. For example, it is impossible to attribute a value to the financial stability of Burkina Faso in 2011, and therefore all observations linked to Burkina Faso as a partner country in 2011 are deleted from the dataset. In fact, it is important that all the observations that are kept in the dataset have a value per variable, for every set of reporting country, partner country and reference year. In the end, the construction and cleaning processes resulted in 8.852 observations. Each observation is a line that includes a value for each variable, and therefore for:

- Reporting (or home) country (control variable),
- Year of reference (control variable),
- Partner (or host) country (control variable),
- Average FDI returns flowing from the partner country to the reporting country over the last 3 years, the last being the year of reference (independent variable),
- Geometrical annual growth of FDI inward stock over the last 3 years, the last being the year of reference, in the home country, in the partner country and as the difference between the values the variable assume in the home and host country (independent variables),
- GDP and GDP per capita in the year of reference in the home country, in the partner country and as the difference between the values the variable assume in the home and host country (independent variables),
- Trade openness in the year of reference in the home country, in the partner country and as the difference between the values the variable assume in the home and host country (independent variables),

- Magnitude of exports in the year of reference in the home country, in the partner country and as the difference between the values the variable assume in the home and host country (independent variables),
- Exports of raw materials as a percentage of total exports in the year of reference in the home country, in the partner country and as the difference between the values the variable assume in the home and host country (independent variables),
- Business environment score in the year of reference in the home country, in the partner country and as the difference between the values the variable assume in the home and host country (independent variables),
- Governance score in the year of reference in the home country, in the partner country and as the difference between the values the variable assume in the home and host country (independent variables),
- Monthly wage in the year of reference or in the latest available one in the home country, in the partner country and as the difference between the values the variable assume in the home and host country (independent variables),
- Human development score in the year of reference in the home country, in the partner country and as the difference between the values the variable assume in the home and host country (independent variables),
- Financial rating in the year of reference or in the latest available one in the home country, in the partner country and as the difference between the values the variable assume in the home and host country (independent variables),
- Geographical and cultural distance between the home and host countries (independent variables),
- The reporting country's FDI outward flow to the partner country in the year of reference (dependent variable).

6.1 Reporting countries

This work uses the Eurostat database, which includes 35 countries: the EU-28 countries, Iceland, Japan, Montenegro, Norway, Switzerland, Turkey and the United States. Although other countries are reporting the needed information on FDI flows and returns, this is the most comprehensive

single and harmonized database. Using a single database ensures that the compilation methodology is consistent across countries, thus increasing the robustness of the dataset and therefore of the statistical results.

6.2 Year of reference

The dataset includes three years of reference, 2010, 2011 and 2012. Although FDI flow statistics are available for more recent years, the latest available year for FDI return statistics is 2012.

6.3 Partner countries

These are the countries receiving FDI from the reporting countries. The Eurostat database covers 244 countries and territories all around the world.

6.4 FDI returns

FDI returns are also sourced from the Eurostat database. This work considers the average of FDI returns flowing from the partner to the reporting country over the last three years. The hypothesis is that, if managers of MNCs look at past FDI returns flowing from host country to the MNC home country, then before making an investment overseas they would look at the returns that MNCs from the same home country have received over the past from investments made in the same host country. The possibility of repatriating returns may depend on several variables:

- The FDI return repatriation law in the host country,
- ITIAs between the host and the home country,
- The possibility of repatriating returns given the profitability of the foreign investment.

For this reason, the average return over the medium term of three years flown back to the home country out of FDI made in the host country is considered as the determinant of future FDI from the reporting country toward the host country.

6.5 FDI inward stock

It is assumed that managers of MNCs make investments in a country also following competing MNCs that have made investments in that country. This is called imitative behavior, and it might occur because a MNC has identified a market with high potential, and therefore other MNCs follow in investing in the same country to reach the same market. However, what is difficult to estimate here is the time lag between the investment of the first MNC and the one this work tries to capture. A few options are available to estimate a country's FDI attractiveness. One is the amount of FDI flows received by the host country in the last year. Another one is the growth of FDI flows received by the host country over the last 3 years. However, FDI flows are annual flows of investments and have therefore a high volatility: a country could receive very high FDI flows in one year because of a very big investment by a single MNC and then nothing in the following year, even if the market potential is still there. Another way to measure FDI received by a country is the stock of inward FDI (instock) received by the host country. The FDI stock is the accumulated value of FDI received by a country at a certain point in time evaluated at its book value. The value of FDI instock is a more solid proxy for the FDI attractiveness of a country as measured through investments already made in the country. However, what this work wants to measure is the imitative behavior of MNCs, and therefore the investments made over a reasonable time by other MNCs in the country. This is measured in this work as the geometrical annual growth of inward FDI stock in the host country. Measuring this variable as a percentage also helps to compare it across countries, given that the total FDI instock in a country might be correlated to the size of the host country. Inward FDI stock data is sourced from the best and most comprehensive database for FDI, developed and maintained by the United Nations Conference on Trade and Development (UNCTAD).

6.6 GDP and GDP *per capita*

Gross Domestic Product (GDP) and GDP *per capita* are measurements of the level of development of a country. From the literature it is possible to observe that the level of development might be a determinant for future FDI, because it is a proxy for the market maturity. This information is sourced from the International Monetary Fund (IMF) World Economic Outlook database.

6.7 Trade openness

Some FDI are defined as market-seeking. These FDI are made by MNCs to reach a foreign market and to jump import tariff duties in the host country or in countries that have a free trade agreement (FTA) with the host country. One example is the MERCOSUR trade block: the US based Caterpillar Inc. invested in Brazil to produce trucks locally export them to Argentina, thus benefiting from the FTA between Argentina and Brazil and bypassing tariff duties if it were to export directly from the US to Argentina (ITC, 2011).

The relative size of a market and the trade openness of a country is measured through the size of foreign trade (the sum of exports and imports) over GDP. Trade data are sourced from the International Trade Center (ITC)'s Trade Map, while GDP data are sourced from the IMF World Economic Outlook.

6.8 Magnitude of exports

Linked to trade openness is also the size of the market, a useful additional variable to capture the absolute size of the host country's market is the magnitude of its exports. Export data are sourced from the International Trade Center (ITC)'s Trade Map.

6.9 Exports of raw materials as a percentage of total exports

Some FDI are defined as resource-seeking. This is the case of mining companies that invest in countries where specific natural resources are available, like in the case of Canadian companies investing in Latin America to dig ores and metals and export them abroad (IDB, 2015).

The availability of raw materials is not easy to estimate, but a good proxy is the percentage of exports of raw materials and natural resources as a percentage of total exports. The export data is sources from the ITC's Trade Map. The tool allows selecting a group of products, and a big part of the work was dedicated to identifying all the products available in the international Harmonized System (HS) nomenclature that refer to natural resources. The HS nomenclature is comprised of around 5,000 product lines, covering natural resources and manufactures.

6.10 Business environment

A country's business environment refers to the set of regulations and procedures that make it easy – or difficult – for a company to establish a business. The business environment includes several dimensions. The World Bank Group has built an indicator that annually measure the ease of doing business in a large set of countries in the world. This is published in the annual Doing Business report. The indicator comprises both a rank of the countries and an indicator (between 0 and 100) that measures the distance of each country to the frontier, where the frontier is defined as the best practice in doing business. This work uses the distance to frontier (DTF) value.

The dimensions that the Doing Business report takes into considerations, as well as the frontier for each dimension, are described in Table 3: Doing Business Distance to Frontier indicators. Further details on how the DTF value is calculated are described in the Doing Business report⁸.

⁸ Calculating the DTF score for each economy involves two main steps. First, individual component indicators are normalized to a common unit where each of the 31 component indicators y is rescaled using the linear transformation $(\text{worst} - y)/(\text{worst} - \text{frontier})$. In this formulation the frontier represents the best performance on the indicator across all economies since 2005 or the third year in which data for the indicator were collected. For legal indicators such as those on getting credit or protecting minority investors, the frontier is set at the highest possible value. For the total tax rate, consistent with the use of a threshold in calculating the rankings on this indicator, the frontier is defined as the total tax rate at the 15th percentile of the overall distribution for all years included in the analysis. For the time to pay taxes, the frontier is defined as the lowest time recorded among all economies that levy the 3 major taxes: profit tax, labor taxes and mandatory contributions, and value added tax (VAT) or sales tax. In addition, the cost to export and cost to import for each year are divided by the GDP deflator, to take the general price level into account when benchmarking these absolute-cost indicators across economies with different inflation trends. The base year for the deflator is 2013 for all economies. Second, for each economy the scores obtained for individual indicators are aggregated through simple averaging into one DTF score, first for each topic and then across all 10 topics: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency. This is the value that is used in this work, and it allows a perfect relative evaluation of the countries. Moreover, When compared across years, the DTF score shows how much the regulatory environment for local entrepreneurs in an economy has changed over time in absolute terms. The improvement in the business environment in a country and its relative easiness of doing business are exactly what this work assumes to be FDI determinants.

Table 3: Doing Business Distance to Frontier indicators

Topic and indicator	Who sets the frontier	Frontier
Starting a business		
Procedures (number)	Canada, New Zealand	1
Time (days)	New Zealand	0.5
Cost (% of income <i>per capita</i>)	Slovenia	0.0
Minimum capital (% of income <i>per capita</i>)	Australia, Colombia	0.0
Dealing with construction permits		
Procedures (number)	Hong Kong SAR, China	5
Time (days)	Singapore	26
Cost (% of warehouse value)	Qatar	0.0
Getting electricity		
Procedures (number)	Germany, Korea, Rep.	3
Time (days)	Korea, Rep.	18
Cost (% of income <i>per capita</i>)	Japan	0.0
Registering property		
Procedures (number)	Georgia, Norway, Portugal, Sweden	1
Time (days)	Georgia, New Zealand, Portugal	1
Cost (% of property value)	Saudi Arabia	0.0
Getting credit		
Strength of legal rights index (0-12)	Colombia, Montenegro, New Zealand	12
Depth of credit information index (0-12)	Ecuador, United Kingdom	8
Protecting minority investors		
Extent of conflict of interest regulation index (0-10)	No economy has attained the frontier yet	10

Extent of shareholder governance index (0-10)	No economy has attained the frontier yet	10
Paying taxes		
Payments (number per year)	Hong Kong SAR, China, Saudi Arabia	3
Time (hours per year)	Singapore	49
Total tax rate (% of profit)	Singapore	26.1
Trading across borders		
Documents to export (number)	France, Ireland	2
Time to export (days)	Denmark, Estonia, Singapore	6
Cost to export (US\$ per container), deflated	Timor-Leste	410.0
Documents to import (number)	France, Ireland	2
Time to import (days)	Singapore	4
Cost to import (US\$ per container), deflated	Singapore	368.4
Enforcing contracts		
Procedures (number)	Singapore	21
Time (days)	Singapore	120
Cost (% of claim)	Bhutan	0.1
Resolving insolvency		
Recovery rate (cents on the dollar)	Japan	92.9
Strength of insolvency framework index (0-16)	No economy has attained the frontier yet	16

Source 2: The World Bank (2015), *Doing Business 2015*

6.11 Governance score

The Worldwide Governance Indicators (WGI) are a research dataset summarizing the views on the quality of governance provided by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. The World Bank Group's WGI project builds aggregate indicators of six dimensions of governance:

- Voice and Accountability
- Political Stability and Absence of Violence/Terrorism
- Government Effectiveness
- Regulatory Quality
- Rule of Law
- Control of Corruption

The six indicators are based on data sources reporting the perceptions of governance of a large number of survey respondents and expert assessments worldwide. The project attributes six variables to each indicator, and these variables are described in Table 4: Variables attributed to each Worldwide Governance Indicator.

Table 4: Variables attributed to each Worldwide Governance Indicator

Variable	Description
Estimate	Estimate of governance (ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance)
StdErr	Standard error reflects variability around the point estimate of governance.
NumSrc	Number of data sources on which estimate is based
Rank	Percentile rank among all countries (ranges from 0 (lowest) to 100 (highest) rank)
Lower	Lower bound of 90% confidence interval for governance, in percentile rank terms
Upper	Upper bound of 90% confidence interval for governance, in percentile rank terms

Source 3: Author's work on the World Bank's World Governance Indicator (www.govindicators.org)

Rank is used in the work as the relevant measure, because this variable only assumes positive value and it works as a 0-100 score for each country. An average of the Rank values of the six dimensions

of governance was calculated as the combined governance score for each country, and this was used in the regression.

The Rule of Law dimension is excluded because the same concepts are already covered by the Doing Business indicators. An analysis of the covariance between the Rule of Law and the various dimensions of the Doing Business indicator shows that the WGI Rule of Law dimension is highly correlated with the composite Doing Business indicator (81% covariance). In particular, it has a covariance greater than 50% with the 5 of the 10 DB dimensions, and specifically Starting a Business, Paying Taxes, Trading Across Borders, Enforcing Contract and Resolving Insolvency. Details are available in Annex 11.11.

6.12 Monthly wage

Several sources of data for monthly wages were assessed, and the ones used in this work are the International Labour Organization (ILO) database, the Eurostat database, the US Bureau of Labour Statistics (BLS) and the ILO, World Bank and VU University of Amsterdam's World Development Report (WDR). Specifically, the Eurostat database is used for EU countries and the US database for the United States. The ILO database is used for all other available countries. These three databases together make it possible to retrieve or calculate the monthly labour income in 2011. Only a very few countries report time series for labour income, and therefore the year 2011, or the most recent available year prior to 2011, is used as a reference in the construction of the dataset. Using exact time series would have restricted the available information to a very limited number of countries, while this work tries to collect the highest number of observations. Moreover, it is not expected that labour income varies too much from one year to the other, and in any case the most recent year in the dataset for any variable is 2012, i.e. only one year ahead of what is available for labour income statistics.

The combination of the US, EU and ILO databases only cover 80 countries and therefore leaves many countries out, including important FDI receivers like Chile, China, India and others. This would represent a strong limitation to the number of observations and to the relevance of the work. For this reason, this combined dataset is integrated with the WDR database. The WDR data is retrieved from the Occupational Wages publication, where the most recent data point is to be referred to 2008. Unfortunately, unique sources of consistent information are not available (research was done also for specific relevant countries, but data were not comparable across

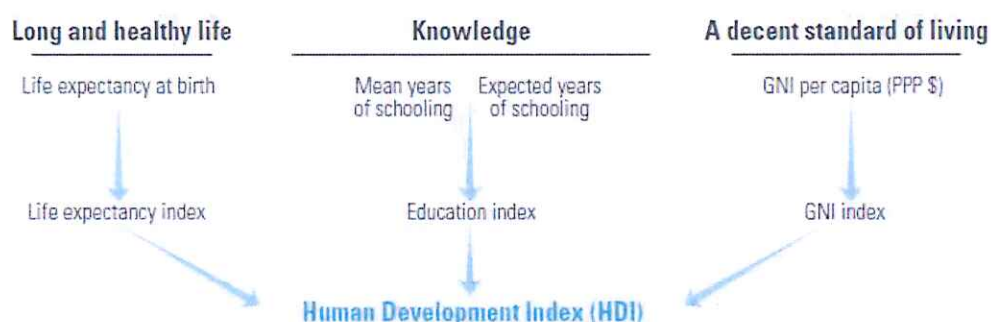
different research works). For example, the Quandl database provides information on minimum wage; however, the minimum wage is something inconsistent with the rest of the available data. The WDR provides data consistent with the ILO, the EU and the US databases used to build the dataset, and additionally provides data for a number of other countries, although having 2008 as the most recent available year of reference. Specifically, labour income data is derived from the WDR for 69 countries, better described in Annex 12.1.

In terms of data, this work uses the only labour income type available across the datasets, and specifically the average monthly earnings in the private sector in the latest available year, including wages and salary and not the social benefits and pension contribution of employer.

Myanmar is an outlier in the ILO database and its value is therefore derived from a specific publication on the topic (Hori, Wong, 2008), while the value for the Republic of Congo, which is unavailable, was assumed to be as Cameroon's, i.e. as the value for the country with the most similar development level and GDP *per capita* among the contiguous countries.

6.13 Human development score

To measure the education level in a country, the United Nations Development Program (UNDP)'s Human Development Index (HDI) is used. The HDI is a summary measure of key dimensions of human development, including a long and healthy life, access to knowledge and a decent standard of living. The HDI is the geometric mean of normalized indices from each of these three dimensions. Each dimension is composed of a certain number of indicators, which, in the case of access to knowledge, are the mean years of schooling and the expected years of schooling. The process of constructing the HDI is shown in Figure 1: The Human Development Index (HDI).



Source 4: UNDP Human Development Report 2013, technical notes

Figure 1: The Human Development Index (HDI)

In the HDI composite index, years of schooling and expected years of schooling are only two of four indicators. However, life expectancy is relevant because it measures how long and healthy the life of employees is expected to be; higher Gross National Income (GNI) per capita tells that on average people are better off and can afford higher expenses for school, health, other basic services that can make an employee more productive. Time series for each indicator are not available, and it is for this reason that the composite index is used in this work, and not only the two education-related indicators. Probably, the composite index will not be able to assess the real significance of education, because it will include also other effects that are presumably correlated with other indicators used in this work, such as the GDP per capita. However, the education is not the variable of interest in this work as the FDI returns is, and retrieving a better indicator for this specific variable is too costly.

