UNIVERSIDADE CATÓLICA PORTUGUESA

THE DETERMINANTS OF FOREIGN DIRECT INVESTMENT IN BRIC COUNTRIES: A FOCUS ON BRAZIL

Final Work in the form of Dissertation submitted in partial fulfilment of requirements for the degree of Master of Finance, at the Universidade Católica Portuguesa (Porto)

by

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Resumo

O crescimento acelerado do Investimento Direto no Estrangeiro (IDE) nos mercados emergentes nas últimas décadas, em particular nos BRIC's (Brasil, Rússia, Índia e China) levou a um crescente interesse no estudo das potenciais determinantes para atração de IDE para estas economias.

O principal objetivo deste trabalho é identificar quais são as determinantes relevantes para a atração de IDE para o Brasil quando comparado com os outros BRIC's. Com este intuito, foram estimados três modelos segundo o método dos mínimos quadrados ordinários para a série temporal de 1989 a 2012 de forma a analisar o efeito de nove potenciais determinantes de IDE para os BRIC: Tamanho do Mercado, Potencial de Crescimento do Mercado, Ambiente Macroeconomico, Liberalização do Mercado, Disponibilidade de Recursos Naturais, Valor da Taxa de Câmbio, Efeitos de Aglomeração, Custo do Trabalho e Estabelidade Política.

Na primeira fase da análise foi desenvolvido um estudo para identificar os determinantes do IDE significativas nas economias dos BRIC's, e numa segunda fase foram analisadas estas mesmas determinantes individualmente para a economia brasileira em comparação com as economias dos BRIC's.

Os resultados dos modelos sugerem que a variável Disponibilidade de Recursos Naturais é significativa. O impacto desta variável no IDE é negativo e a magnitude deste efeito é muito maior no Brasil do que nos restantes BRIC's, o que demonstra que os investidores não fazem os seus investimentos no Brasil com base nos recursos naturais.

Além disso, os resultados demonstram que a liberalização do mercado tem um impacto positivo na atração de IDE para o Brasil, fato que não se parece verificar para os restantes BRIC's.

Abstract

Over the last decades, the Foreign Direct Investment (FDI), in emerging markets observed an accelerated growth. This has been occurring, predominantly, in BRIC's (Brazil, Russia, India and China), leading to an exponential interest in studying the potential determinants for attracting FDI to these economies.

Therefore, the main objective of this work is to identify the relevant determinant variables of FDI inflow for Brazil when compared with the other BRIC's. For this purpose, three models were estimated using the OLS method, for the time series from 1989 to 2012 in order to analyse the effect of nine potential determinants of FDI inward to BRIC's: Market size, Market Growth Potential, Macroeconomic Environment, Trade Openness, Natural Resources Availability, Exchange Rate Valuation, Clustering Effects, Labour Cost and Political Stability.

In the first stage of the analysis, a study has been conducted to identify the relevant determinant of FDI variables of the BRIC's economies. Moreover, in a second stage, the same determinant variables were analysed, individually, for the Brazilian economy in comparison with BRIC's economies.

The models' results suggest that the Natural Resources Availability variable is significant. The impact of this effect on FDI is negative and the magnitude of this variable is considerably higher in Brazil than in other BRIC's, which demonstrates that investors do not make their investments in Brazil based on the Natural Resources, as Brazil is not resource-seeking driven.

Furthermore, the results demonstrate that the Trade Openness variable has a positive impact on the attraction of FDI inward to Brazil, a fact that does not seem to also be verified for other BRIC's.

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List of Abbreviations

BRIC's	Brazil, Russia, India and China
EU	European Union
FDI	Foreign Direct Investment
FPI	Foreign Portfolio Investment
GDP	Gross Domestic Product
GFC	Global Financial Crisis
HFDI	Horizontal Foreign Direct Investment
HO	Heckscher-Ohlin model
IMF	International Monetary Fund
KC	Knowledge-Capital model
MCs	Multinational companies
OECD	Organisation for Economic Co-operation and Development
UNCTAD	United Nations Conference on Trade and Development
US	United States
VFDI	Vertical Foreign Direct Investment
WTO	World Trade Organization

1. Introduction

Over the last decades, the Foreign Direct Investment has been growing strongly, especially in what concerns the investment flows to and from emerging countries. This way of investment implies the spread of knowledge and technology from the investing country to the country that is receiving the capital. This contributes as a key factor on the globalization and liberalization process in the world economy. This work will be based on BRIC's. The designation "BRIC" was suggested by Goldman Sachs on 2001, to define the emerging economies from Brazil, Russia, India and China.

The recent trend of FDI inflow to BRIC's has inspired not only students, but also companies and government's interests in examining the potential determinant variables of FDI inward in BRIC's. These researches will allow policy makers to identify the factors that are relevant to captivate FDI inward, and allow them to shape their variables to attract more foreign capital to their own country.

The main goal of this study is to identify the determinant variables of FDI inflow to Brazil when compared with the other BRIC's, for the period between 1989 and 2012. In this research are analysed nine potential determinants of FDI inward to BRIC's, in a total of three models in order to capture the effect of these determinant variables.

In the first stage of the analysis, I will develop a study to identify the determinant variables from BRIC's economies and in a second stage I will focus on these determinant variables for Brazilian economy and compare this result with other BRIC's economies.

The rest of the study is organized as follows: Section 2 contains the extant literature; Section 3 the data and methodology; Section 4 describes empirical

results for the models; Section 5 concludes, describes the limitations of the study, and presents suggestions for future researches on this topic.

2. Literature Review

2.1 Main concepts and definitions of Foreign Direct Investment

The globalization and liberalization of trade over the world's economy in the last decades has contributed for the economic activity integration among countries, leading to an impressive growth of FDI.