The only problem posed by the HDI is that no indicators are available for Macao, Hong Kong and Chinese Taipei. However, a previous report (UNDP, 2013) attributes similar scores to these Chinese provinces, the only Chinese provinces ranked as very high human development ones. The HDI had data for the year 2011 for the Chinese provinces of Macao and Taiwan. Based on this, this work assumes that Macao and Taiwan have evolved in the human development index the same way as Hong Kong, maintaining always the same relative distance from this province in the HDI.

6.14 Financial ratings

This work uses the ratings by the most renowned international rating agencies to estimate a country's financial stability. Fitch is the only agency whose ratings are available in time series. However, two problems arise while using Fitch ratings:

- The time series are not complete for all countries. The work uses three years of reference, and tries to match the ratings with these three years, 2010, 2011 and 2012. Where this is not possible, the rating in the latest available year is used for all the years of reference;
- The list of countries is not complete. Fitch ratings only covers 112 countries⁹. The rating list is therefore integrated with Standard and Poor(S&P)'s ratings, and in three cases (Andorra, Liechtenstein and Burkina Faso), with Moody's ratings. This brings the list to 147 observations.

The international rating agencies attribute comparable ratings in the form of letter combinations. The correspondence among the three agencies' ratings is available in Table 5: International rating agencies' rating correspondences. Ratings have to be quantified to be used in the model and transformed into scores. The transformation matrix for the S&P ratings is described in Table 6: Quantification matrix for S&P ratings. Additionally to what described in Table 6: Quantification matrix for S&P ratings, every plus in the S&P rating counts as a +0.5, while every minus counts as a -0.5, thus creating a quantified scale of ratings going from 10 to 1, 10 being the best, with a scale unit of 0.5.

⁹ The value for the United Arab Emirates is calculated as the average of the only two available emirates of Abu Dhabi and Ras Al Kaimah.

Table 5: International rating agencies' rating correspondences

Major Rating Agencies Rating Guide for Long and Short Term Debt						
Moody's		S&P		Fitch		Risk
Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Characteristic
Aaa	P-1	AAA	A-1+	AAA	F1+	Prime
Aa1		AA+		AA+		High Grade
Aa2		AA		AA		
Aa3		AA-		AA-		
A1		A+	A-1	A+	F1	Upper Medium Grade
A2	A	A				
A3	A-	A-				
Baa1	P-2	BBB+	A-2	BBB+	F2	Lower Medium Grade
Baa2	P-3	BBB	A-3	BBB	F3	
Baa3		BBB-		BBB-		
Ba1	Not Prime	BB+	B	BB+	B	Non-investment grade speculative
Ba2		BB		BB		
Ba3		BB-		BB-		
B1		B+		B+		Highly Speculative
B2		B	B			
B3		B-	B-			
Caa1		CCC+	C	CCC	C	Substantial Risks
Caa2		CCC				Extremely Speculative
Caa3		CCC-				In default with little prospect for recovery
Ca		CC				
C		C	/	DDD	/	In default
/		D		DD		
/				D		

Source 5: Reuters Guide to Credit Ratings, Scales and Terms

Table 6: Quantification matrix for S&P ratings

S&P rating	Quantification
AAA	10
AA	9
A	8
BBB	7
BB	6
B	5
CCC	4

CC	3
C	2
D	1

Source 6: Author's calculations

6.15 Geographical and cultural distance

The distance variables used in this work are sourced from the CEPII database. Specifically, the CEPII database uses bilateral distance, contiguity and cultural links as measures of distance. This work uses four of the several variables available in the CEPII database, and these are:

- Weighted distance between the biggest cities of the home and host countries: the distance is calculated based on bilateral distances between the biggest cities of the two countries, those inter-city distances being weighted by the share of the city in the overall country's population;
- Contiguity between the home and the host country;
- Common official language shared by the home and host country (yes or no variable);
- Common unofficial language (yes or no variable, which assumes a yes value when a language is spoken by at least 9% of the population in both countries).

6.16 Bilateral FDI outflows in the year of reference

Outward FDI flow data are sourced from the Eurostat database. This work considers bilateral FDI, and specifically outward FDI flows going from the reporting country to the host country in the year of reference. Looking at outward FDI, this work looks at the perspective of the MNC investing abroad. This perspective reinforces the results, because the research looks at the behavior of the MNCs, and not at the attractiveness of the host country (in this case, it would have considered inward FDI in the host country).

6.17 Logarithmic transformations

It is normal praxis in econometric modelling to use logarithmic transformations of certain variables. Generally, a logarithmic transformation is employed to obtain a more homogeneous variance of a series (Lütkepohl, Xu, 2010). This transformation is therefore applied to variables with a high variance, and in this work it is applied to:

- Average FDI returns over the last 3 years,
- GDP and GDP per capita in the year of reference in the home country, in the partner country and as the difference between the values the variable assume in the home and host country,
- Magnitude of imports in the year of reference in the home country, in the partner country and as the difference between the values the variable assume in the home and host country,
- Monthly wage in the home country, in the partner country and as the difference between the values the variable assume in the home and host country,
- Geographical distance between the home and host countries,
- The reporting country's FDI outward flow to the partner country.

The logarithmic transformation also allows converting variations in the values assumed by the variable into percentage variations. The logarithmic transformation, however, is possible only for variables that assume positive values, and in this work many variables often assume negative values (e.g. all the variables measured as the difference between the value of the variable in the home country and that in the host country, such as the difference between the GDP *per capita* in the home country and in the host country, when the home country is a developed country and the host country is a developing country).

To solve this problem and make the logarithmic transformation possible, the values in the whole dataset, excluding the percentage values, are turned into positive value by summing to each observation the absolute value of the minimum value assumed by the variable. For example, in the case of GDP *per capita* difference, the final variable used in the model is:

Equation 1: Example of a logarithm of the GDP per capita variable

$$Observation_{ijt} = LN (absolute\ value\ of\ min\ (GDP\ per\ capita\ difference) + GDP\ per\ capita\ difference_{ijt}).$$

Where:

Observation = each single observation of the GDP per capita difference variable, as it was used in the final model

j = home country

i = host country

t = year of reference

This means that for every variable that can assume negative values and for which the logarithm is used, the actual variable used in the model is:

Equation 2: General formula of the logarithm of a variable that assumes negative values

$$LN (\delta + variable)$$

where δ is a constant representing the minimum of the values that the corresponding variable can assume.

7. Analysis of the correlation of input data and model development

The objective of the work is to assess the relationship between the dependent variable of FDI flows and the independent variable of FDI returns. The formula used is described in Equation 3: Regression formula of the first model.

Equation 3: Regression formula of the first model

$$\begin{aligned} \ln(\delta_1 + FDI_{ij}) = & \alpha + \beta_1 \ln(\delta_2 + \text{average of FDI returns}_{ij \ t-1, \ t-2, \ t-3}) + \beta_2 \text{growth of FDI stock}_{i \ t, \ t-1, \ t-2} + \beta_3 \text{growth of FDI} \\ & \text{stock}_{j \ t, \ t-1, \ t-2} + \beta_4 (\text{growth of FDI stock}_i - \text{growth of FDI stock}_j)_{t, \ t-1, \ t-2} + \beta_5 \ln(\text{GDP per capita}_{it}) + \beta_6 \ln(\text{GDP per} \\ & \text{capita}_{jt}) + \beta_7 \ln(\delta_3 + \text{GDP per capita}_i - \text{GDP per capita}_j) + \beta_8 (\text{GDP per capita}_i + \text{GDP per capita}_j)_t + \beta_9 \text{GDP}_{it} + \\ & \beta_{10} \text{GDP}_{jt} + \beta_{11} \ln(\delta_4 + \text{GDP}_i - \text{GDP}_j)_t + \beta_{12} (\text{GDP}_i + \text{GDP}_j)_t + \beta_{13} [(\text{imports} + \text{imports})/\text{GDP}]_{it} + \beta_{14} \\ & [(\text{imports} + \text{imports})/\text{GDP}]_{jt} + \beta_{15} \{[(\text{imports} + \text{imports})/\text{GDP}]_i - [(\text{imports} + \text{imports})/\text{GDP}]_j\}_t + \beta_{16} \ln(\text{imports}_{it}) + \beta_{17} \\ & \ln(\text{imports}_{jt}) + \beta_{18} \ln(\delta_5 + \text{imports}_i - \text{imports}_j)_t + \beta_{19} (\text{imports of raw materials}/\text{imports})_{it} + \beta_{20} (\text{imports of raw materials} \\ & / \text{imports})_{jt} + \beta_{21} [(\text{imports of raw materials}/\text{imports})_i - (\text{imports of raw materials}/\text{imports})_j]_t + \beta_{22} \text{business environment} \\ & \text{score}_{it} + \beta_{23} \text{business environment score}_{jt} + \beta_{24} (\text{business environment score}_i - \text{business environment score}_j)_t + \beta_{25} \\ & \text{governance score}_{it} + \beta_{26} \text{governance score}_{jt} + \beta_{27} (\text{governance score}_i - \text{governance score}_j)_t + \beta_{28} \text{HDI}_{it} + \beta_{29} \text{HDI}_{jt} + \\ & \beta_{30} (\text{HDI}_i - \text{HDI}_j)_t + \beta_{31} \ln(\text{monthly wage}_{it}) + \beta_{32} \ln(\text{monthly wage}_{jt}) + \beta_{33} \ln(\delta_6 + \text{monthly wage}_i - \text{monthly wage}_j)_t + \\ & \beta_{34} (\text{monthly wage}_i + \text{monthly wage}_j)_t + \beta_{35} \text{financial rating}_{it} + \beta_{36} \text{financial rating}_{jt} + \beta_{37} (\text{financial rating}_i - \text{financial rating}_j)_t + \beta_{38} \ln(\text{distance}_{ij}) + \beta_{39} \\ & \text{contiguity}_{ij} + \beta_{40} \text{common official language}_{ij} + \beta_{41} \text{common unofficial language}_{ij} + \epsilon_{ijt} \end{aligned}$$

Where

i = index to represent the country of origin, the home country

j = index to represent the country of destination, the host country

t = time index representing the year of reference

α = fixed parameter of the linear regression identifying the y-intercept in the linear model (to be estimated),

β = parameters to estimate to identify the relation between the dependent variable and the independent variables,

δ = constant parameters equal to the minimum of the values that the corresponding variable assumes

ε = random component of error, to be minimized.

The raw formula described above contains 38 variables, and not all of them are relevant for the model. Some of them are not necessary and having them might even distort the results, because their effect is correlated to the effect of other variables. Moreover, some variables described in the formula above are actually not used in general statistical model of prediction of FDI flows. The above formula serves therefore only as a general exhaustive example of what variables could be included in a similar model.

Including two or more variables that are correlated with other variables in the model distorts the model itself. To study the correlation of input data and drop the distorting variables, two tests are run:

- The Variance Inflation Factor (VIF) test,
- The correlation matrix between variables.

The VIF test follows a general rule of thumb that, for any value of the VIF above 5, the corresponding variable has a high multicollinearity with other variables in the model, and its correlation with other variables in the model should therefore be analysed and eventually some variables should be dropped. VIF values above 10 are not accepted, and mean that a multicollinearity problem in the model needs to be corrected.

Among the variables with a VIF value above 5, some are dropped because they are generally not used in the literature. Some relevant others, however, need further assessment. The correlation matrix between the variable with a high VIF and the others in the model helped understand which variables can be dropped. Annex 11.2 gives an overview of the VIF values assumed by all variables in the model. As it is possible to observe, although the variable of interest (returns on FDI) appeared already as significant, almost all other variables were distorted in the model and some were zeroed: the model was initially malconditioned. This process allowed reconditioning the model. The variables with a high VIF and the corresponding correction actions are described in Table 7: Variable with high VIF and corresponding correction actions . Variables in red are dropped, while variables in green need further investigation.

Table 7: Variable with high VIF and corresponding correction actions, during the first run of the model

Variable	VIF	Correction action
<i>growth of FDI stock_i _{t, t-1, t-2}</i>	14	Dropped. Never seen in the literature, because it would mean that the level of FDI attractiveness of a country determines its investment patterns
<i>growth of FDI stock_j _{t, t-1, t-2}</i>	14	Dropped. Never seen in the literature, because it obviously has a strong correlation with other variables of any model that identifies the FDI attractiveness of a country. This might be by itself a dependent variable in other research.
<i>(growth of FDI stock_i - growth of FDI stock_j) _{t, t-1, t-2}</i>	16	Dropped. Never seen in the literature, because it would mean that the difference in the level of FDI attractiveness between two countries determines the investment patterns between them
<i>GDP per capita_{it}</i>	44	Needs further investigation, because it is a variable used in the literature and might explain the ability of individuals to invest. However, this is a variable that might be also reflected in any other variable linked to the level of development of a country.
<i>GDP per capita_{jt}</i>	24	Needs further investigation, because it is a variable used in the literature and might explain the ability of individuals to invest. However, this is a variable that might be also reflected in any other variable linked to the level of development of a country.
<i>(GDP per capita_i + GDP per capita_j)_t</i>	18	Dropped. Most likely this is the variable that is correlated to the GDP per capita of the reporting and partner countries. Along with this one, although it has a VIF at 4, we dropped also the difference in GDP per capita, because a correlation assessment of the 4 variables together shows that they are all highly correlated with each other, except for the GDP per

		capita of the home and host countries. This correlation matrix is available in Annex 11.12.
GDP_{it}	9	Needs further investigation, because this is a variable often used in any FDI regression model. It might be correlated to several variables, and therefore we have first dropped the variables that made sense to drop, and kept this variable for further assessment in the second run of the model.
GDP_{jt}	35	Needs further investigation, because this is a variable often used in any FDI regression model. It might be correlated to several variables, and therefore we have first dropped the variables that made sense to drop, and kept this variable for further assessment in the second run of the model.
$(GDP_i + GDP_j)_t$	9	Needs further investigation, because this is a variable often used in any gravity model. It might be correlated to several variables, and therefore we have first dropped the variables that made sense to drop, and kept this variable for further assessment in the second run of the model.
$[(imports+imports)/GDP]_{it}$	6	Dropped. This variable is not often used in the literature. Additionally, it might be related to many other variables, including the difference in trade openness between the home and host country, which has a lower VIF of 4. We assumed that the difference in trade openness is more relevant, because a MNC might invest abroad to reach a more open market, but not necessarily because its own market is closed.
$[(imports+imports)/GDP]_{jt}$	6	Needs further investigation. The market openness of a country might be a reason for FDI attraction. However, this variable might be related to import of GDP levels. The correlation matrix suggested that the market openness of the partner

		country is highly negatively correlated with the market openness difference. See Annex 11.13.
<i>imports_{jt}</i>	32	Dropped. Investigation suggested that this variable is highly correlated to the GDP of the country.
<i>imports_{it}</i>	32	Dropped. Investigation suggested that this variable is highly correlated to the GDP of the country.
<i>(imports of raw materials/imports)_{it}</i>	15	Needs further investigation, because we do suspect that a difference of resource availability can influence investment patterns between two countries. However, there might be the possibility that this variable does not predict well the resource availability of a country or that the level of resource availability in the home country is correlated with some other variables. From the matrix correlation in Annex 11.14, we could observe a high correlation between this variable and difference of resource availability in the home and host country. For easiness of analysis, we kept only the difference and this variable was dropped.
<i>(imports of raw materials / imports)_{jt}</i>	15	Needs further investigation, because we do suspect that a difference of resource availability can influence investment patterns between two countries. However, there might be the possibility that this variable does not predict well the resource availability of a country or that the level of resource availability in the host country is correlated with some other variables. From the matrix correlation in Annex 11.14, we could observe a high correlation between this variable and difference of resource availability in the home and host country. For easiness of analysis, we kept only the difference and this variable was dropped.