According to O'Brien & Williams (2007) there are two types of foreign investment: FDI and Foreign Portfolio Investment (FPI). Generally speaking, FDI consists on an investment made in a 'host' country different from the 'home' country of the investing company and in which significant control over the resources (capital, technology, management skills, access to markets and entrepreneurship) transferred remain with the investor. Implicit in FDI is the existence of a long-term relationship between the investing company and the 'host' country, generating a significant impact on the foreign market, particularly on production structures, banks, warehouses and other long-lasting support organizations. Consequently, it causes a variation in the economic environment of the 'host' country, namely in what concerns to the economic growth, economic development and economic trends contributing for progress.

The Organisation for Economic Co-operation and Development (OECD) encompasses within FDI both the initial transaction between the investing company and the 'host' country, as well as all the *'subsequent capital transactions between them and among affiliated enterprises, both incorporated and unincorporated'* (OECD, 1999:7-8; UNCTAD, 2013). FDI may be executed in the investment form

of greenfield investment, joint ventures or made in an existent business through cross border mergers and acquisitions. The OECD (1999) further states that an ownership of 10% *'of ordinary shares or voting stock'* is the minimum necessary for investment to be qualified as FDI (OECD, 1999: 7-8). FDI aims to obtain a significant degree of influence on the management of the foreign company, exercising active management control rights over them and also maintaining managers under their supervision.

According to the International Monetary Fund (IMF) and World Economic Outlook (2007), cited by Walsh & Yu (2010), it is empirically proven that investment through FDI is less volatile than other investment manners of supply of the international market activities. Furthermore, there is confidence among investors that FDI is the best option in terms of investment for growth and expansion.

On the 2013 United Nations Conference on Trade and Development (UNCTAD) some types of investment were identified by 'home' country investing companies that are classified as FDI, such as stockholders' equity capital [1], reinvestment of profit obtained in 'host' country that was not distributed as dividends to investing country and company lending between mother-company and foreign affiliates especially short- and long-term loans (also Capital Markets Consultative Group, 2003).

On the other hand, FPI consists mainly in short- and medium-term transaction activities undertaken by private and institutional investors. These positions in 'host' companies may be acquired through stocks and/or bonds which correspond to a passive holding of foreign securities, as investors do not exercise any control over 'host' company leadership. This situation causes an agency problem between managers and stockholders due to different motivations and points of view for the company's business strategy. Usually,

[1] Equity capital represents the purchase of ordinary shares by the investing company

investors' motivation is short-term oriented willing to obtain a rapid profit, while management are focused on long-term business plan of the company. FPI is strongly impacted by determinants as exchange- , interest- and tax-rates on interest or dividends.

The main difference between FDI and FPI is that the FDI investor aims to have an active control over the foreign company, contrarily to the FPI investor, who speculates in order to obtain rapid profits but does not intend to control the foreign company on which is investing. Hence, FDI activity is more efficient than FPI due to the conflicts of interest between owners and managers that occurs on FPI.

FDI is an active concept that has been changing over the time due to different research contributions and it has progressively replaced FPI in the 20th century (O'Brien & Williams, 2007; Rajan & Agrawal, 2011). FDI plays '*a crucial role in the internationalisation of economic activities*' (OECD, 1999: 5) and it is the most capital intensive form of internalization activity that a company may follow.

At the end of the 20th century, one of the biggest challenges for multinational companies (MCs) was choosing the best form of investment and the respective location in order to have the best tax of return with the lowest risk possible.

MCs motivate their affiliates to run self-sustaining and to generate internally enough cash flow to finance the business expansion project. MCs advise affiliates to seek internal financing preferring to conserve their own capital and to avoid intercompany loans (Capital Markets Consultative Group, 2003).

2.2 Theoretical timeline framework approaches of the determinants of FDI flows

2.2.1 FDI introductory approaches

There are several theoretical models concerning the meaning of FDI and the strategic decision on the location of investment by MCs.

The first research on this study was provided in the model introduced to explain the international capital flows[2] which assumed perfect structure of the markets and factor immobility between the countries. The Heckscher-Ohlin model (HO) emerges from the traditional literature on international trade that consisted in competitive markets and constant-return models. This model was supported later on the premise that '*commodities differ in relative factor intensities and countries differ in relative factor endowments*'[3] generating different prices between the countries (Faeth, 2009: 167). HO model is not in line with the current reality, considering that the factor mobility is the key determinant for international trade. The MacDougall-Kemp model based on researches carried out by Jasay (1960), MacDougall (1960) and Kemp (1964) emphasized that capital was expected to switch from capital abundant countries to countries where there was a lack of investment, aiming higher capital return margins. Aliber (1970) complemented the logic behind the MacDougall-Kemp model and conclude that the differences in capital returns were based on factor endowment and 'host' country currency variation (Protsenko, 2003; Forte, 2004; Faeth, 2009; Rohl, 2012).

The HO model approach was initially criticized by authors like Hymer (1976) and Kingleberger (1969). These authors argued that the model could not justify

[2] It was based on Heckscher-Ohlin model of the neoclassical trade theory.
[3] Resources that a country can possess to exploit manufacturing like the amount of land, labour, capital, local entrepreneurship and cost of transport.

FDI flows, as the FDI occurred in imperfect markets instead of perfect ones. The authors added into the HO model the theory of MCs. This theory explains the main reasons for the entry of MCs in a foreign market: the product differentiation, new technology, management experience, good relationship with 'host' country government and economies of scale. These features allow MCs to obtain an important market competitive advantage over 'host' country companies due to the ownership of the innovative products.

2.2.2 OLI Framework

2.2.2.1 OLI's Framework description

Dunning (1977, 1979, 1988, 1996), cited by Faeth (2009: 171-174) enriched this area of research with the ownership, location and internalization advantages of the OLI framework, that had its base in the Theory of Internalization and Transaction Cost Theory[4].

Dunning's OLI framework points out MCs' motivations on FDI flows rather than other entry options into 'host' country market. It introduced three new MCs characteristics to the previous theories such as '*ownership-, location- and internalization-advantages'* (also Forte, 2004; Rajan & Agrawal, 2011; Rohl, 2012). The possible manners of supplying international market activities are FDI, exporting or licensing.

With respect to MCs ownership advantages, the investment is executed in differentiated products in order to take a monopolistic advantage over the local companies on the production process at the 'host' country. Consequently, this

[4] The Transaction Cost Theory demonstrates that the transactions are done inside the company if its costs are higher in the open market than internally.

MCs dominance is demonstrated in the technology, expertise qualifications, economy of scale and goods knowledge which leads to a Horizontal Foreign Direct Investment (HFDI) flow instead of exporting or licensing. FDI increases in the foreign production the more competitive 'home' companies are, it strength is presented in high level of assets and qualifications.

The location form occurs when the 'home' companies have motivations to produce abroad in order to have a competitive advantage such as stable government, special tax treatment, lower wages, favourable access to protected market, existence of raw materials, similar culture, good infrastructure level, and natural resources. The FDI inward persuasion by 'host' country should be done based on market size and potential growth stabilized with the country's risk. Knickerbocker (1973) with 'Oligopolistic Reaction' demonstrates that the entry of the first MCs in a foreign market created a "chain effect" behaviour for the following companies regardless of other factors that caused an agglomeration effect.

The Internalization advantage for 'home' companies pursues the strategy to own the production abroad instead of producing with a partnership arrangement like a joint-venture or licensing. This option provides cost savings to MCs due to the lower trade costs; it also permits a better control over all manufacture process operations and minimizes the technologic imitation. MCs prefer FDI than licensing to reduce risk of losing competitive advantages for 'host' country competitors, namely on the knowledge of the goods.

Buckley and Casson (1976) linked the internalization definition to the theory of MCs and concluded that MCs will locate their production activities abroad through FDI when they face lower internal transactions costs than other forms of entry like exports, so FDI and exports can be considered substitutes.

2.2.2.2 Typical motivations of FDI

Dunning (1980) outlines two distinctive typical motivations of FDI that are resource- and market-seeking investment. Resource-seeking investment consists on the access to basic materials like oil, metals and natural gas by the investing company in the foreign country, usually operated by companies in extractive industry. Market-seeking investment consists in free trade agreements between 'home' and 'host' country and subsequent plans of action to be followed for the company's entry in a new market or an established one, usually only an initial investment. This investment aims to avoid transactions costs and intends to control production and distribution activities abroad. As soon as the 'home' company establishes a solid position in the foreign market it should focus on expansion, looking for an efficiency- and strategic-asset-seeking investment. FDI led by efficiency-seeking investment will focus in countries with a lower workforce cost and with a good level of productivity which will optimize the international distribution of workforce. Alternatively, Strategic-asset-seeking investment consists mainly in 'host' companies' takeovers. It has the objective of obtaining the competitive advantage of the acquired 'host' company in the foreign market. In this type of investment seeking, it is usual to observe that some 'host' country companies may be acquired by 'home' companies even when they report current losses but are likely to have future profits (Capital Markets Consultative Group, 2003; Faeth, 2009; Walsh & Yu, 2010; Rohl, 2012).

2.2.3 New Theory Trade

With the purpose of complementing the previous theoretical models, a new theory has emerged, the "new theory trade", which considers the assumptions

of increasing returns of scale and imperfect competition. This model aims to explore FDI and MCs activities in which ownership and location advantages are linked with technology and country determinants. Trade was carried out by intra- and inter-industry according to the differences in the relative factor endowments[5] (Protsenko, 2003; Forte, 2004; Faeth, 2009).

Subsequently, the theory of MCs was split on both HFDI theory and Vertical Foreign Direct Investment (VFDI) models.

2.2.3.1 Horizontal FDI model

HFDI refers to the investment realized by MCs to produce abroad in multiple facilities and in different countries the same type of goods or services as MCs do at 'home' country. This production, in foreign markets, is driven for the local consumers.

There are several motivations for MCs to undertake HFDI into 'host' country, such as a cheaper production than in 'home' country, the opportunity to entry in a 'host' country that is solely supplied internally and also avoid trade costs related to exports. Therefore, this encouragement arises when transport costs and trade barriers become significant and investment barriers and scale economies at the plant level are significantly lower. The HFDI increases when a company replicates its 'home' country activities operations in a similar value chain process in a 'host' country. HFDI models are also stimulated by an increasing share of FDI between the similar countries and when trade flow is mainly two-way directional.

[5] On what concerns to the existing trade flows some type of trade patterns are showed. There is an exchange between 'home' country company and their affiliates as the 'home' country company exports headquarter qualified human capital services to their affiliates abroad that are abundant in workforce capital. In compensation for this network affiliates provides to 'home' country company the output, namely specialized goods (creating intra-industry trade) and similar type of goods (creating inter-industry trade)

The reason for the appearance of HFDI is perceived in the strategic decision of the company to install a new facility abroad, instead of exporting. This option depends on the trade-off between the additional fixed costs to enter in a foreign country to establish a new facility and the saving costs from avoiding transportation and custom duties. HFDI will dominate over exports or totally remove them every time that trade costs are higher than fixed costs from establishing a new facility abroad and when firm-level scale effects are higher than plant-level scale effects. As larger are these differences more strong will be the motivation of MCs to engage HFDI (Protsenko, 2003; Forte, 2004; Faeth, 2009).