$[(imports\ of\ raw\ materials/imports)_i - (imports\ of\ raw\ materials/imports)_j]_t$	15	Needs further investigation. From the matrix correlation, we saw that this variable is highly negatively correlated with the resource availability in the host country. We dropped the latter and kept this one.
$business\ environment\ score_{it}$	15	Dropped. From the correlation matrix (see Annex 11.15), we could observe a high negative correlation between the home country's business environment score and the business environment score difference between the home and host countries. We kept the difference as we expect it to be likely relevant at least for reporting middle income countries investing in high income countries.
$(business\ environment\ score_i - business\ environment\ score_j)_t$	15	Investigation (Annex 11.15) suggested a negative high correlation with the home country's business environment score. We dropped the latter and kept this one.
$governance\ score_{it}$	60	Dropped. From the correlation matrix (see Annex 11.16), we could observe a high negative correlation between the home country's governance score and the governance score difference between the home and host countries. We kept the difference as we expect it to be likely relevant at least for reporting middle income countries investing in high income countries.
$(governance\ score_i - governance\ score_j)_t$	64	Investigation (Annex 11.16) suggested a negative high correlation with the home country's governance score. We dropped the latter and kept this one.
HDI_{it}	124	Dropped. From the correlation matrix (see Annex 11.17), we could observe a high negative correlation between the home country's HDI and the HDI difference between the home and host countries. We kept the difference as we expect it to be

		likely relevant at least for reporting middle income countries investing in high income countries.
$(HDI_i - HDI_j)_t$	131	Investigation (Annex 11.17) suggested a negative high correlation with the home country's HDI. We dropped the latter and kept this one.
$monthly\ wage_{it}$	20	Dropped. This variable is not used generally in such models, and we do not expect that high wages in a country drives investment decisions. It is rather the difference between wages in the home and host countries. Moreover, further analysis (see Annex 11.19) suggests that this variable is highly correlated to the GDP per capita of the home country. We have kept GDP per capita in the home country, and we can therefore drop this one.
$monthly\ wage_{jt}$	10	Needs further investigation, because we expect low wages to be a determinant of investments abroad. However, this variable might be correlated to the GDP per capita in the host country. We will run the model first with the two variables, in case the VIF is till high, we will probably need to get rid of one of the two (GDP per capita or monthly wage in the host country).
$financial\ rating_{jt}$	17	Dropped. From the correlation matrix (see Annex 11.18), we could observe a high negative correlation between the home country's rating and the rating difference between the home and host countries. We kept the difference as we expect it to be likely relevant at least for reporting middle income countries investing in high income countries.
$(financial\ rating_i - financial\ rating_j)_t$	17	Investigation (Annex 11.18) suggested a negative high correlation with the home country's rating. We dropped the latter and kept this one.

Running the model after having dropped the selected variables gives a model with no distorted variables (see results in Annex 11.3). The formula at this point is:

$$\begin{aligned} \ln(\delta_1 + FDI_{ijt}) = & \alpha + \beta_1 \ln(\delta_2 + \text{average of FDI returns}_{ijt-1, t-2, t-3}) + \beta_5 \ln(\text{GDP per capita}_{it}) + \beta_6 \ln(\text{GDP per capita}_{jt}) \\ & + \beta_7 \ln(\delta_3 + \text{GDP per capita}_i - \text{GDP per capita}_j)_t + \beta_9 \text{GDP}_{it} + \beta_{10} \text{GDP}_{jt} + \beta_{11} \ln(\delta_4 + \text{GDP}_i - \text{GDP}_j)_t + \beta_{12} (\text{GDP}_i + \\ & \text{GDP}_j)_t + \beta_{14} [(\text{imports} + \text{imports})/\text{GDP}]_{jt} + \beta_{15} \{[(\text{imports} + \text{imports})/\text{GDP}]_i - [(\text{imports} + \text{imports})/\text{GDP}]_j\}_t + \beta_{18} \ln(\delta_5 + \\ & \text{imports}_i - \text{imports}_j)_t + \beta_{20} [(\text{imports of raw materials}/\text{imports})_i - (\text{imports of raw materials}/\text{imports})_j]_t + \beta_{22} \text{business} \\ & \text{environment score}_{jt} + \beta_{22} (\text{business environment score}_i - \text{business environment score}_j)_t + \beta_{24} \text{governance score}_{jt} + \beta_{25} \\ & (\text{governance score}_i - \text{governance score}_j)_t + \beta_{27} \text{HDI}_{jt} + \beta_{28} (\text{HDI}_i - \text{HDI}_j)_t + \beta_{30} \ln(\text{monthly wage}_{jt}) + \beta_{31} \ln(\delta_6 + \text{monthly} \\ & \text{wage}_i - \text{monthly wage}_j)_t + \beta_{33} \text{financial rating}_{jt} + \beta_{34} (\text{financial rating}_i - \text{financial rating}_j)_t + \beta_{35} \ln(\text{distance}_{ij}) + \beta_{36} \\ & \text{contiguity}_{ij} + \beta_{37} \text{common official language}_{ij} + \beta_{38} \text{common unofficial language}_{ij} + \epsilon_{ijt} \end{aligned}$$

However, some variables still have a VIF above 10. These variables are again assessed in Table 8: Variable with high VIF and corresponding correction actions, during the second run of the model. Once again, the variables in red are dropped, and the variables in green need further analysis.

Table 8: Variable with high VIF and corresponding correction actions, during the second run of the model

Variable	VIF	Correction action
<i>(governance score_i - governance score_j)_t</i>	61	Dropped. There is still a very high negative correlation with the governance score of the host country. Because of the overall model distortion, this was not visible in the previous run.
<i>governance score_{jt}</i>	55	Kept, because we dropped the distance in governance score, which had a high negative correlation with this one.
<i>(HDI_i - HDI_j)_t</i>	102	Dropped. There is still a very high negative correlation with the HDI of the host country. Because of the overall model distortion, this was not visible in the previous run.

HDI_{jt}	109	Kept, because we dropped the distance in HDI, which had a high negative correlation with this one.
$(financial\ rating_i - financial\ rating_j)_t$	16	Dropped. There is still a very high negative correlation with the rating of the host country. Because of the overall model distortion, this was not visible in the previous run.
$financial\ rating_{jt}$	16	Kept, because we dropped the distance in financial rating, which had a high negative correlation with this one.
$GDP\ per\ capita_{it}$	10	Kept it, because it does not show any particularly high correlation with the variables left. A third run might tell more.
$GDP\ per\ capita_{jt}$	21	Dropped. Highly correlated with the business environment score, and as expected, with the monthly wage.
$business\ environment\ score_{jt}$	12	Kept, because it was correlated with the difference in the business environment score, which we dropped.
$(business\ environment\ score_i - business\ environment\ score_j)_t$	9	Dropped. Highly correlated with the business environment score of the host country. We preferred to keep the score of the host country, as it is more easily calculated, verified, and explained.
$monthly\ wage_{jt}$	9	Kept, because it was correlated with the GDP per capita, which we dropped. It is actually also correlated to the difference in monthly wages between the home and host country. For easiness of analysis, we are also dropping this difference.
$(monthly\ wage_i - monthly\ wage_j)_t$	3	Dropped, because correlated with the monthly wage of both home and host countries and also with the difference in GDP per capita.

GDP_{it}	8	Kept, because it does not show any particularly high correlation with the variables left and this is a variable often present in similar models. A third run might tell more.
------------	---	---

The new formula at this point is:

Equation 4: Regression formula of the last model

$$\begin{aligned} \ln(\delta_1 + FDI_{ijt}) = & \alpha + \beta_1 \ln(\delta_2 + \text{average of FDI returns}_{ij, t-1, t-2, t-3}) + \beta_5 \ln(GDP \text{ per capita}_{it}) + \beta_7 \ln(\delta_3 + GDP \text{ per} \\ & \text{capita}_i - GDP \text{ per capita}_{jt}) + \beta_9 GDP_{it} + \beta_{10} GDP_{jt} + \beta_{11} \ln(\delta_4 + GDP_i - GDP_j)_t + \beta_{12} (GDP_i + GDP_j)_t + \beta_{14} \\ & [(imports+imports)/GDP]_{jt} + \beta_{15} \{[(imports+imports)/GDP]_i - [(imports+imports)/GDP]_j\}_t + \beta_{18} \ln(\delta_5 + imports_i - \\ & imports_j)_t + \beta_{20} [(imports \text{ of raw materials}/imports)_i - (imports \text{ of raw materials}/imports)_j]_t + \beta_{22} \text{business environment} \\ & \text{score}_{jt} + \beta_{24} \text{governance score}_{jt} + \beta_{27} HDI_{jt} + \beta_{30} \ln(monthly \text{ wage}_{jt}) + \beta_{33} \text{financial rating}_{jt} + \beta_{35} \ln(distance_{ij}) + \beta_{36} \\ & \text{contiguity}_{ij} + \beta_{37} \text{common official language}_{ij} + \beta_{38} \text{common unofficial language}_{ij} + \varepsilon_{ijt} \end{aligned}$$

This model now includes only variables with a VIF below 10. The highest VIF are for the variables $(GDP_i + GDP_j)_t$ and $monthly \text{ wage}_{jt}$, that have a VIF of 8 and 7 respectively. We decided to keep these variables anyway, because they are the only two with a VIF above 5 and because are variables generally included in similar models in the literature. Results of the third run of the model are available in Annex 11.4.

One important thing to note is that these passages have not affected the R squared coefficient¹⁰ of the model.

¹⁰ The R-squared coefficient tells how well data are close to the fitted regression line estimated through the statistical model. The coefficient ranges from 0 to 100. 0 indicates that the model explains none of the variability of the response data around its mean, while 100 indicates that the model explains all the variability of the response data around its mean. The R-squared coefficient for this model is 8% and, although low, it did not change through the process of elimination of variables with a high VIF.

8. Results

From a very first analysis of the results, it is possible to observe that only two variables in the model are highly significant¹¹ in predicting the behavior of outward FDI flows. The variables are the returns on FDI (the variable of interest in this work) and the contiguity between two countries.

In this specific case, and with regards to the variable of interest, it is possible to say that a variation of 1% in the average returns on FDI over the last 3 years corresponds to a variation of 0.18% of the outward FDI flows from the home to the host country. This is *per se* already an important and informative result for this work. However, we can observe that the R squared coefficient equals 8%, and it is still possible to raise it to higher values by manipulating the model as described below.

8.1 Model dissection into income levels

We decide therefore to dissect the model by assigning to each country a level of income. We expect, in fact, that different variables of the model might affect investment behaviors differently depending on the income levels of the home and host countries. For example, the behavior of a MNC from a high income country investing in another high-income country may be different from that of a MNC from a high income country investing in a low income country. There might be factors that play a role in a situation and do not play any role in another.

Countries are thus divided in 3 income groups: high-income, middle-income and low-income. Home countries include only high- and middle-income countries (the latter including basically Eastern European countries), while host countries include all country groups. Therefore, the couples used in the analysis are as described in Table 9: Couples used in the model dissection by countries' income levels.

Table 9: Couples used in the model dissection by countries' income levels

Couple nr.	Home country (investor)'s income level	Host country (investee)'s income level
------------	--	--

¹¹ Significance is measured through the value assumed by the p value (that is Prob > /t/ in the Annexes). A variable is significant when its p-value is lower than 0.05 (confidence level of 95%). The statistical software of JMP was used to run the model.

1	High income	High income
2	High income	Middle income
3	High income	Low income
4	Middle income	High income
5	Middle income	Middle income
6	Middle income	Low income

The model is run for the different couples. As expected, the R-squared for each model increases and it is also possible to observe that variables do play different roles in different situations. This behaviour is described in Table 10: Results for each couple used in the model dissection by countries' income levels.

Table 10: Results for each couple used in the model dissection by countries' income levels

Couple	R ²	Significant variables	A variation of 1% of the variable corresponds to a variation of the dependent variable of (%)
1	10%	<i>average of FDI returns_{ij} t-1, t-2, t-3</i>	0.17
		$(GDP_i + GDP_j)_t$	0.03
2	22%	<i>average of FDI returns_{ij} t-1, t-2, t-3</i>	0.20
		$(GDP \text{ per capita}_i - GDP \text{ per capita}_j)_t$	0.01
		$(GDP_i - GDP_j)_t$	-0.02
		<i>common official language_{ij}</i>	negative
3	40%	<i>average of FDI returns_{ij} t-1, t-2, t-3</i>	0.23
		$(GDP_i + GDP_j)_t$	-0.001
		$(GDP_i - GDP_j)_t$	-0.009

		GDP_{it}	0.001
		GDP_{jt}	0.002
		$governance\ score_{jt}$	positive
		$(exports_i - exports_j)_t$	0.007
4	17%	average of FDI returns$_{ij\ t-1, t-2, t-3}$	0.92
		GDP_{it}	0.0006
5	17%	average of FDI returns$_{ij\ t-1, t-2, t-3}$	0.09
		$GDP\ per\ capita_{it}$	0.0002
		$(exports_i - exports_j)_t$	-0.004
		$[(exports + imports)/GDP]_{jt}$	-0.0003
		$distance_{ij}$	negative
		$contiguity_{ij}$	positive
6	26%	average of FDI returns$_{ij\ t-1, t-2, t-3}$	-0.22
		$(GDP_i - GDP_j)_t$	-0.003
		GDP_{it}	0.00005
		GDP_{jt}	0.00003
		$distance_{ij}$	negative

As expected, variables play a different role in different combinations of countries with different income. For example, distance plays a role only when MNCs from middle-income countries invest in middle- or low-income countries: this can be explained by the fact that poorer countries have less access to technologies or know-how that could lower transaction costs. Furthermore, the governance score of the host country is relevant for MNCs from high-income countries investing in low-income host countries.

8.2 Discussion of the results

The point of the exercise is to estimate the effect of FDI returns in influencing investment decisions of MNCs. It is possible to observe that this effect exists, is always significant and generally positive. Only in the case of MNCs from middle-income countries investing in middle- or low-

income countries, the relation is much milder or even negative. This can be explained by the fact that MNCs from Eastern European countries¹² might seek returns from investments made in advanced markets, but seek something else when investing in lower-income countries¹³. In fact, these are the only cases when contiguity and distance matter in the investment location decision. Transactions costs might be higher in these types of investment – because of the ability of the middle-income home country to assess potential returns from middle- or low-income countries; returns are therefore lower. It is easier to assess transaction costs when a high-income country, with potentially better reporting standards, higher transparency, better governance, etc. is involved in the transaction.

The main objective of this research, which is to analyze the contribution that FDI returns can provide private sector to improve, inform and influence its decision-making process in determining an investment location abroad, is fulfilled. It is possible to affirm that a variation of 1% in the average returns on FDI over the last 3 years corresponds to a variation of 0.18% of the outward FDI flows from the home to the host country, on average. In general, there is also a positive correlation between the geographical contiguity of two countries and the amount of FDI that the home country makes in the host country. These general results and the effect and significance of the predicting variables vary depending on the income levels.

As Table 10: Results for each couple used in the model dissection by countries' income levels shows, the model provides different results depending on the couples of countries, defined by their income levels.

8.2.1 *High income to high income*

When two high-income countries are involved, the main significant variables in the model are the average FDI returns (the variable of interest) and the sum of the GDP of the two countries involved. In this case, the average of the past FDI returns has a contribution to bilateral outward FDI similar to the average one. In fact, a variation of 1% in the average returns on FDI over the last 3 years corresponds to a variation of 0.17% of the outward FDI flows from the home to the host country.

¹² The only middle-income countries in the database are Eastern European countries and Turkey.

¹³ It could be informative to observe where exactly Eastern European countries are investing.

It is possible to imagine, in fact, that the flows among high-income countries in the dataset have a heavy weight in the average results, since they include all the flows among high-income EU countries.

When two high-income countries are involved, also the sum of the two countries' GDP explains the amount of bilateral FDI outflow. This means that the potential economic synergies between the two countries explain the level of investments. A variation of 1% in the sum of the two countries' GDP corresponds to a variation of 0.03% of the outward FDI flows from the home to the host country. Economic synergies determine bilateral FDI flows in the case of a high income country investing in another high income country.

Finally, the model explains 10% of the behavior of bilateral outward FDI. This means that there probably are additional variables that explain this model, and that are not included in the model object of this research.

8.2.2 *High income to middle income*

In the case of a high-income country making FDI in a middle-income country, the main significant variables in the model are the average return on FDI, the GDP *per capita* difference, the GDP difference and the common official language. In this case, the average of the past FDI returns has a contribution to bilateral outward FDI similar to the average one. In fact, a variation of 1% in the average returns on FDI over the last 3 years corresponds to a variation of 0.20% of the outward FDI flows from the home to the host country.

The relation with the GDP *per capita* difference is positive, and shows that a variation of 1% in the difference between the countries' GDP *per capita* corresponds to a variation of 0.01% of the outward FDI flows from the home to the host country. This refers to the fact that high income countries tend to invest in middle-income countries with the lowest possible level of GDP *per capita*. Higher differences in the level of development of the two countries predicts higher FDI flows. This is somehow tautological, since middle-income countries show by definition a level of development lower than high-income countries.

At the same time, the relation with the difference between the two countries' GDP is negative. A variation of 1% in the difference between the countries' GDP corresponds to a variation of - 0.02%

of the outward FDI flows from the home to the host country. This means that high-income countries invest in economies with preferably a similar size, or even bigger. This might be the example of countries like Luxembourg or Switzerland, with high GDP per capita but smaller economies, investing in countries like Brazil or Poland.

Finally, the common official language seems to have a negative effect on the outward FDI flows from the home to the host country. The construction of the dataset explains this, because there are only few reporting countries that share a common official language with middle-income countries (some couples might be Portugal and Brazil, England and Kenya, USA and Kenya). In fact, the significance of this variable is relevant for the discussion, but not comparable to the significance of the variable of interest of this research, which is the average returns on FDI.

Finally, the model explains 22% of the behavior of bilateral outward FDI.

8.2.3 *High income to low income*

In the case of a high-income country making FDI in a low-income country, the main significant variables in the model are the average return on FDI, the GDP sum, the GDP difference, the GDP levels of the two countries, the governance score of the host country and the difference in imports. In this case, the average of the past FDI returns has a contribution to bilateral outward FDI similar to the average one. In fact, a variation of 1% in the average returns on FDI over the last 3 years corresponds to a variation of 0.23% of the outward FDI flows from the home to the host country.