Horstmann and Markusen (1987a, 1992) explained the HFDI based on the *'proximity-concentration hypothesis'* whose strength was based in the trade-off between the proximity effect and the concentration effect. Horizontal MCs had a gain for being closer to the 'host' country market, avoiding transportation costs and carrying out economies of scale obtained in the services'concentration and similar product manufacture into a single facility. This process was done in multiple countries.

Forte (2004: 9-10) Hortsmann & Markusen (1992) and Brainard (1993) improved the HFDI models which had assumptions that were based in countries with similar market size, level of technology and factor endowments where there were not comparative advantages for trade. Hortsmann and Markusen (op. cit.) researched the company's output for homogeneous goods and Brainard (op. cit.) on differentiated goods and reached the same conclusion. The 'home' company aims to reduce the fixed cost of transport to supply a foreign market. Hence, when this cost reaches an excessive level for the company, MCs have reasons to exist, operating in both countries and progressively increase the 'host' country market share which, consequently, will decrease the market share from 'host' companies.

Markusen and Venables (1998, 2000) demonstrated in their study that MCs seek for investment in countries similar on market size, technologic level and with equivalent factor endowments. MCs HFDI activities decrease when factor endowments is considerably different between countries.

Markusen and Venables (op. cit.) introduced the *´convergence hypothesis´* to enrich the previous models and confirmed their conclusion. MCs tend to emerge when fixed transport costs and tariffs are extremely high to supply the foreign market, leading to the option of investing abroad instead of exporting taking advantage of the economies of scale. Apart from this, the authors demonstrate that the convergence between MCs and 'host' country companies increases the volume of trade in the beginning of the business. Thus, the establishment and maturity in the foreign market from the MCs leads to a reduction of the business with 'host' country companies. This effect, in the long run will materialize the MCs dominance over 'host' companies and replace them partially or totally in the 'host' market.

According to Protsenko (2003: 18-19) it is possible to conclude that HFDI: has attraction for countries with large market size to gain economies of scale; causes a decrease in the volume of trade flow since 'host' country production and distribution is done internally and not by exports; occurs in 'host' country due to lower costs, which make the country more competitive; the last one considers both compromise and responsibility of the MCs with the 'host' market, this status raises up the reputation of the 'home' country company offering a strategic importance to 'host' country production facilities. Hence, this circumstance may change the competitors' behaviour. Thus, the reduction of marginal costs from MCs would allow to decrease the prices of their products which influence negatively competitors' sales.

Helpman (1984) developed a model based on international trade with MCs under the assumptions that there was not transport costs and barriers related to

trade. Helpman (op. cit.) argues that when there are increasing disparities in factor endowments between the countries the MCs have the attraction to split the production geographically. This model assumes that homogeneous goods were intensive in labour and differentiated goods were intensive in human capital.

2.2.3.2 Vertical FDI model

VFDI refers to the investment realized by MCs on production in the 'host' country which depends on a large market, transport costs and factor endowments. With this production abroad, MCs aim to serve their 'home' country.

The VFDI was initially explained by 'factor-proportions hypothesis' (Helpman, 1984; Markusen, 1984; Helpman, 1985; Either, 1986; Horstman and Markusen, 1987a), cited by Faeth (2009: 175) which pointed out that MCs separate their production process stages geographically in order to benefit of the cheapest cost possible for each step of assembling a product in the most advantageous country, outsourcing some manufacturing stages abroad.

Hanson et. al., (2003) showed that in vertical MCs there is a disintegration of each part of the production process to take advantage of the factor price differences between countries. The investment from MCs is performed taking in account the input needs and prices provided by the different countries. Hence, it is triggered a production process chain in different countries to achieve the diverse steps for the output, consolidating the production vertically.

The splitting process of the production by several countries is only rational for MCs if the costs of fragmentation are lower than savings costs. These costs are essentially related with transports, custom duties and bureaucracy.

MCs' interest is to produce in countries with lower wages and relative abundant unqualified workforce in order to obtain an intensive and cheaper manufacture to increase returns to scale, this circumstance lead to one direction flow that should emerge between countries that present different economic development level. (Protsenko, 2003; Forte, 2004; Faeth, 2009).

According to Helpman (1984) initially MCs developed their business at headquarter services centre through differentiated products to provide a unique value to customers. These types of products demand a place where is possible to find relative abundant human capital resources. The products require proper management expertise to flourish the creativity for new and original products. Therefore, the work intensive part of the final product is manufactured in the country relative abundant in unqualified workforce. There is a complementary relationship between FDI and international trade which is expected to boost the volume of trade due to the increase in the difference in relative factor endowments.

2.2.3.3 Knowledge-Capital model

Markusen developed the Knowledge-Capital model (KC) (Markusen et al., 1996; Markusen, 1997, 2002) connecting the vertical and horizontal FDI theories into a combined model to complement the theoretical literature on MCs theories. The KC model demonstrated that independently of the type of FDI used by MCs the know-how was geographically movable, in order to support the affiliates in the production process at the multiple facilities abroad. The determinants of this model that are catalyst for both types of FDI in 'host' country are market size, factor endowment and transport costs for HFDI models. On the other side, for VFDI models its dominance was based in differences on the factor endowments. The vertical integration was used when

MCs were facing difficulties to expand abroad, namely in contracting and protecting the property rights in the knowledge of a product. In this case, MCs avoid the plagiarism of their products knowledge by 'host' country competitors.

KC model has its basis on both HFDI and VFDI models and it provides three distinct types of companies: Horizontal MCs that replicate their production process at facilities abroad. Although, the qualified human capital activity operations were performed at 'home' country these were geographically disconnected from production; VFDI MCs split the production process chain in various countries locating the qualified human capital resources headquarters in an abundant qualified human capital 'home' country and the unqualified workforce resources whose production is intensive in an abundant unqualified workforce 'host' country; the last are 'home' country companies that operate in foreign markets by exports (Protsenko, 2003; Forte, 2004; Faeth, 2009).

Protsenko (2003, 23-24) concluded on KC model that HFDI occurred between identical countries, with large market size and VFDI emerged with the disparity on factor price between countries. A significant value of tariffs and transport costs between countries attract HFDI instead of VFDI that drawn attention to difference in factor endowments between countries. There is a concentration of headquarter services for both types of FDI, therefore this way MC avoids duplication costs bringing more efficiency to the business. Concerning salaries HFDI increases in similar proportion the wages in 'home' and 'host' country and VFDI decreases the wage disparity in absolute terms between 'home' and 'host' country but there is an approach on wages between countries when associated with relative terms. There is an evidence that FDI has an impact in the salaries of 'host' countries which generating an increase in workforce costs.

2.2.3.4 Empirical Data

The empirical evidence for FDI models is mixed and controversial, especially for VFDI. The main reason for this is the lack of empirical data for the estimation of HFDI and VFDI theoretical models. With respect to HFDI it was found solid support between similar countries in the early results obtained from empirical evidence studies as it was expected in the theoretical models. However, the same situation didn't happen for empirical attempts on VFDI model which has been rejected in the primary investigations. The increasing attention on this model over the last decades contrived for development of refined measures for researches in which findings strongly supported the VFDI model. It became even more important in our days than ever which make MCs prefer the production fragmentation over the world in order to achieve more competitiveness and efficiency. Concerning the KC model, researchers had different opinions as mixed results were found in the first empirical attempts. This model also found strong support in succeeding studies with the measurement improvement and larger data set. The progress in ratios calculation related to country characteristics as market size and factor endowment differences modified the results, supporting robustly VFDI model and KC model (Protsenko, 2003).

Lipsey and Weiss (1984) concluded that FDI and exports are substitutes. This positive relationship is based on the company's decision of maximizing its profit, seeking the lowest unit cost possible per product. Hence, the company will export or produce in the 'host' country depending on the cheapest cost obtained. Further, Head and Ries (2001) empathized that a strong commitment and social responsibility from companies with the foreign market through FDI can increase the company's sales due to the reputation scored with their presence abroad.

The relationship between FDI and international trade is difficult to understand due to several variables as FDI indicators, studies with different databases and various types of analysis, such as country-, industry-, company- and product-level.

There is a paradox between the theoretical FDI models and the empirical findings, as theoretical HFDI models support a substitution relationship between FDI and international trade while the most part of empirical works defend a complementary relationship. This is mainly explained by companies that present a multi-product branding strategy and by the evidence of an artificial positive relationship between FDI and trade based in endogenous changes and the use of data at an aggregation level (Forte, 2004)

2.2.4 Risk Diversification Theoretical Models

MCs aim to maximize their profit. So, in order to achieve this goal new types of FDI emerged, such as international outsourcing, wholesale FDI and export-platform FDI.

Grossman and Helpman (2002a, b) concluded that multinational companies preferred outsourcing instead VFDI when there was evidence of competitive specialized companies abroad to make the product more efficiently than integrated MCs. These "host" country companies granted productivity and/or cost benefits to MCs without impacting the goods quality.

Hanson et al. (2001) showed that wholesale FDI is orientated taking in account the trade-off between manufacture and distribution.

According to Ekholm et. al. (2003) export-platform FDI consists in an investment from 'home' country into 'host' country with the objective of exporting the output to a third country. This type of investment involves HFDI,

as the foreign affiliate distributes the product over the integrated market and VFDI as the production's location is decided on a cost-oriented basis.

Rugman (1995, 1997), developed a different approach of MCs' investment type with his 'risk diversification hypothesis' which demonstrated that MCs decision to produce abroad aims to decrease the volatility related with the business risk in the product and area. Diversified MCs as risk adverse companies that distribute their business projects into different markets where searching for government stability. A stable macroeconomic environment with low volatility of interest rates and exchange rates is necessary to decrease the company's business risk.

2.2.5 'Host' Country Government influence in attraction of FDI

2.2.5.1 Empirical Data

The complex investment decision of the MCs through FDI, licensing or internal production has its key player in the 'host' country government. 'Host' countries governments compete among themselves to have the best incentives to attract foreign capital. MCs and 'host' countries governments discuss over several business components, such as country taxes and subsidies, the proportion of employees that a 'home' company may expatriate in total employees that operate in 'host' country, local trainings, local recruitment, export conditions, custom duties and financial arrangements.

The negotiation process is also influenced by the current macroeconomic status, expected economic trends, market size, infrastructure level and natural resources of the 'host' country.

2.2.5.1 'Host' country government incentives

'Host' countries provide two relevant types of incentives to attract FDI: fiscal- and financial-incentives. Fiscal incentives are related with capital repatriation, capital investment executed in 'host' country, export and import conditions, profits and employment terms. Financial incentive involves government grants and government credits at special rates, government equity support and other type of specific industry-, services- and treatment on foreign exchange-support.

Haaparanta (1996) focusing on the determinant of FDI workforce cost demonstrated that countries with lower-salaries attract more FDI than countries with higher-salaries without government subsidies. When high-salaries countries present higher subsidies than low-salaries countries, MCs invest in high-salaries countries. The market competitiveness and better environment conditions of the high-salaries countries showed that the subsidy was not always needed to reach FDI.