The relations between the GDP sum and the dependent variable, and the GDP difference and the dependent variable are negative. This suggests that the closer the size of the two countries involved, the higher the amount of FDI made by the high-income country in the low-income country. In the case of this specific couple of countries, the more similar the economies are in term of size, the greater the bilateral FDI outflows.

This is confirmed by the fact that the size of the two economies shows a positive relation with the amount of FDI flowing from the high-income countries to the low-income countries. In fact, a variation of 1% in the GDP of the high-income country corresponds to a variation of 0.001% of the outward FDI flows from the home to the host country; and a variation of 1% in the GDP of the

low-income country corresponds to a variation of 0.002% of the outward FDI flows from the home to the host country.

The governance score of the low-income country presents a positive relation with the bilateral FDI outflow from the high-income to the low-income country. High-income countries invest in low-income countries with a better governance. It is interesting to see how the governance score of the host country is significant only in the case of a high-income country investing in a low-income country.

Finally, the difference in exports also plays a positive significant role. A variation of 1% in the difference in the two countries' exports corresponds to a variation of 0.007% of the outward FDI flows from the home to the host country. The bigger the difference (meaning the smaller the exports of the host country and the greater the exports of the home country), the higher the FDI of the home country to the host country. This suggests that the export platform FDI theory does not apply to FDI made by MNCs based in high-income countries and investing in low-income countries.

The model explains 40% of the behavior of bilateral outward FDI.

8.2.4 *Middle income to high income*

In the case of a middle-income country making FDI in a high-income country, the main significant variables in the model are the average return on FDI and the GDP level of the home country. In this case, the average of the past FDI returns has a contribution to bilateral outward FDI much greater than the average one. In fact, a variation of 1% in the average returns on FDI over the last 3 years corresponds to a variation of 0.92% of the outward FDI flows from the home to the host country. This is the greatest coefficient, and therefore the contribution of FDI returns is the greatest in the case of a middle-income country investing in a high-income country.

In this case, the contribution of the GDP level of the middle-income home country is also positive. This is explained by the fact that, the larger the size of the middle-income economy investing in the high-income one, the greater the investment made. A larger economy has better means to invest in an even larger economy.

The model explains 17% of the behavior of bilateral outward FDI.

8.2.5 *Middle income to middle income*

In the case of a middle-income country making FDI in a middle-income country, the main significant variables in the model are the average return on FDI, the GDP *per capita* of the home country, the difference in export levels, the trade openness of the host country, the distance and contiguity between the two countries. In this specific case, the average of the past FDI returns has a contribution to bilateral outward FDI lower than the average one. In fact, a variation of 1% in the average returns on FDI over the last 3 years corresponds to a variation of 0.09% of the outward FDI flows from the home to the host country.

In this case, the GDP per capita, measure of the level of the development, of the home country makes a positive contribution to the amount of investment that the country makes.

The difference in the market size makes a negative contribution. A variation of 1% in the difference in exports corresponds to a variation of -0.004% of the outward FDI flows from the home to the host country. Middle-income countries invest in other middle-income countries with similar or greater export levels.

The trade openness of the host country also makes a negative contribution to the outward FDI flows from the home to the host country. The higher market openness of the host country, the lower the FDI outflows.

Finally, the closer the two middle-income countries are, best if they are geographically contiguous, the greater the FDI between the two.

The model explains 17% of the behavior of bilateral outward FDI.

8.2.6 *Middle income to low income*

In the case of a middle-income country making FDI in a low-income country, the main significant variables in the model are the average return on FDI, the GDP difference, the GDP levels in the two countries and the geographical distance between the two countries. This is the only case where the average of the past FDI returns makes a negative contribution to bilateral outward FDI. In fact, a variation of 1% in the average returns on FDI over the last 3 years corresponds to a variation of -0.22% of the outward FDI flows from the home to the host country. Transactions costs are higher

in these types of investment, because of the ability of the middle-income home country to assess potential returns from low-income countries, where it is less easy to understand potential returns; FDI returns are therefore more than offset by transaction costs.

The GDP difference makes a negative contribution to the outward FDI. This is consistent with what is observed in the case of high-income countries investing in low-income countries. Once again, this suggests that the closer the size of the two countries involved, the higher the amount of FDI made in the low-income country, no matter whether the investing country is a high-income or a middle-income. The more similar the economies are in term of size, the greater the bilateral FDI outflows.

Also in this case, as in the case of the couple high-income to low-income, the above finding is confirmed by the fact that the size of both economies shows a positive relation with the amount of FDI flowing from the high-income countries to the low-income countries.

Finally, the closer the two countries are, the greater the FDI between the two. This is consistent with the finding in the case of a middle-income country investing in another middle-income country. Distance becomes therefor an important factor when a middle-income country invests in a country with a similar or lower development level. This confirms the transaction costs theory: transaction costs are relevant when a middle-income home country is to assess potential returns from low-income countries, where it is less easy to understand potential returns; geographical proximity provides a means to lower these transaction costs.

9. Conclusions

Research on FDI determinants is not new, yet research on FDI returns is. No study has been made so far to understand if there is any link between past FDI returns and future FDI. The hypothesis of this work, that FDI returns are positively correlated to future FDI, is confirmed.

It is therefore possible to state that MNCs seek returns in the investments they make abroad. This is particularly true when high-income countries are involved in the transactions: MNCs from high-income countries repatriate returns to their home countries from FDI made anywhere, while MNCs from middle-income countries repatriate returns from FDI made in high-income countries. In the case of middle-income countries investing in middle- or low-income countries, transaction costs can affect and offset the potential FDI returns to repatriate. It is, in fact, in these cases that geographical distance is deemed relevant to determine the level of FDI: proximity is a way to reduce transaction costs.

10. Recommendations

Three main recommendations arise from the findings of this work, one for the private sector, one for the public sector and one suggesting further research.

10.1 Private sector

First, MNCs seek returns to repatriate home from their FDI. Most likely, the possibility to repatriate returns from an investment made abroad depends on several variables. It might be therefore hard to predict the level of returns that a company can repatriate, but higher predictability certainly makes an investment decision sounder. Evidence of past returns from FDI, broken down by country (and even by sector, although this work did not consider this additional breakdown), is now available for a number of countries, and MNCs can certainly use it for their future FDI decisions.

10.2 Public sector

Second, it is important for host governments to keep in mind that MNCs likely repatriate part of the returns generated by their investments. This is particularly important when host governments develop their FDI-attraction policies. FDI, in fact, affects a country's Balance of Payments (BoP)¹⁴ in two ways:

- FDI flows are recorded in the BoP financial account. FDI flows can be inward or outward, and inward FDI flows contribute positively to the BoP financial account.
- Returns on FDI affect the BoP current account. Also in this case, there can be inward and outward flows of FDI returns. Inward FDI is associated with outward FDI returns, which provide a negative contribution to the current account.

¹⁴ The balance of payments is the method countries use to monitor all international monetary transactions at a specific period of time. All transactions conducted by both the private and public sectors are accounted for in order to determine how much money is going in and out of a country. The balance of payments is divided into three accounts: the current account, the capital account and the financial account. The current account is used to mark the inflow and outflow of goods and services and returns on investments. The capital account records all international capital transfers. In the financial account, international monetary flows related to investments. Also included are government-owned assets such as foreign reserves, gold, special drawing rights held with the International Monetary Fund, private assets held abroad and FDI, as well as assets owned by foreigners, private and official.

Therefore, the contribution of inward FDI to a country is twofold: it is positive on the financial account, but potentially negative on the current account. For example, a country like Brazil had a negative current account balance in 2014 of \$ 104.7million (Brazil's Central Bank, 2015). 10% of all debit items is represented by FDI returns outflows. In other words, FDI returns debit represented 4% of the current account deficit of Brazil in 2014, and 26% of all FDI inflows. Details are available in Annex 11.25.

It is therefore important for governments and national IPAs to take into account the fact that inward FDI, although making a positive contribution to a country's capital formation and to the BoP financial account, also generate returns that will likely be repatriated, thus worsening the current account balance of the BoP.

A further thought bearing from this work comes from the observation of the fact that FDI returns do not seem to play a role in the investment decision of MNCs from middle-income countries investing in middle- and low-income countries. This could be an argument for the promotion of South-South cooperation (UNCTAD, 2014), although this specific aspect would need further analysis.

10.3 Further research

Future research could try to dissect the models into economic sectors. For example, what happens in the manufacturing sectors might be different from what happens in the agricultural or services sectors. This, however, should be done at the country level, because variables like level of education or labour costs are different depending on the sector, and this data might be available only for a very limited number of countries.

Furthermore, the possibility of repatriating FDI returns may hide other variables: the political willingness of the host country to let MNCs repatriate returns, the MNC's decision to use its FDI only to generate returns and the motivation behind MNC's decision to reinvest in the host country the earnings generated by its foreign affiliates. Further research could therefore try to assess what variables drive FDI returns. From a very first analysis, it seems that those variables that are supposed to influence FDI (like HDI, governance score, education score, financial stability,

common language, market openness and development level) may also influence the amount of FDI returns that MNCs repatriate (see Annex 11.24 FDI returns as the dependent variable). For example, the higher the education and development (GDP) levels of the reporting country, the higher the FDI returns. However, this needs further investigation and literature review, which are out of this work's scope.

Finally, it might be interesting also to further explore if returns from FDI increase over time, as some authors predicted in their models hypothesizing perfect competitive markets. As explained in Paragraph 3.1, it was supposed that, in the long-term, the investing country gets higher income from its investment abroad. This is, however, also an aspect that would require further research.

11. Annexes

11.1 WDR countries

Angola	Eritrea	Maldives	Tonga
Azerbaijan	Ethiopia	Malawi	Trinidad and Tobago
Barbados	Fiji	Malaysia	Tanzania
Bangladesh	Gabon	Mozambique	Uganda
Burkina Faso	Equatorial Guinea	Namibia	Saint Vincent and the Grenadines
Bahrain	Gambia	New Caledonia (FR)	Yemen
Burundi	Haiti	Niger	South Africa
Benin	Iran	Nicaragua	Zambia
Bermuda	Kenya	Papua New Guinea	Zimbabwe
Brunei Darussalam	Kyrgyzstan	Palestine	
Bolivia	Saint Kitts and Nevis	Rwanda	
Botswana	Kuwait	Solomon Islands	
Belarus	Kazakhstan	Seychelles	
Canada	Saint Lucia	Saint Helena, Ascension and Tristan da Cunha (UK)	
Central African Republic	Liberia	Sierra Leone	
Côte d'Ivoire	Lesotho	Samoa	
Cameroon	Moldova	Suriname	
Cape Verde	Madagascar	Swaziland	
Dominica	Mali	Togo	
Djibouti	Mauritius	Tajikistan	

11.2 First run of the model

Variable	Distortion	Estimation	Standard	T value	Prob > t	VIF
Intercept	Distorto	8.668855	0.227417	38.12	<.0001	
AvgreturnsonFDI,3years	Distorto	0.175366	0.009402	18.65	<.0001	1.154874
FDIinstock,growthoverlast3years,Difference	Distorto	-0.02536	0.035957	-0.71	0.4807	16.33995
GDPpercapitaSum,T	Distorto	-0.00869	0.00873	-1	0.3193	18.11149
GDPpercapitaDifference,T	Distorto	-0.00542	0.008222	-0.66	0.5101	4.537469
GDPsum	Distorto	0.002698	0.002755	0.98	0.3274	9.468181
GDPdifference	Distorto	-7E-05	0.004009	-0.02	0.986	1.956715
Exports+Imports/GDP,T,difference	Distorto	-0.00727	0.004544	-1.6	0.1098	4.726113
ExportsDifference,T	Distorto	-0.00124	0.004745	-0.26	0.7937	2.290632
exportsrawmaterials/exports,T,difference	Distorto	-0.04249	0.018433	-2.31	0.0212	15.63741
businessenvironmentdifference	Distorto	0.000145	0.000351	0.41	0.679	13.05002
governancedifference	Distorto	-0.00015	0.000402	-0.38	0.7004	64.68359
labourcostdifference	Distorto	-0.00133	0.006716	-0.2	0.8428	3.33677
educationdifference	Distorto	-0.07065	0.102943	-0.69	0.4926	124.95
financialstabilitydifference	Distorto	-0.00056	0.002122	-0.26	0.7919	17.45976
Distance		0.00069	0.0019	0.36	0.7164	1.867346
contiguity		0.017306	0.008724	1.98	0.0473	1.238497
commonlanguageofficial	Distorto	0.011229	0.0098	1.15	0.2519	2.723722
commonlanguageethno	Distorto	-0.00551	0.009649	-0.57	0.5681	2.848008
FDIinstock,growthoverlast3years	Distorto	-0.00262	0.039861	-0.07	0.9476	14.43401
GDPcapitareporting	Distorto	0.040564	0.013158	3.08	0.0021	44.85331
GDPpercapitapartner,T	Distorto	0.003987	0.004852	0.82	0.4112	24.94238
Exports+Imports/GDP,T	Distorto	-0.00732	0.00679	-1.08	0.2812	6.020802
Exports,T	Distorto	-0.00209	0.003595	-0.58	0.561	32.65171
exportsrawmaterials/exports,T	Distorto	-0.04182	0.019766	-2.12	0.0344	15.37874
businessenvironment_P	Distorto	0.000167	0.000433	0.39	0.6995	15.25161
businessenvironment_R	Azzerato	0	0			0
governance_P	Distorto	-0.00012	0.000428	-0.29	0.7726	60.25122
governance_R	Azzerato	0	0			0
labourcost_P		-0.00104	0.003377	-0.31	0.7578	10.43584
labourcost_R		-0.02464	0.008335	-2.96	0.0031	20.30073
education_P	Distorto	-0.07616	0.108765	-0.7	0.4838	131.5926
education_R	Azzerato	0	0			0
financialstability_P	Distorto	-0.0013	0.002572	-0.51	0.6135	17.07108
financialstability_R	Azzerato	0	0			0
GDPreporting		-0.00186	0.002335	-0.8	0.4257	9.12167
GDP partner		0.002096	0.004102	0.51	0.6094	35.09015

11.3 Second run of the model

Variable	Distortion Estimation	Standard	T value	Prob > t	VIF
Intercetta	8.697281	0.200823	43.31	<.0001	
AvgreturnsonFDI,3years	0.18026	0.009274	19.44	<.0001	1.122263
GDPpercapitaDifference,T	0.000933	0.007175	0.13	0.8966	3.451031
GDPsum	0.003516	0.002679	1.31	0.1895	8.942842
GDPdifference	0.000729	0.003989	0.18	0.8549	1.934638
Exports+Imports/GDP,T,difference	-0.00441	0.00441	-1	0.3174	4.447052
ExportsDifference,T	-0.00114	0.00474	-0.24	0.8094	2.28325
exportsrawmaterials/exports,T,difference	-0.00461	0.006266	-0.74	0.4619	1.804699
businessenvironmentdifference	-8.9E-05	0.000297	-0.3	0.764	9.316309
governancedifference	5.03E-05	0.000393	0.13	0.8981	61.57085
labourcostdifference	-0.00363	0.006381	-0.57	0.5696	3.008442
educationdifference	-0.13104	0.093221	-1.41	0.1598	102.3388
financialstabilitydifference	0.000124	0.002082	0.06	0.9524	16.78166
Distance	0.00136	0.001832	0.74	0.4579	1.733354
contiguity	0.019	0.008699	2.18	0.029	1.230047
commonlanguageofficial	0.011481	0.009794	1.17	0.2411	2.717044
commonlanguageethno	-0.00456	0.009623	-0.47	0.6354	2.829234
GDPcapitareporting	0.009713	0.006484	1.5	0.1342	10.87832
GDPpercapitapartner,T	0.001532	0.004482	0.34	0.7326	21.26361
Exports+Imports/GDP,T	-0.00658	0.005498	-1.2	0.2316	3.943317
businessenvironment_P	-1.72E-05	0.00039	-0.04	0.9649	12.33566
governance_P	0.000118	0.000411	0.29	0.7744	55.6627
labourcost_P	-0.00219	0.003296	-0.66	0.5066	9.930667
education_P	-0.13205	0.099121	-1.33	0.1828	109.1573
financialstability_P	-0.00075	0.002532	-0.3	0.7672	16.52303
GDPreporting	-0.00224	0.002202	-1.02	0.31	8.096604
GDP partner	-0.0003	0.00147	-0.2	0.8376	4.50119