According to Haaland and Wooton (1999, 2001a) the 'host' government needs to create conditions to convince a first foreign investor to invest in their country, this may be fulfilled with initial subsidies for the short-term period and labour market flexibility with reduced bureaucracy level. Agglomeration effects are also sources of FDI growth, the first investor brings followers companies when succeeded in the market entry. The workforce cost may also decrease due to the high rate of unemployment providing this way an opportunity for hiring at a low cost, due to the average decrease of the wages in function of the high job candidates (Faeth, 2009).

3. BRIC countries FDI

3.1 Historical FDI pattern

Since the 1970s, FDI has been growing strongly, even if the type of investment flows and investors' locations differs over the decades.

According to UNCTAD Stat (2013), in 1970 the global FDI inflows reached levels of 13, 35 billion US $ and achieved all-time highs on 2007 totalling 2002, 69 billion US $, an increase of 1500%.

Until 1990's almost all FDI flows have been performed within developed countries. Thereafter, emerged several historical events that changed the patterns of world's investments flows, such as the policies of trade liberalization in China, structural and economic reforms in the countries of Latin America, and the fall of communism in Russia.

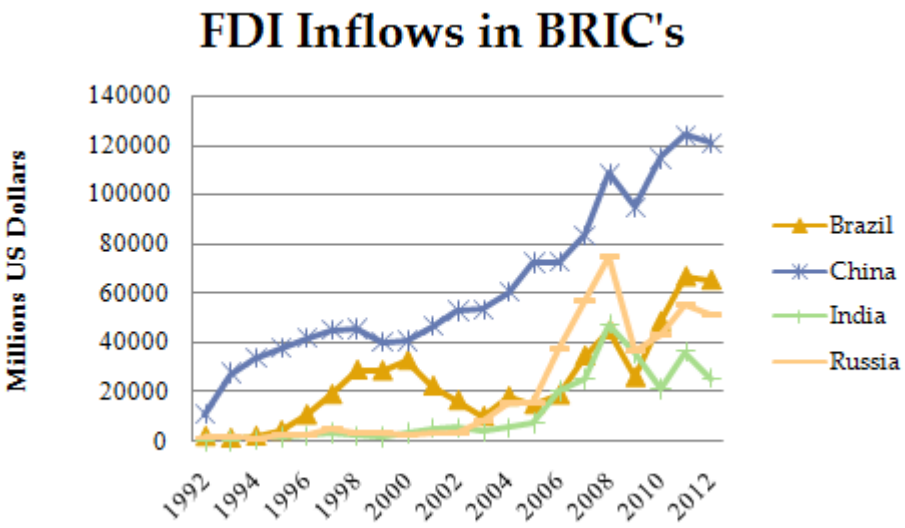
Consequently, the FDI into emerging markets climbed in the 1990's due to several M&A operations undertaken in Latin America and Eastern Europe, on the privatization of 'host' government property and with the crisis that triggered in Asia, affecting various countries. This situation created an 'open window' for MCs to enter in this new market with potential growth prospects and acquire at a bargain price troubled banks and corporate assets. Another important feature in FDI into emerging markets is related with the large capital inflow demand for market-seeking FDI, essentially on the services sector, namely on telecommunications and finance. This new investment approach in 1990's contrasts with the type of investment prior to that date, which was oriented to extractive and industrial companies (Capital Markets Consultative Group, 2003).

In this work, the focus will be the BRIC's. In 2001, Goldman Sachs coined the term BRICs to define the emerging economies from Brazil, Russia, India and China that were expected to have a significant economic growth over the decade (O'Neill, 2001).

Since the 1990's, BRIC's have become the largest receivers of FDI, mostly in production and services sectors, due to the fundamental country characteristics to investors such as large population and land size, large consumer market and potential economic growth performance that is substantially higher than the developed economies. All the mentioned factors makes BRIC's highly attractive for FDI.

Figure 1 shows the increasing importance of BRIC's in the world economy over the last 20 years.

Figure 1: FDI Inflows in BRIC's (million US dollars)



SOURCE: UNCTAD Stat, FDI Inflows

Regarding the FDI inflows, it is undeniable the brilliant progress from BRIC's on this matter. Analysing the last 20 years of FDI inflows provided by UNCTAD Stat (2013), it is visible that the flows into these economies rose from

$14,5 billion US $ in 1992 to $78,4 billion US $ in 2002 and more recently, in 2012 to $263,3 billion US $ (see Appendix 1 and 2).

The main reasons for this inward FDI growth include not only growing markets and decreasing barriers to trade, but also BRIC governments pushing forward neoliberal agendas since the 1990's.

China is clearly the larger receiver of FDI inflows from the group of countries that are designated as BRIC's. China opened its market to foreign capital flows in 1978, after several favourable economic reforms undertaken for this effect but there is only an evidence of a powerful FDI inward after 1990's as shown in Figure 1.

The industrial sector was the destination for the first investors in order to take advantage of the lower workforce costs in China, but the exponential growth of double digits in the Chinese economy only appeared after 1990's. Foreign investors envisioned a business opportunity and relocated their initial investments made on the production sector into the large Chinese consumer market in which have provided a varied range of products and services to satisfy this consumption need (Rohl, 2012).

There are other circumstances that contributed to the rise of FDI inward in China, these are related with the tax benefits for repatriation of the savings to China that multiple ethnic Chinese groups which were immigrant in countries culturally similar to China had, especially during 1990's. The adhesion to World Trade Organization (WTO) on December of 2001 also supported this continuous growth trend on FDI inflow in China (Capital Markets Consultative Group, 2003).