11.4 Third run of the model

Variable	Distortion Estimation	Standard Error	T value	Prob > t	VIF
Intercetta	8.536381	0.15569	54.83	<.0001	
AvgeturnsonFDI,3years	0.179299	0.009232	19.42	<.0001	1.1124
GDPpercapitaDifference,T	0.001773	0.006782	0.26	0.7938	3.084354
GDPcapitareporting	0.002756	0.002857	0.96	0.3348	2.113105
GDPsum	0.002892	0.002618	1.1	0.2694	8.543013
GDPdifference	0.00059	0.00398	0.15	0.8822	1.926789
GDPreporting	-0.00226	0.002022	-1.12	0.2643	6.83404
GDP partner	-4E-05	0.00145	-0.03	0.978	4.383255
Exports+Imports/GDP,T,difference	-0.00629	0.003674	-1.71	0.0871	3.08774
Exports+Imports/GDP,T	-0.00835	0.004881	-1.71	0.0871	3.108831
ExportsDifference,T	-0.00195	0.004708	-0.41	0.679	2.253983
exportsrawmaterials/exports,T,difference	-0.00657	0.005878	-1.12	0.2636	1.588673
businessenvironnement_P	5.02E-05	0.000242	0.21	0.8354	4.739046
governance_P	8.96E-05	0.000148	0.61	0.5445	7.201761
education_P	0.007447	0.023208	0.32	0.7483	5.986443
labourcost_P	-0.00175	0.002951	-0.59	0.5521	7.960636
labourcostdifference	-0.00373	0.006326	-0.59	0.5552	2.957973
financialstability_P	-0.00072	0.00138	-0.52	0.6038	4.905614
Distance	0.001192	0.001816	0.66	0.5115	1.703224
contiguity	0.018893	0.008694	2.17	0.0298	1.229001
commonlanguageofficial	0.013672	0.009693	1.41	0.1584	2.662033
commonlanguageethno	-0.00714	0.00939	-0.76	0.4469	2.695116

11.5 Model results: FDI from high income countries to high income countries

Variable	Distortion Estimation	Standard error	T value	Prob > t
Intercetta	8.862396	0.814043	10.89	<,0001
AvgreturnsonFDI,3years	0.169626	0.021098	8.04	<,0001
GDPpercapitaDifference,T	-0.042238	0.034186	-1.24	0.2168
GDPcapitareporting	0.0213014	0.018474	1.15	0.249
GDPreporting	-0.01296	0.009115	-1.42	0.1553
GDP partner	-0.010104	0.0102	-0.99	0.322
GDPsum	0.0315954	0.013457	2.35	0.019
GDPdifference	0.0484888	0.034435	1.41	0.1593
Exports+Imports/GDP,T,difference	-0.016737	0.019056	-0.88	0.3799
Exports+Imports/GDP,T	-0.017229	0.027212	-0.63	0.5267
ExportsDifference,T	-0.060433	0.051953	-1.16	0.2449
exportsrawmaterials/exports,T,difference	-0.030523	0.038735	-0.79	0.4308
businessenvironnement_P	0.0011741	0.001561	0.75	0.4519
governance_P	0.0001627	0.001399	0.12	0.9074
labourcost_P	-0.035109	0.028001	-1.25	0.2101
education_P	0.3561887	0.478244	0.74	0.4565
financialstability_P	-0.011144	0.010049	-1.11	0.2676
Distance	-0.00629	0.00795	-0.79	0.4289
contiguity	0.0202108	0.026121	0.77	0.4392
commonlanguagofficial	0.0489668	0.039852	1.23	0.2193
commonlanguageethno	-0.011581	0.039448	-0.29	0.7691

11.6 Model results: FDI from high income countries to middle income countries

Variable	Distortion	Estimation	Standard error	T value	Prob > t
Intercetta		9.0668888	0.248711	36.46	<.0001
AvgreturnsonFDI,3years		0.2042304	0.010309	19.81	<.0001
GDPpercapitaDifference,T		0.0112776	0.005672	1.99	0.0469
GDPcapitareporting		0.0018458	0.002279	0.81	0.4181
GDPreporting		0.0007732	0.001368	0.57	0.5719
GDP partner		-0.000193	0.000788	-0.25	0.8063
GDPsum		0.0013142	0.001688	0.78	0.4363
GDPdifference		-0.021507	0.010505	-2.05	0.0407
Exports+Imports/GDP,T,difference		0.0006024	0.002337	0.26	0.7966
Exports+Imports/GDP,T		-0.004248	0.00266	-1.6	0.1104
ExportsDifference,T		-0.01033	0.008988	-1.15	0.2505
exportsrawmaterials/exports,T,difference		-6.20E-05	3.60E-03	-0.02	0.9863
businessenvironment_P		-0.000088	0.000138	-0.64	0.5238
governance_P		4.61E-05	8.25E-05	0.56	0.5762
labourcost_P		0.0029283	0.002017	1.45	0.1466
education_P		-0.018388	0.017235	-1.07	0.2861
financialstability_P		1.21E-03	0.00083	1.46	0.1453
Distance		-0.000882	0.001076	-0.82	0.4129
contiguity		0.0065532	0.006786	0.97	0.3343
commonlanguageofficial		-0.011042	0.005108	-2.16	0.0307
commonlanguageethno		0.0002767	0.005012	0.06	0.956

11.7 Model results: FDI from high income countries to low income countries

Variable	Distortion Estimation	Standard error	T value	Prob > t
Intercetta	8.0713118	0.124497	64.83	<,0001
AvgreturnsonFDI,3years	0.2251238	0.009112	24.71	<,0001
GDPpercapitaDifference,T	0.012058	0.008119	1.49	0.1377
GDPcapitareporting	-0.002977	0.00217	-1.37	0.1703
GDPreporting	0.001334	0.000576	2.32	0.0206
GDP partner	0.0017793	0.000331	5.38	<,0001
GDPsum	-0.001706	0.000685	-2.49	0.0128
GDPdifference	-0.009034	0.003707	-2.44	0.0149
Exports+Imports/GDP,T,difference	-0.001584	0.000805	-1.97	0.0491
Exports+Imports/GDP,T	-0.000493	0.001327	-0.37	0.7102
ExportsDifference,T	7.31E-03	0.003491	2.1	0.0363
exportsrawmaterials/exports,T,difference	-3.75E-05	1.06E-03	-0.04	0.9717
businessenvironment_P	-5.65E-05	0.000047	-1.2	0.23
governance_P	1.17E-04	3.22E-05	3.62	0.0003
labourcost_P	0.0001795	0.000588	0.31	0.7604
education_P	-0.005144	0.00385	-1.34	0.1817
financialstability_P	-2.32E-04	0.000253	-0.92	0.359
Distance	-0.000282	0.000612	-0.46	0.6446
contiguity	-0.001899	0.00405	-0.47	0.6392
commonlanguageofficial	-0.000573	0.001598	-0.36	0.7198
commonlanguageethno	0.0010125	0.001726	0.59	0.5576

11.8 Model results: FDI from middle income countries to high income countries

Variable	Distortion Estimation	Standard	T value	Prob > t
Intercept	2.124114	1.424852	1.49	0.1366
AvgreturnsonFDI,3years	0.924758	0.166651	5.55	<.0001
GDPpercapitaDifference,T	5.45E-05	0.000347	0.16	0.8752
GDPcapitareporting	0.000654	0.000589	1.11	0.2676
GDPreporting	6.54E-04	0.000273	2.39	0.0172
GDP partner	0.000482	0.00039	1.24	0.2167
GDPsum	-0.00054	0.000477	-1.14	0.2548
GDPdifference	-1.22E-05	0.000148	-0.08	0.9347
Exports+Imports/GDP,T,difference	0.000315	0.000712	0.44	0.6585
Exports+Imports/GDP,T	0.000877	0.0009	0.97	0.3301
ExportsDifference,T	-3.16E-05	0.00016	-0.2	0.8439
exportsrawmaterials/exports,T,difference	6.73E-04	0.001064	0.63	0.5276
businessenvironment_P	-1.67E-05	3.77E-05	-0.44	0.658
governance_P	1.49E-05	0.000035	0.43	0.67
labourcost_P	-3.37E-05	0.000698	-0.05	0.9616
education_P	7.24E-03	0.012062	0.6	0.5484
financialstability_P	-0.00014	0.000251	-0.55	0.5803
Distance	1.33E-04	0.000251	0.53	0.5953
contiguity	0.001119	0.001003	1.12	0.2649
commonlanguageofficial	-8.98E-05	0.002214	-0.04	0.9676
commonlanguageethno	1.47E-03	0.001562	0.94	0.3455

11.9 Model results: FDI from middle income countries to middle income countries

Variable	Distortion	Estimation	Standard error	T value	Prob > t
Intercetta		9.344797	0.206765	45.2	<.0001
AvgreturnsonFDI,3years		0.0932389	0.023629	3.95	<.0001
GDPpercapitaDifference,T		0.0002232	0.000178	1.25	0.211
GDPcapitareporting		0.0002616	1.15E-04	2.27	0.0232
GDPreporting		0.0002781	8.28E-05	3.36	0.0008
GDP partner		-6.23E-05	3.97E-05	-1.57	0.117
GDPsum		-0.000108	8.35E-05	-1.29	0.1966
GDPdifference		1.35E-03	2.02E-03	0.67	0.5031
Exports+Imports/GDP,T,difference		6.10E-05	1.41E-04	0.43	0.6641
Exports+Imports/GDP,T		-0.000333	0.000167	-1.99	0.0468
ExportsDifference,T		-4.39E-03	0.00089	-4.93	<.0001
exportsrawmaterials/exports,T,difference		-0.000221	1.59E-04	-1.39	0.1657
businessenvironement_P		2.88E-06	5.86E-06	0.49	0.6237
governance_P		-4.99E-06	3.38E-06	-1.48	0.1398
labourcost_P		-2.64E-05	0.000084	-0.31	0.7531
education_P		0.0006705	0.000699	0.96	0.3375
financialstability_P		3.76E-05	3.49E-05	1.08	0.2817
Distance		-8.44E-05	3.64E-05	-2.32	0.0206
contiguity		6.69E-04	1.79E-04	3.73	0.0002
commonlanguageofficial		5.79E-05	0.000367	0.16	0.8746
commonlanguageethno		-2.18E-04	0.000254	-0.86	0.3896

11.10 Model results: FDI from middle income countries to low income countries

Variable	Distortion Estimation	Standard error	T value	Prob > t
Intercetta	12.095937	0.597658	20.24	<.0001
AvgreturnsonFDI,3years	-0.231756	0.069899	-3.32	0.001
GDPpercapitaDifference,T	0.0003906	0.000468	0.83	0.4045
GDPcapitareporting	1.08E-05	5.65E-05	0.19	0.8492
GDPreporting	0.0000548	1.97E-05	2.79	0.0055
GDP partner	2.88E-05	9.17E-06	3.14	0.0018
GDPsum	-3.08E-05	1.62E-05	-1.9	0.0582
GDPdifference	-2.47E-03	9.84E-04	-2.51	0.0123
Exports+Imports/GDP,T,difference	-2.69E-05	2.82E-05	-0.95	0.3415
Exports+Imports/GDP,T	-1.04E-05	3.58E-05	-0.29	0.7706
ExportsDifference,T	9.41E-04	0.00066	1.43	0.1544
exportsrawmaterials/exports,T,difference	6.38E-06	2.30E-05	0.28	0.7812
businessenvironement_P	-1.00E-06	9.47E-07	-1.06	0.2876
governance_P	8.88E-07	7.45E-07	1.19	0.2334
labourcost_P	1.23E-05	1.18E-05	1.04	0.2981
education_P	9.64E-05	8.57E-05	1.12	0.2612
financialstability_P	-1.44E-06	5.19E-06	-0.28	0.781
Distance	-0.00005	1.06E-05	-4.72	<.0001
contiguity	-1.79E-05	4.90E-05	-0.37	0.715
commonlanguagofficial	0.0000198	8.18E-05	0.24	0.8088
commonlanguageethno	-8.56E-05	7.36E-05	-1.16	0.245

11.11 Correlation matrix between Doing Business and the Rule of Law variables of the Governance Indicator

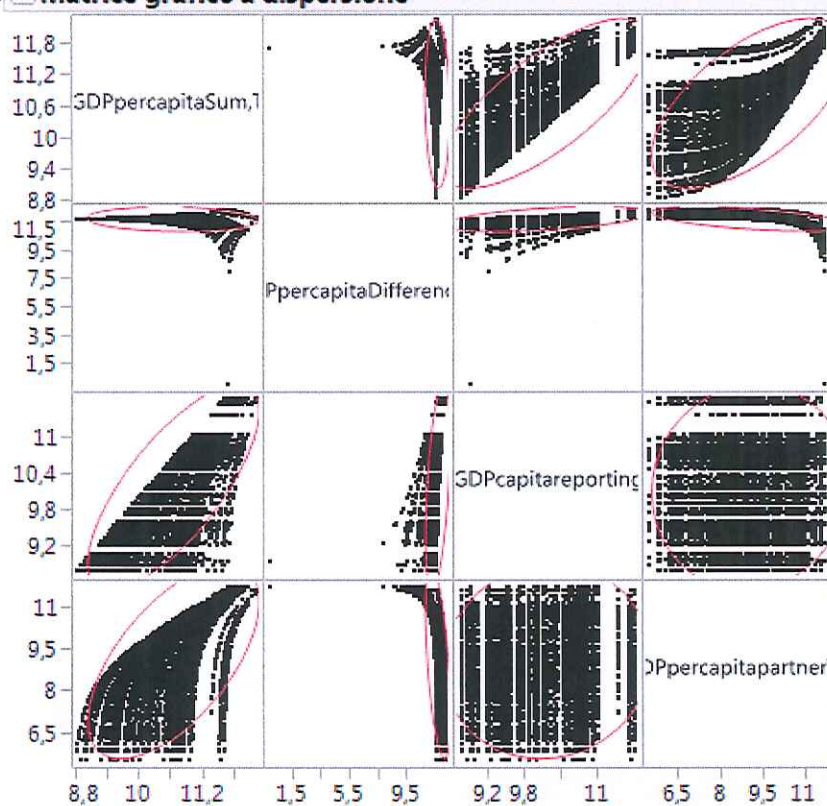
	rule of FDIoutflow_T law_P	ronement_ P	rule of law_P 2	Starting a Business_P	Construction Permits_P	Getting Electricity_P	Registering Property_P	Getting Credit_P	Minority Investors_P	Paying Taxes_P	Across Borders_P	Enforcing Contracts_P	Insolvency_ P
FDIoutflow_T rule of law_P	100%	3%	3%	3%	3%	1%	1%	0%	3%	3%	3%	2%	4%
businessenvironment_P	3%	100%	6%	6%	4%	1%	3%	2%	5%	4%	3%	5%	5%
rule of law_P 2	3%	6%	100%	81%	78%	58%	62%	68%	67%	69%	76%	66%	80%
Starting a Business_P	3%	6%	81%	100%	62%	45%	53%	38%	44%	48%	64%	70%	56%
Dealing with Construction Permits_P	3%	4%	78%	62%	100%	34%	34%	46%	55%	57%	53%	56%	55%
Getting Electricity_P	1%	1%	58%	45%	34%	100%	42%	37%	17%	32%	38%	44%	31%
Registering Property_P	1%	3%	62%	53%	34%	42%	100%	37%	24%	24%	41%	59%	33%
Getting Credit_P	0%	2%	62%	38%	46%	37%	37%	100%	39%	24%	37%	31%	54%
Protecting Minority Investors_P	3%	5%	68%	44%	55%	17%	24%	39%	100%	53%	29%	52%	42%
Paying Taxes_P	3%	4%	67%	48%	57%	32%	24%	24%	53%	100%	47%	42%	26%
Trading Across Borders_P	3%	3%	69%	64%	53%	38%	41%	37%	29%	47%	100%	44%	37%
Enforcing Contracts_P	2%	5%	76%	70%	56%	44%	59%	31%	52%	42%	44%	100%	37%
Resolving Insolvency_P	2%	4%	66%	56%	55%	31%	33%	54%	42%	26%	37%	37%	100%
	4%	5%	80%	73%	55%	41%	38%	39%	48%	51%	50%	55%	53%

11.12 Correlation matrix among GDP per capita of the home and host countries and their sum and difference

Correlazioni

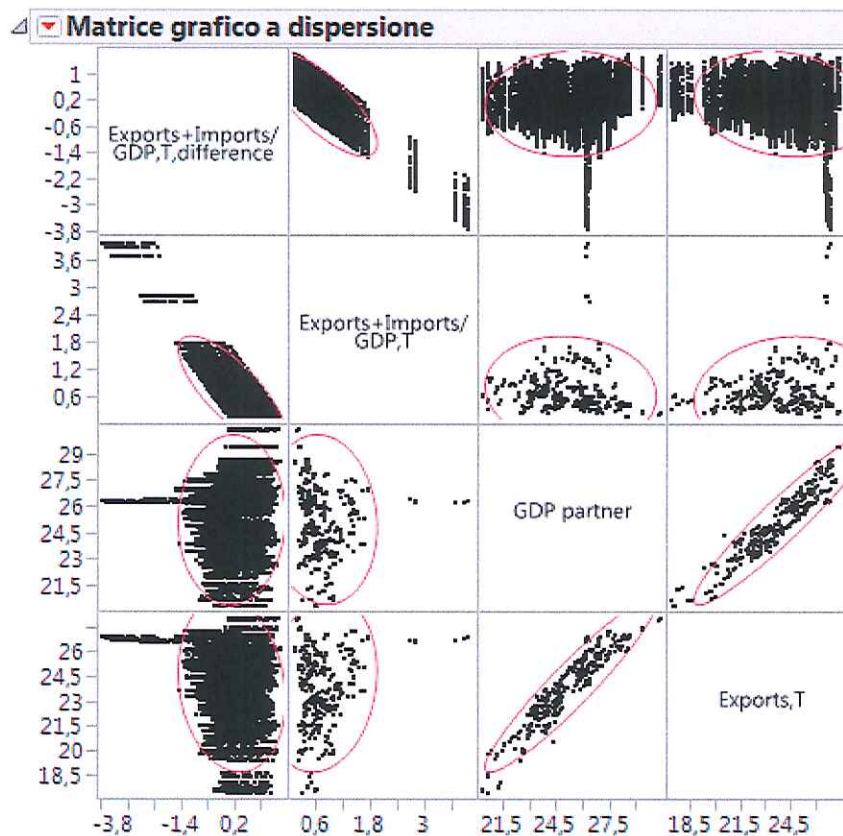
	GDPpercapitaSum,T	GDPpercapitaDifference,T	GDPcapitareporting	GDPpercapitapartner\,T
GDPpercapitaSum,T	1,0000	-0,0957	0,7459	0,6189
GDPpercapitaDifference,T	-0,0957	1,0000	0,4793	-0,5286
GDPcapitareporting	0,7459	0,4793	1,0000	0,0571
GDPpercapitapartner\,T	0,6189	-0,5286	0,0571	1,0000

Matrice grafico a dispersione

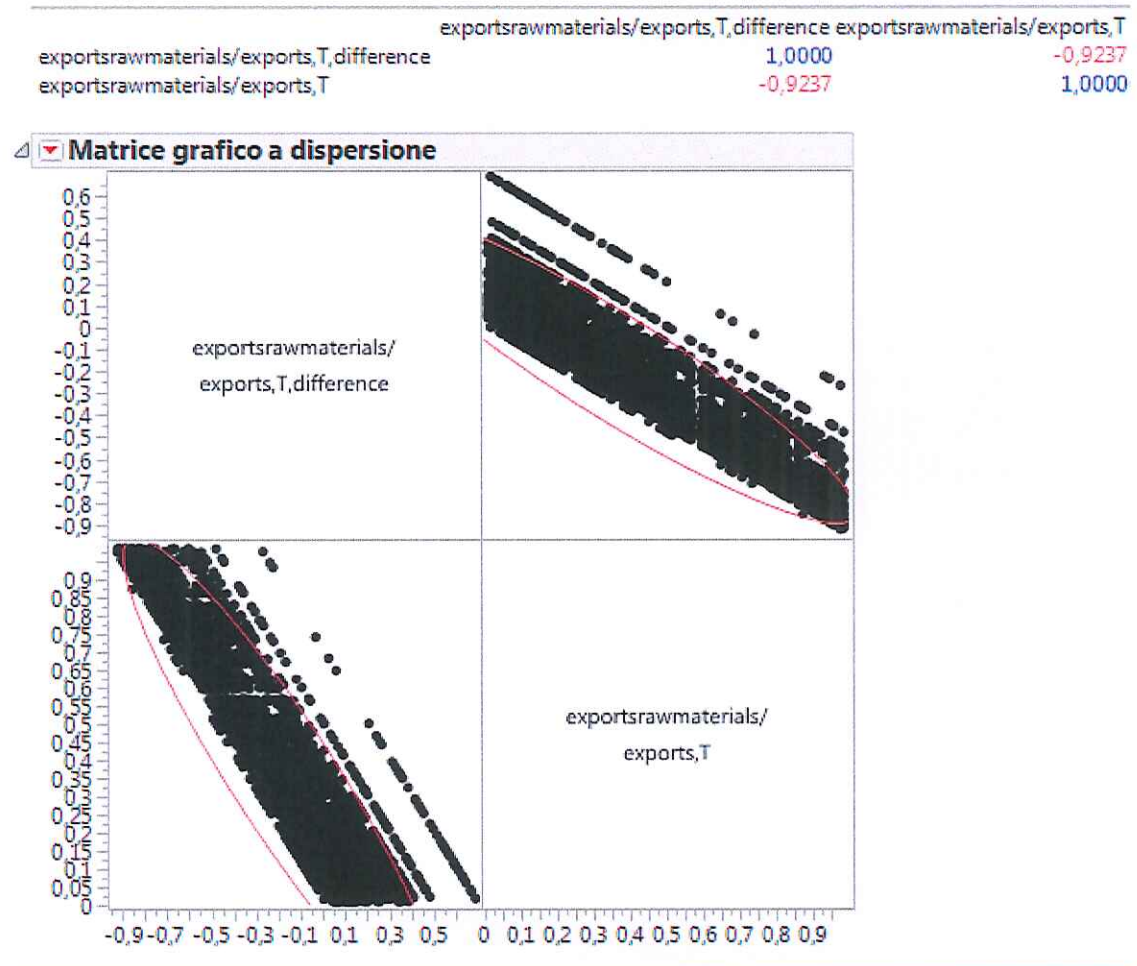


11.13 Correlation among level of imports, market openness, GDP and market openness difference

	Exports+Imports/GDP,T,difference	Exports+Imports/GDP,T	GDP partner	Exports,T
Exports+Imports/GDP,T,difference	1,0000	-0,7582	0,0364	-0,1585
Exports+Imports/GDP,T	-0,7582	1,0000	-0,0883	0,1716
GDP partner	0,0364	-0,0883	1,0000	0,9441
Exports,T	-0,1585	0,1716	0,9441	1,0000

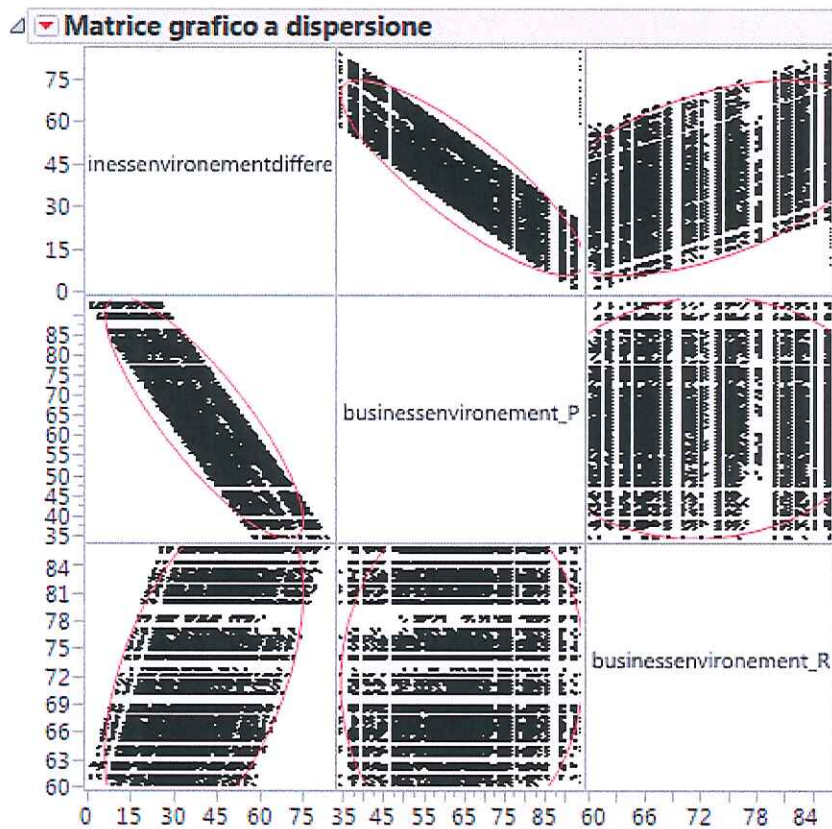


11.14 Correlation between the resource availability in the host country and the difference between the home and host country



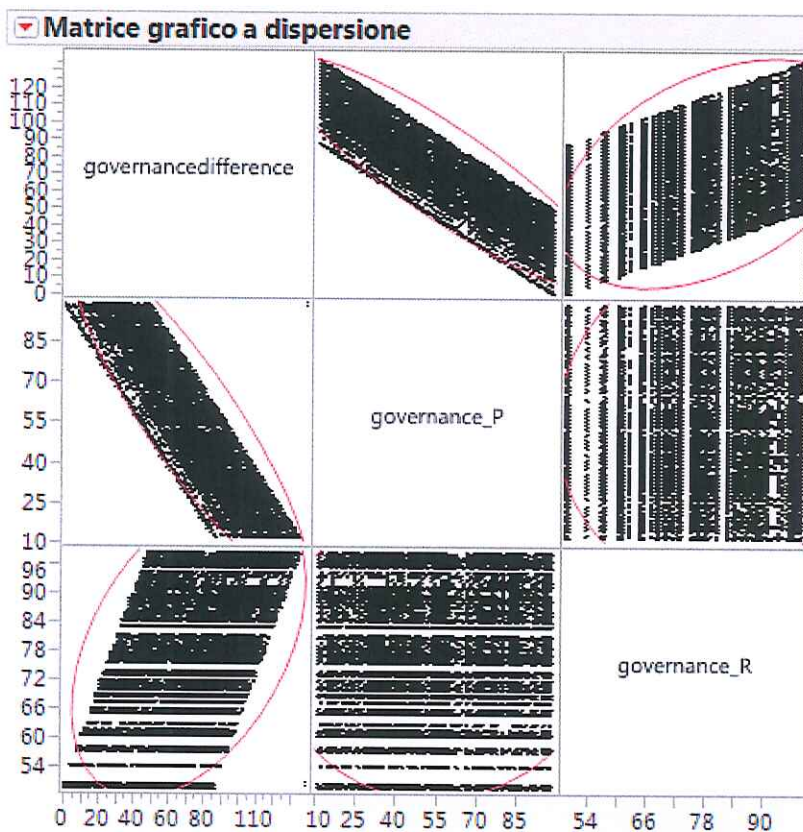
11.15 Correlation among the business environment difference and the business environment score in home and host countries

	businessenvironmentdifference	businessenvironment_P	businessenvironment_R
businessenvironmentdifference	1,0000	-0,8467	0,4858
businessenvironment_P	-0,8467	1,0000	0,0538
businessenvironment_R	0,4858	0,0538	1,0000



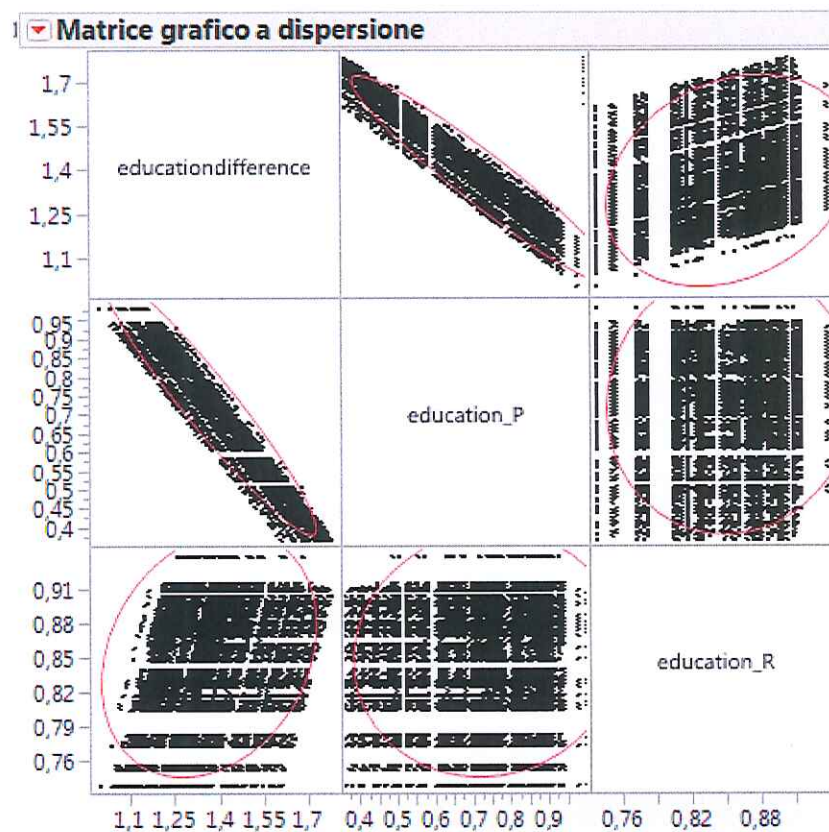
11.16 Correlation among the governance score difference and the governance score in home and host countries

	governancedifference	governance_P	governance_R
governancedifference	1,0000	-0,8836	0,4222
governance_P	-0,8836	1,0000	0,0515
governance_R	0,4222	0,0515	1,0000



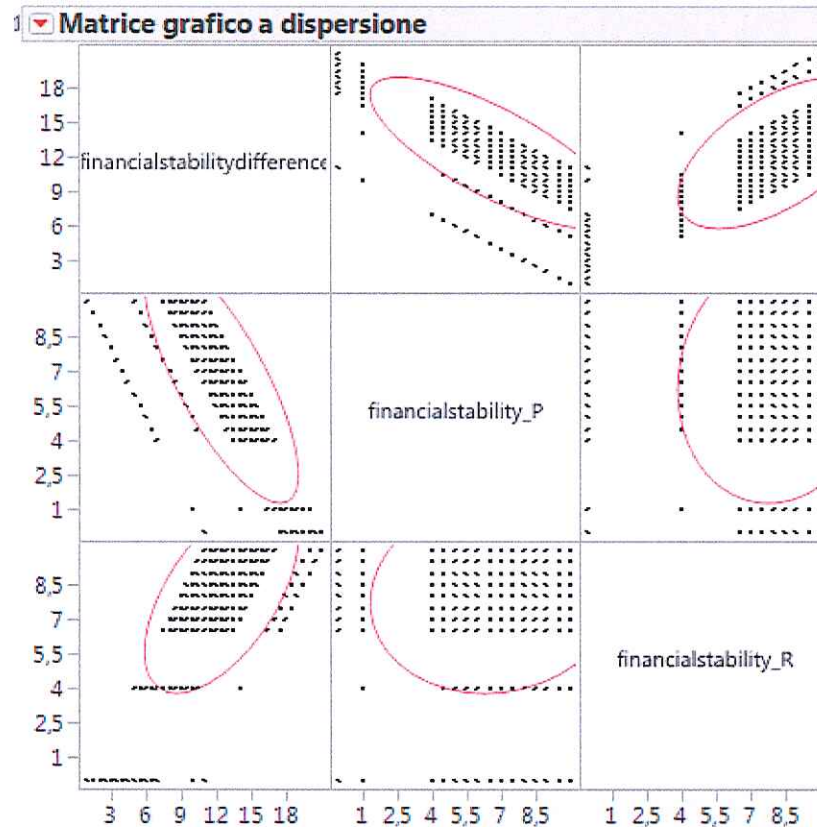
11.17 Correlation among the HDI difference and the HDI in home and host countries

	educationdifference	education_P	education_R
educationdifference	1,0000	-0,9552	0,2436
education_P	-0,9552	1,0000	0,0544
education_R	0,2436	0,0544	1,0000



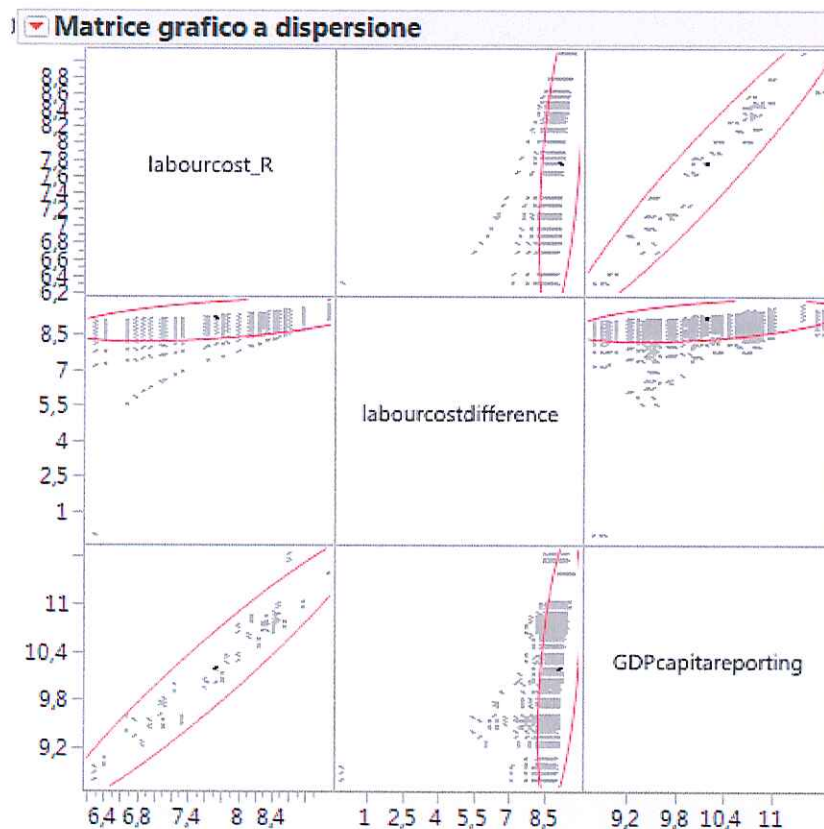
11.18 Correlation among the financial rating difference and the financial rating in home and host countries

	financialstabilitydifference	financialstability_P	financialstability_R
financialstabilitydifference	1,0000	-0,7638	0,5821
financialstability_P	-0,7638	1,0000	0,0803
financialstability_R	0,5821	0,0803	1,0000