Comparatively to China, there was a delay on investment flows to the other BRIC's, as political reforms in these countries related to market liberalization had a slower evolution.

In Brazil there is evidence of a significant increase on FDI inflows after the access to WTO in 1995 and a major downturn on the period between 2001 and 2003, due to the Argentine economic crisis that began in 1999. All Latin America countries suffered with this crisis, declining sharply the FDI flows into the region.

Since the Latin America economic area has stabilised, Brazil has been growing in foreign capital until today. This way only affected by a temporary investment drop motivated by the Global Financial Crisis (GFC) of 2007/8.

With respect to Russia, FDI inflows have increased robustly in the middle of the 2000's, due to partial privatizations on electricity sector and foreign investments into manufacture, real state, financial and oil & gas industry (Kutnetsov, 2010).

Concerning India, FDI inward has been increasing consistently over the last twenty years, but the total amount is considerably lower than Brazil, China and Russia. There is a lot of potential in this country, but the difficulty to implement more aggressive political reforms, in order to be attractive to foreign capital, is a "red flag" to investors.

While, historically, a form of investment that predominates between developed countries, FDI from emerging countries led by the BRIC's has been growing significantly since the early 2000's, as well as FDI inward flows to these countries. This is not unexpected considering that the BRIC's' share of world GDP is constantly rising, standing on 2012 at 26,2% when twenty years ago is was only 14,5% (see Appendix 3). This trend (the BRIC's' rising contribution to FDI) has been particularly marked since the GFC of 2007/8 as traditional investors' such as the United States (US) and the European Union (EU) economies have been particularly hard-hit by the subsequent recession[6].

[6] This is visible notably in rising unemployment levels, GDP growth rates below inflation levels and rising debt levels in OECD countries.

Globalization, notably the high level of financial connection between states, has caused economic vulnerability in all countries to a crisis that broke out initially in the world's leading economy, with countries dependent on external investments being some of the most affected.

The GFC is simply precipitating the reconfiguration of international economic linkages that is occurring, as the BRIC's continue to growth faster than developed economies.

3.2 Current FDI situation

The world's economy continues to struggle from the GFC of 2007/8 that was the worst financial crisis since World War II period. This GFG has been caused by the US Subprime mortgage crisis and later, on 2010, has been triggered the EU sovereign debt crisis. This problem is still unsolved and affecting the global economy.

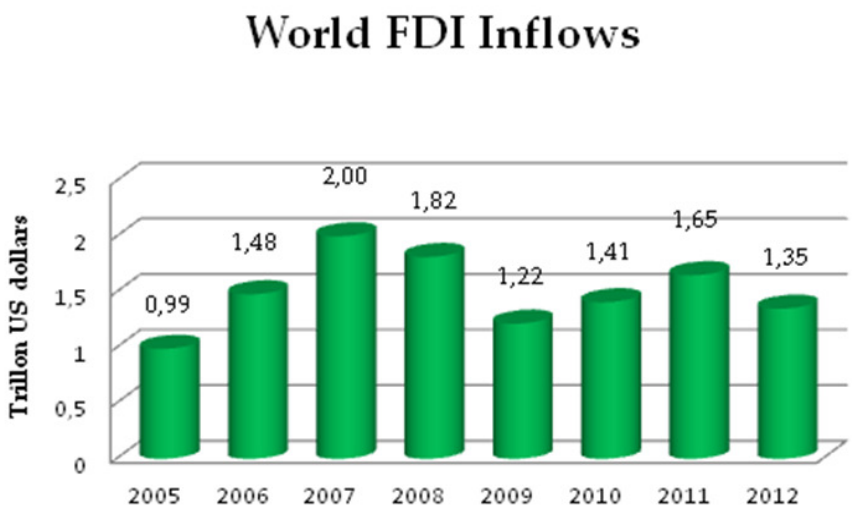
The contraction of worldwide investment was felt in the years after the FDI's peak (in 2007) that reached $2 trillion US $. GFC effect caused a delay in the investments over the world, mainly due to the restrictions in obtaining financial credit from the banks, the consumer reduction and weaker growth prospects. Consequently, FDI decreased in 2008 to $1,82 trillion US $ and in the following year slumped to $1,22 trillion US $ in 2009.

Although, there was a small rebound during 2010-2011, it reveals some anxiety and caution of investors about a possible recovery of global economy.

In 2012, Global FDI inflows have slid to $1,35 trillion US $ caused by a persistent weaker macroeconomic environment and uncertain policy, especially by EU with the unsolved sovereign debt issues and US with fiscal cliff impasse

which made investors to hold the cash flows and delay their investment to more favourable economic conditions (Figure 2).

Figure 2: World FDI Inflows (trillion US dollars)



SOURCE: UNCTAD Stat, FDI Inflows

MCs, during 2012, reduced significantly their capital flows to US and EU due to issues mentioned above and shifted their investments to emerging markets. Consequently, for the first time ever, emerging economies exceeded developed economies in FDI inward, accounting 52% of world FDI flows. This has enhanced its key role in the global economic growth (UNCTAD, 2013).