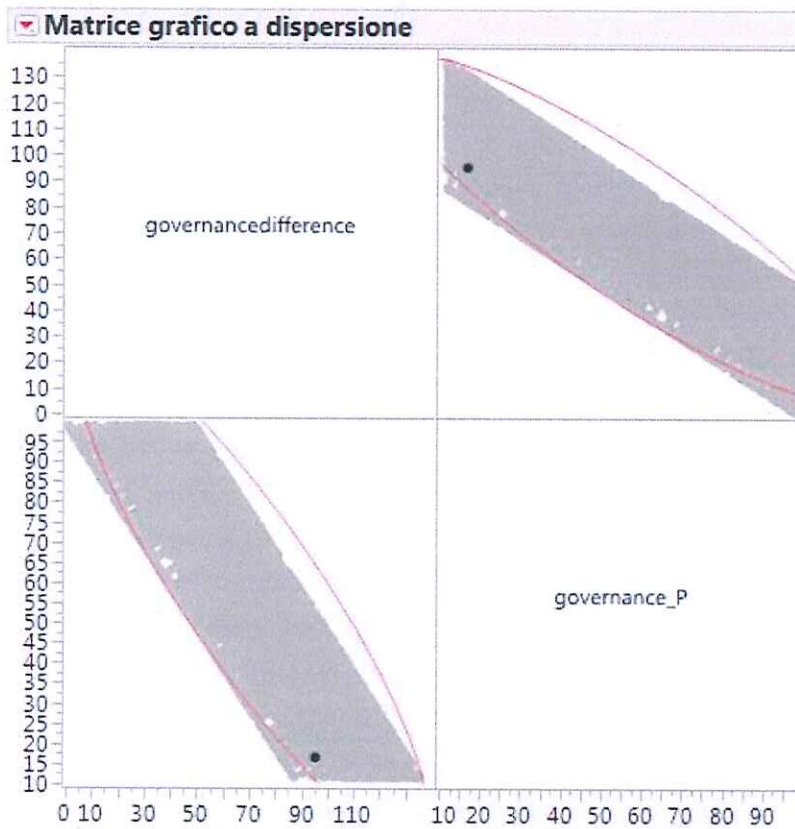
11.19 Correlation between monthly wage and GDP per capita in reporting country

	labourcost_R	labourcostdifference	GDPcapitareporting
labourcost_R	1,0000	0,4929	0,9606
labourcostdifference	0,4929	1,0000	0,4790
GDPcapitareporting	0,9606	0,4790	1,0000

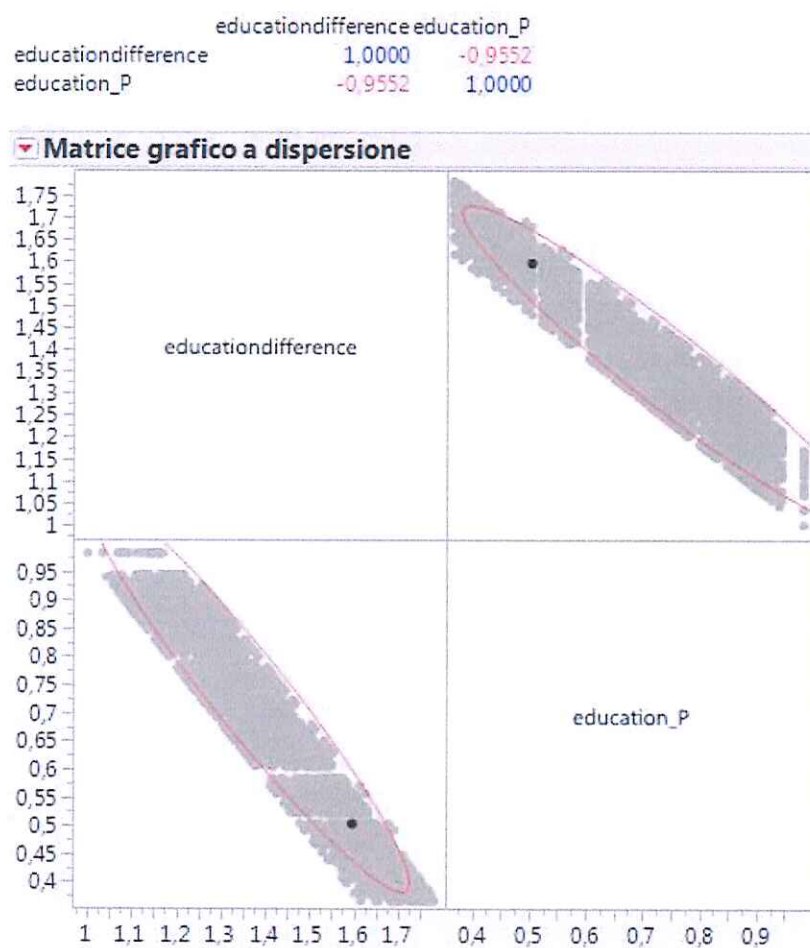


11.20 Correlation between governance score distance and score of the host country

	governancedifference	governance_P
governancedifference	1,0000	-0,8836
governance_P	-0,8836	1,0000

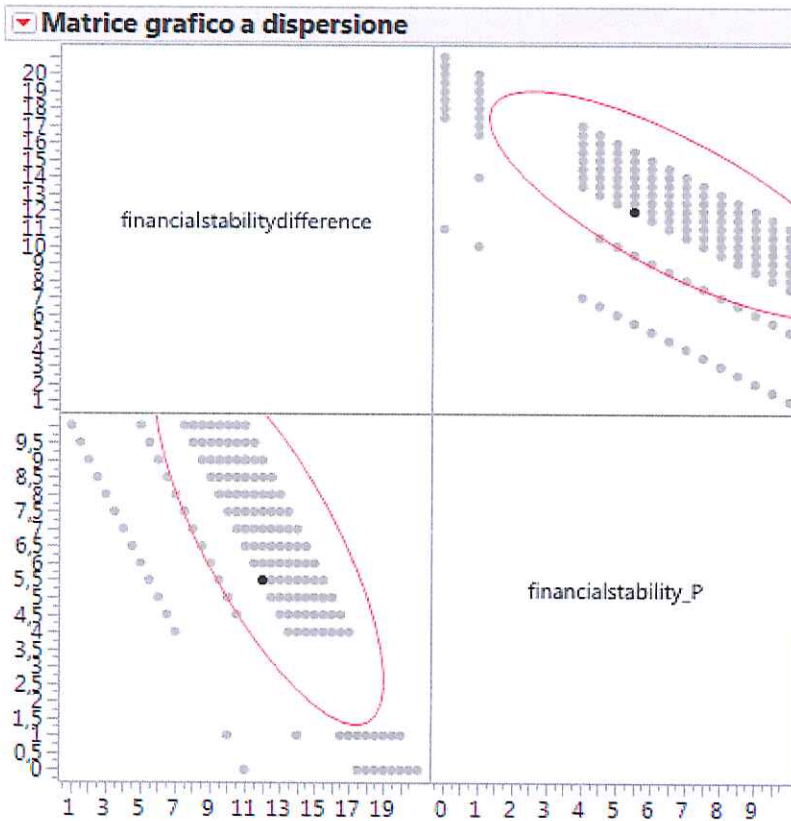


11.21 Correlation between HDI distance and HDI of the host country



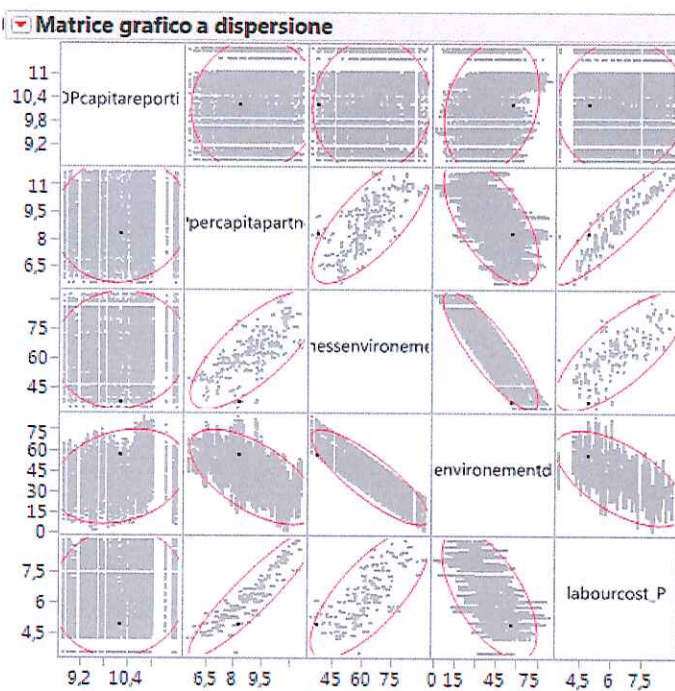
11.22 Correlation between financial rating distance and financial rating of the host country

	financialstabilitydifference	financialstability_P
financialstabilitydifference	1,0000	-0,7638
financialstability_P	-0,7638	1,0000



11.23 Correlation matrix among several variables that were left with a high VIF in the second run and for which we suspected a multicollinearity

	GDPcapitareporting	GDPpercapitapartner\,T	businessenvironnement_P	businessenvironnementdifference	labourcost_P
GDPcapitareporting	1,0000	0,0571	0,0489	0,2488	0,0542
GDPpercapitapartner\,T	0,0571	1,0000	0,7440	-0,6192	0,9176
businessenvironnement_P	0,0489	0,7440	1,0000	-0,8467	0,7438
businessenvironnementdifference	0,2488	-0,6192	-0,8467	1,0000	-0,6214
labourcost_P	0,0542	0,9176	0,7438	-0,6214	1,0000



11.24 FDI returns as the dependent variable

	Estimate	Std error	T value	Prob> t	VIF
Intercept	7,908889	0,091913	86,05	<,0001	
GDPpercapitaDifference,T	0,008424	0,007633	1,1	0,2698	2,853694
GDPsum	0,003315	0,002047	1,62	0,1054	3,814004
Exports+Imports/GDP,T,difference	-0,04609	0,004914	-9,38	<,0001	4,034086
businessenvironmentdifference	0,000705	0,000253	2,79	0,0053	4,93732
governancedifference	-0,00033	0,000135	-2,44	0,0149	5,29404
labourcostdifference	-0,00806	0,007354	-1,1	0,2731	2,919541
Distance	-0,00011	0,001932	-0,06	0,954	1,407947
contiguity	0,03176	0,01013	3,14	0,0017	1,218506
commonlanguageofficial	0,039099	0,007321	5,34	<,0001	1,109047
Exports+Imports/GDP,T	-0,04422	0,006257	-7,07	<,0001	3,730732
businessenvironment_R	4,64E-05	0,000374	0,12	0,9013	3,072595
labourcost_R	-0,05225	0,006033	-8,66	<,0001	7,761523
education_R	0,749879	0,093429	8,03	<,0001	6,603419
financialstability_P	0,010237	0,001419	7,22	<,0001	3,788491
financialstability_R	0,009547	0,001965	4,86	<,0001	4,579622
GDPReporting	0,007908	0,001853	4,27	<,0001	4,189158

11.25 Correlation matrix between FDI returns and other variables in the model

	AvgreturnsonFDI, 3years
AvgreturnsonFDI,3years	100%
FDIinstock,growthoverlast3years,Difference	5%
GDPpercapitaSum,T	17%
GDPpercapitaDifference,T	-3%
GDPsum	23%
GDPdifference	3%
Exports+Imports/GDP,T,difference	-12%
ExportsDifference,T	3%
exportsrawmaterials/exports,T,difference	2%
businessenvironementdifference	-2%
governancedifference	-8%
labourcostdifference	-3%
educationdifference	-8%
financialstabilitydifference	-4%
Distance	-3%
contiguity	6%
commonlanguagofficial	11%
commonlanguageethno	12%
FDIinstock,growthoverlast3years	-3%
GDPcapitareporting	13%
GDPpercapitapartner\,T	14%
Exports+Imports/GDP,T	3%
Exports,T	16%
exportsrawmaterials/exports,T	-5%
businessenvironement_P	11%
businessenvironement_R	14%
governance_P	13%
governance_R	8%
labourcost_P	14%
labourcost_R	11%
education_P	12%
education_R	14%
financialstability_P	16%
financialstability_R	14%
GDPReporting	21%
GDP partner	16%

11.26 Brazil's Balance of Payments

US\$ million	
Itemization	2014
<u>Current account</u>	<u>- 104 740</u>
Credit	<u>281 734</u>
Debit	<u>386 475</u>
Balance on goods and services	<u>- 54 635</u>
Credit	<u>264 614</u>
Debit	<u>319 249</u>
Balance on goods	<u>- 6 165</u>
Imports	<u>224 649</u>
Imports	<u>230 814</u>
Services	<u>- 48 471</u>
Credit	<u>39 965</u>
Debit	<u>88 435</u>
<u>Manufacturing services on physical inputs owned by others</u>	<u>14</u>
Credit	<u>18</u>
Debit	<u>3</u>
<u>Maintenance and repair services n.i.e.</u>	<u>160</u>
Credit	<u>356</u>
Debit	<u>196</u>
<u>Transport</u>	<u>- 9 060</u>
Credit	<u>5 844</u>
Debit	<u>14 904</u>
<u>Travel</u>	<u>- 18 724</u>
Credit	<u>6 843</u>
Debit	<u>25 567</u>
<u>Business</u>	<u>- 3 701</u>
Credit	<u>2 151</u>
Debit	<u>5 852</u>

Personal	- 15 023
Credit	<u>4 692</u>
Debit	<u>19 715</u>
Health-related	- 13
Credit	<u>29</u>
Debit	<u>42</u>
Education-related	- 1 325
Credit	<u>151</u>
Debit	<u>1 476</u>
Other	- 13 685
Credit	<u>4 511</u>
Debit	<u>18 197</u>
<i>Of which: settled by credit cards</i>	- 6 557
Credit	<u>5 255</u>
Debit	<u>11 812</u>
<u>Construction</u>	<u>267</u>
Credit	<u>288</u>
Debit	<u>21</u>
<u>Insurance and pension services</u>	- 783
Credit	<u>669</u>
Debit	<u>1 451</u>
<u>Financial services</u>	<u>184</u>
Credit	<u>1 176</u>
Debit	<u>992</u>
Charges for the use of <u>intellectual property</u> n.i.e.	- 5 548
Credit	<u>375</u>
Debit	<u>5 923</u>
<u>Telecommunications, computer, and information services</u>	- 2 224
Credit	<u>1 446</u>
Debit	<u>3 670</u>
<u>Operating leasing services</u>	- 22 629
Credit	<u>170</u>
Debit	<u>22 798</u>
Other <u>business</u> services	<u>12 651</u>

Credit	<u>21 181</u>
Debit	<u>8 530</u>
Personal, cultural, and recreational services	<u>- 1 541</u>
Credit	<u>681</u>
Debit	<u>2 222</u>
Government goods and services n.i.e.	<u>- 1 238</u>
Credit	<u>919</u>
Debit	<u>2 157</u>
Primary income	<u>- 52 172</u>
Credit	<u>12 849</u>
Debit	<u>65 021</u>
Compensation of employees	<u>357</u>
Credit	<u>520</u>
Debit	<u>163</u>
Investment income	<u>- 52 528</u>
Credit	<u>12 329</u>
Debit	<u>64 857</u>
Direct investment	<u>- 28 226</u>
Credit	<u>7 576</u>
Debit	<u>35 803</u>
Dividends, except reinvested earnings	<u>- 19 811</u>
Credit	<u>1 324</u>
Debit	<u>21 135</u>
Reinvested earnings	<u>- 4 688</u>
Credit	<u>6 010</u>
Debit	<u>10 698</u>
Interest on intercompany loans	<u>- 3 727</u>
Credit	<u>243</u>
Debit	<u>3 970</u>
Portfolio investment	<u>- 21 067</u>
Credit	<u>469</u>
Debit	<u>21 536</u>
Dividends	<u>- 6 688</u>
Credit	<u>116</u>

Debit	<u>6 804</u>
Interest on securities issued abroad	<u>- 6 748</u>
Credit	<u>353</u>
Debit	<u>7 101</u>
Interest on securities issued in Brazil – debit	<u>- 7 631</u>
Other investment	<u>- 6 225</u>
Credit	<u>1 294</u>
Debit	<u>7 519</u>
Reserve assets	<u>2 990</u>
Other primary income	=
Credit	=
Debit	=
Secondary income	<u>2 066</u>
Credit	<u>4 271</u>
Debit	<u>2 205</u>
General government	<u>24</u>
Credit	<u>265</u>
Debit	<u>241</u>
Financial corporations, nonfinancial corporations, households, and NPISHs	<u>2 042</u>
Personal transfers	<u>753</u>
Credit	<u>2 125</u>
Debit	<u>1 372</u>
Other current transfers	<u>1 289</u>
Credit	<u>1 881</u>
Debit	<u>592</u>
Capital account	<u>231</u>
Credit	<u>376</u>
Debit	<u>145</u>
Gross acquisitions (DR.) / disposals (CR.) of nonproduced nonfinancial assets	<u>162</u>
Credit	<u>267</u>
Debit	<u>104</u>
of which: transfer rights on sporting club players	<u>168</u>

<i>Credit</i>	<u>224</u>
<i>Debit</i>	<u>56</u>
Capital transfers	<u>69</u>
Credit	<u>110</u>
Debit	<u>40</u>
<u>Financial account: Net lending (+) / net borrowing (-)</u>	<u>- 101 349</u>
Direct investment	<u>- 70 809</u>
Net acquisition of financial assets	<u>26 042</u>
Inflows	<u>7 119</u>
Outflows	<u>33 161</u>
Equity and investment fund shares	<u>25 330</u>
Inflows	<u>4 570</u>
Outflows	<u>29 900</u>
Equity other than reinvestment of earnings	<u>19 320</u>
Reinvestment of earnings – outflows	<u>6 010</u>
Debt instruments	<u>712</u>
Inflows	<u>2 548</u>
Outflows	<u>3 260</u>
Direct investor in direct investment enterprises	<u>1 150</u>
Amortizations received from abroad	<u>862</u>
Funds lent abroad	<u>2 012</u>
Direct investment enterprises in direct investor (reverse investment)	<u>- 232</u>
Amortizations received from abroad	<u>702</u>
Funds lent abroad	<u>470</u>
Between fellow enterprises	<u>- 206</u>
Amortizations received from abroad	<u>984</u>
Funds lent abroad	<u>779</u>
Net incurrence of liabilities	<u>96 851</u>
Inflows	<u>130 581</u>
Outflows	<u>33 730</u>
Equity and investment fund shares	<u>57 874</u>
Inflows	<u>66 753</u>

Outflows	<u>8 879</u>
Equity other than reinvestment of earnings	<u>47 176</u>
Reinvestment of earnings – inflows	<u>10 698</u>
Debt instruments	<u>38 977</u>
Inflows	<u>63 828</u>
Outflows	<u>24 851</u>
Direct investor in direct investment enterprises	<u>8 969</u>
Credits received from abroad	<u>18 910</u>
Amortizations paid abroad	<u>9 941</u>
Direct investment enterprises in direct investor (reverse investment)	<u>24 248</u>
Credits received from abroad	<u>27 773</u>
Amortizations paid abroad	<u>3 524</u>
Between fellow enterprises	<u>5 760</u>
Credits received from abroad	<u>17 146</u>
Amortizations paid abroad	<u>11 386</u>
Portfolio investment	<u>- 38 710</u>
Net acquisition of financial assets	<u>2 818</u>
Inflows	<u>17 211</u>
Outflows	<u>20 029</u>
Equity – assets	<u>58</u>
Inflows	<u>1 362</u>
Outflows	<u>1 420</u>
Investment fund shares – assets	<u>2 084</u>
Inflows	<u>12 445</u>
Outflows	<u>14 530</u>
Debt securities	<u>675</u>
Inflows	<u>3 404</u>
Outflows	<u>4 079</u>
Debt securities - short-term	<u>50</u>
Inflows	<u>99</u>
Outflows	<u>150</u>
Debt securities - long-term	<u>625</u>

<i>Inflows</i>	<u>3 305</u>
<i>Outflows</i>	<u>3 930</u>
Net incurrence of liabilities	<u>41 527</u>
Inflows	<u>272 326</u>
Outflows	<u>230 799</u>
Equity – liabilities	<u>10 873</u>
Inflows	<u>141 907</u>
Outflows	<u>131 033</u>
Issued in Brazil	<u>9 897</u>
Inflows	<u>140 644</u>
Outflows	<u>130 747</u>
Issued abroad (Depository Receipts)	<u>977</u>
Inflows	<u>1 263</u>
Outflows	<u>286</u>
Investment fund shares – liabilities	<u>900</u>
Inflows	<u>3 536</u>
Outflows	<u>2 636</u>
Debt securities	<u>29 754</u>
Inflows	<u>126 883</u>
Outflows	<u>97 129</u>
Issued in the domestic market	<u>27 068</u>
Inflows	<u>109 361</u>
Outflows	<u>82 292</u>
Issued abroad	<u>2 686</u>
Inflows	<u>17 522</u>
Outflows	<u>14 836</u>
Short term	<u>457</u>
Inflows	<u>483</u>
Outflows	<u>27</u>
Long term	<u>2 229</u>
Inflows	<u>17 039</u>
Outflows	<u>14 810</u>
General government	<u>2 510</u>

Inflows	<u>5 976</u>
Outflows	<u>3 466</u>
Other sectors except government	<u>- 280</u>
Inflows	<u>11 063</u>
Outflows	<u>11 343</u>
Financial derivatives (other than reserves) and employee stock options	<u>1 569</u>
Net acquisition of financial assets	<u>- 7 614</u>
Net incurrence of liabilities	<u>- 9 182</u>
Other investment	<u>- 4 232</u>
Net acquisition of financial assets	<u>45 549</u>
Net incurrence of liabilities	<u>49 780</u>
Other equity	<u>95</u>
Net acquisition of financial assets	<u>95</u>
Inflows	=
Outflows	<u>95</u>
Net incurrence of liabilities	=
Inflows	=
Outflows	=
Currency and deposits	<u>18 992</u>
Net acquisition of financial assets	<u>15 345</u>
Central banks	=
Deposit-taking corporations, except central bank	<u>- 2 019</u>
General government	<u>1 295</u>
Other sectors	<u>16 069</u>
Net incurrence of liabilities	<u>- 3 646</u>
Central banks	<u>- 2 855</u>
Deposit-taking corporations, except the central bank	<u>- 937</u>
General government	=
Other sectors	<u>146</u>
Loans	<u>- 42 874</u>

Net acquisition of financial assets	- 166
Inflows	<u>837</u>
Outflows	<u>671</u>
Net incurrence of liabilities	42 708
Inflows	<u>78 232</u>
Outflows	<u>35 524</u>
<i>Net incurrence of liabilities - short-term</i>	24 440
Inflows	<u>25 173</u>
Outflows	<u>734</u>
<i>Net incurrence of liabilities - long-term</i>	18 268
Inflows	<u>53 059</u>
Outflows	<u>34 791</u>
Central bank	=
Deposit-taking corporations, except the central bank	28 490
General government	4 695
Other sectors	9 522
Insurance, pension, and standardized guarantee schemes	- 40
Net acquisition of financial assets	- 41
Net incurrence of liabilities	- 2
Trade credit and advances	19 231
Net acquisition of financial assets	29 951
Net incurrence of liabilities	10 720
Inflows	<u>16 922</u>
Outflows	<u>6 202</u>
<i>Net incurrence of liabilities - short-term</i>	9 472
Inflows	<u>13 960</u>
Outflows	<u>4 488</u>
<i>Net incurrence of liabilities - long-term</i>	1 248

<i>Inflows</i>	<u>2 962</u>
<i>Outflows</i>	<u>1 714</u>
Other accounts receivable/payable	<u>365</u>
Net acquisition of financial assets	<u>365</u>
Inflows	=
Outflows	<u>365</u>
Net incurrence of liabilities	=
Inflows	=
Outflows	=
Special drawing rights (Net incurrence of liabilities)	=
Reserve assets	<u>10 833</u>
Monetary gold	=
Gold bullion	=
Unallocated gold accounts	=
Special drawing rights	<u>4</u>
Reserve position in the IMF	<u>- 622</u>
Other reserve assets	<u>11 451</u>
Currency and deposits	<u>1 147</u>
Claims on monetary authorities	=
Claims on other entities	<u>1 147</u>
Securities	<u>10 302</u>
Debt securities	<u>10 302</u>
Short-term	=
Long-term	<u>10 302</u>
Equity and investment fund shares	=
Financial derivatives	<u>2</u>
Other claims	=
Net errors and omissions	<u>3 160</u>

12.27 Final list of partner countries used in the model

Angola
Argentina
Armenia
Australia
Austria
Azerbaijan
Bahrain
Bangladesh
Barbados
Belarus
Belgium
Belize
Benin
Bolivia
Botswana
Brazil
Bulgaria
Burkina Faso
Cambodia
Cameroon
Canada
Cape Verde
Chile
Colombia
Costa Rica
Côte d'Ivoire
Croatia
Cyprus
Czech Republic

Denmark
Dominican Republic
Ecuador
Egypt
El Salvador
Estonia
Ethiopia
Fiji
Finland
France
Gabon
Gambia
Georgia
Ghana
Greece
Guatemala
Honduras
Hong Kong
Hungary
Iceland
India
Indonesia
Iran
Ireland
Israel
Italy
Japan
Jordan
Kazakhstan
Kenya
Kuwait

Latvia
Lebanon
Lesotho
Lithuania
Luxembourg
Malawi
Malaysia
Mali
Malta
Mauritius
Mexico
Moldova
Mozambique
Namibia
Netherlands
New Zealand
Nicaragua
Nigeria
Norway
Oman
Pakistan
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Poland
Portugal
Qatar
Romania
Russian Federation

Rwanda
Saint Vincent and the Grenadines
Seychelles
Singapore
Slovakia
Slovenia
South Africa
Korea
Spain
Sri Lanka
Sweden
Switzerland
Taipei
Thailand
Trinidad and Tobago
Tunisia
Turkey
Uganda
Ukraine
United Kingdom
United States
Uruguay
Venezuela
Viet Nam
Zambia
Republic of Congo

12. Bibliography

- Araújo S. (2009), Imitative Behaviour and FDI Location Choice: an empirical assessment, University of Essex and OECD.
- Bénassy-Quéré A., Coupet M., Mayer T. (2005), Institutional Determinant of Foreign Direct Investment, Centre d'Études Prospectives et d'Informations Internationales (CEPII).
- Blonigen, B. (2005), A review of the empirical literature on FDI determinants, NBER Working Paper 11299, National Bureau of Economic Research.
- Blonigen, Bruce A. (1997) Firm-Specific Assets and the Link Between Exchange Rates and Foreign Direct Investment *American Economic Review*, 87(3): 447-65.
- Blonigen, Bruce A. (2001) In Search of Substitution Between Foreign Production and Imports, *Journal of International Economics*, 53(1): 81-104.
- Blonigen, Bruce A. (2002) Tariff-Jumping Antidumping Duties, *Journal of International Economics*, Vol. 57(1): 31-50.
- Blonigen, Bruce A., and David N. Figlio. (1998) Voting for Protection: Does Direct Foreign Investment Influence Legislator Behavior? *American Economic Review*, 88(4): 1002-14.
- Bosworth B., Collins S., Chodrow-Reich G. (2007), Returns on FDI: does the US really do better?, NBER Working Paper 13313, National Bureau of Economic Research.
- Brainard, S. Lael. (1993a), A Simple Theory of Multinational Corporations and Trade with a Trade-off Between Proximity and Concentration, NBER Working Paper No. 4269.
- Brazil's Central Bank (2015), Balance of Payment publication, Central Bank of Brazil.
- Buckley, Peter J. and Mark Casson. (1981), The Optimal Timing of Foreign Direct Investment, *Economic Journal*, 91(361): 75-87.
- Caves, Richard E. (1996), *Multinational Enterprise and Economic Analysis*, Second Edition, Cambridge, New York and Melbourne: Cambridge University Press.
- Çeviş I., Çamurdan B., (2007), The Economical Determinants of Foreign Direct Investment (FDI) in Developing Countries and Transition Economies, *The Pakistan Development Review*, Volume 46, Autumn 2007, Number 3, pp. 285-299.
- Cushman, David O. (1985), Real Exchange Rate Risk, Expectations, and the Level of Direct Investment, *Review of Economics and Statistics*, 67(2): 297-308.
- Dunning, John H. (2001) The Eclectic (OLI) Paradigm of International Production: Past, Present and Future, *International Journal of Economics and Business*, 8(2): 173-90.
- Eaton J., Tamura A. (1994), Bilateralism and Regionalism in Japanese and U.S. Trade and Direct Foreign Investment Patterns, *Journal of the Japanese and International Economies*.
- Economist Intelligence Unit (EIU) (2014), Still making it, An analysis of manufacturing labour costs in China, Economist Intelligence Unit.
- Farole T., Winkler D. (2012), Making Foreign Direct Investment Work for Sub-Saharan Africa, Local Spillovers and Competitiveness in Global Value Chains, The World Bank.

- Fitch Ratings (2014), Definitions of Ratings and Other Forms of Opinion, Fitch Ratings.
- Giordano P. (2015), Double-dip, Monitor 2015, Inter-American Development Bank.
- Hallward-Dreimeier, Mary. (2003). Do Bilateral Investment Treaties Attract Foreign Direct Investment? A Bit ... and They Could Bite. World Bank Working Paper, No. 3121.
- Hanson, Gordon H., Raymond J. Mataloni, and Matthew J. Slaughter. (2003) Vertical Production Networks in Multinational Firms, NBER Working Paper No. 9723.
- Head, Keith and John Ries. (2001), Overseas Investment and Firm Imports, *Review of International Economics*, 9(1): 108-22.
- Helpman, Elhanan, Marc J. Melitz, and Stephen R. Yeaple. (2003) Import Versus FDI with Heterogeneous Firms, *American Economic Review*, 94(1), 300-16.
- Helpman, Elhanan. (1984), A Simple Theory of International Trade with Multinational Corporations, *Journal of Political Economy*, 92(3), 451-71.
- Hirschman, A. O. and Lindblom, C. E. (1962), Economic development, research and development, policy making: Some converging views. *Syst. Res.*, 7: 211-222.
- Hori M., Wong Y.C. (2008), Efficiency costs of Myanmar's multiple exchange rate regime, *International Monetary Fund*.
- Hunya G. (2012), The Role of Multinational Companies in International Business Integration, The Vienna Institute for International Economic Studies.
- International Labour Organization (ILO) (2013); Global Wage Report, 2012/13: Wages and Equitable Growth, International Labour Organization.
- International Trade Centre (ITC) (2011), Market Analysis Tools newsletter, International Trade Centre.
- Levin J. (2006), General Equilibrium, Stanford University.
- Lewney R. (2011), Study on the cost competitiveness of European industry in the globalisation era - empirical evidence on the basis of relative unit labour costs (ULC) at sectoral level, European Commission.
- Lütkepohl H. Xu F. (2010), The Role of the Log Transformation in Forecasting Economic Variables, *Empirical Economics*, Volume 42, Issue 3, pp 619-638.
- Kaufmann D., Kraay A., Mastruzzi M. (2010)., The Worldwide Governance Indicators: A Summary of Methodology, Data and Analytical Issues. Policy Research Working Paper No. 5430, World Bank Group
- Krishna K., Pérez C. (2005), Unbalanced growth, *The Canadian Journal of Economics*, Vol. 38, No. 3, pp. 832-851.
- Markusen, James R. (1984) Multinationals, Multi-Plant Economies, and the Gains from Trade, *Journal of International Economics*, 16(3-4): 205-26.
- Markusen, James R. (1997) Trade Versus Investment Liberalization, NBER Working Paper No. 6231.
- Nayak D., Choudhury R. (2014), A selective review of Foreign Direct Investment theories, UN ESCAP, Working Paper N. 143
- OECD (2011), Intra-firm trade: patterns, determinants and policy implications, OECD Trade Policy Working Paper No. 114, Organization for Economic Co-operation and Development.
- Oostendopr R.H. (2013), The Occupational Wages around the World (OWW) Database: Update for 1983-2008, VU University of Amsterdam.

- Reuters (2008), Reuters Guide to Credit Ratings, Scales and Terms, Reuters.
- Trkulja J. (2005), Geographic Factors as Determinants of Foreign Direct Investment in Eastern Europe's Transitioning Economies, Honors Projects, Paper 4.
- U.S. Census. (2001) U.S. Goods Trade: Imports and Imports by Related Parties: 2000 U.S. Department of Commerce News. Available at: [www.census.gov/foreign-trade/ Press-Release/2000pr/aip/related-party.html](http://www.census.gov/foreign-trade/Press-Release/2000pr/aip/related-party.html).
- UNCTAD (2013), World Investment Report, UNCTAD.
- UNCTAD (2014), World Investment Report, UNCTAD.
- UNCTAD (2015), World Investment Report, UNCTAD.
- UNDP (2013), 2013 China National Human Development Report, United Nations Development Program.
- UNDP (2014), Human Development Report 2013, The Rise of the South Human Progress in a Diverse World, United Nations Development Program.
- WEF (2013), Foreign Direct Investment as a Key Driver for Trade, Growth and Prosperity: The Case for a Multilateral Agreement on Investment, World Economic Forum.
- World Bank Group (2015), Doing Business 2015, Going Beyond Efficiency, The World Bank.
- Zurawicki L., Habib M. (2010), Corruption And Foreign Direct Investment: What Have We Learned?, International Business & Economics Research Journal.