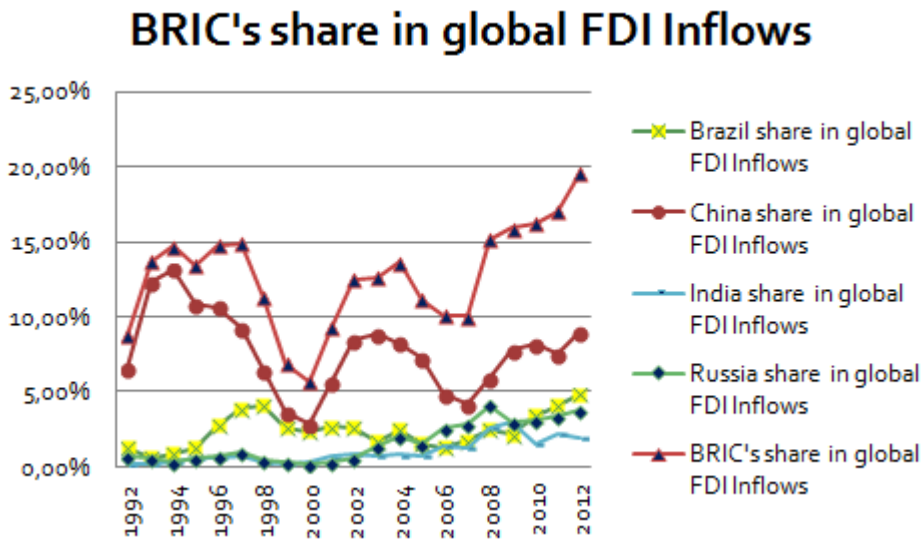
The MCs relocation of their capital flows happens due to GFC, causing chances in the figures of the global economy. MCs intend to diversify their investment portfolio in foreign markets looking for the best rate of return, with the minimum risk possible. Thus, the rise of FDI inflows in emerging markets against the decrease in developed economies, mainly in EU and US, demonstrates investors' propensity for risk. Investors seek the best rate of return in function of the business risk assumed (Capital Markets Consultative Group, 2003).

Muller points out the two-way relationships that are being developed in global economy: investors from *'established economies enter BRIC countries to do business and take advantage of growing markets. At the same time, companies from BRIC countries increasingly have a size and purchasing power that allows them to expand their interest abroad and invest in other economies'* (Muller, 2011:1619).

This rising importance of BRIC's is crystal clear as they are part of the Top-10 major economies in the world in 2012. China is ranked as the 2nd biggest economy, Brazil is the 7th, Russia is the 9th and India is ranked 10th (see Appendix 4).

The BRIC's are also in the most attractive economies, rising year over year and reaching all-time highs in 2012, attracting 19.45% of global FDI inward flows (Figure 3).

Figure 3: BRIC's share in global FDI Inflows

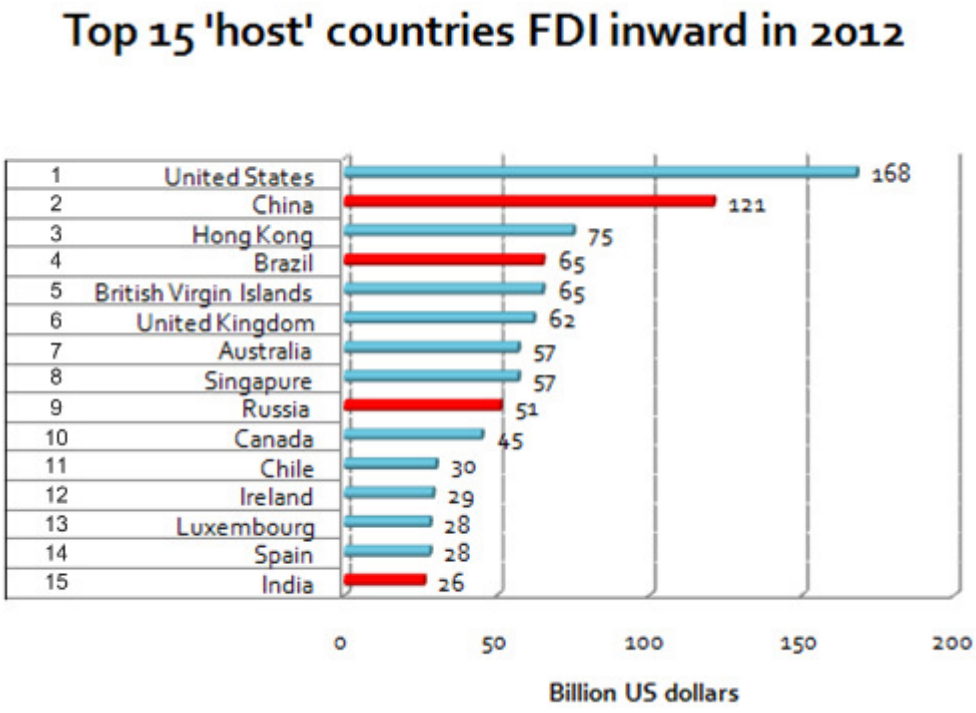


SOURCE: UNCTAD Stat, FDI Inflows

The level of FDI inflows to a 'host' country represent the confidence that foreign investors have in the potential of that country's economy. It displays their belief in the best expected return tax and indicates the trends of capital flows for the short and medium term period.

According to UNCTAD (2013), BRIC's are in the Top-20 largest receivers of FDI inflows in 2012. China is the 2nd largest beneficiary of FDI inward with 121, 08 billion US $. Brazil took the 4th position with 65, 27 billion US $, Russia is the 9th with 51, 42 billion US $ and India is the 15th with 25, 54 billion US $ (Figure 4).

Figure 4: Top 15 'host' countries FDI inward in 2012 (billion US dollars)



SOURCE: UNCTAD, World Investment Report 2013

3.3 FDI prospects

The recovery of investment confidence is related with MCs investment decision that, in the short-term, investors do not foresee to achieve the FDI inflows levels of 2007, as the global economic outlook remains grey and full of doubts .

According to UNCTAD (2013), it is expected that FDI inflows in 2013 will be between the interval of 1, 35 trillion US $ (amount of 2012) and 1, 45 trillion US

$ and then FDI inflows may increase to 1, 6 trillion US $ in 2014 and 1, 8 trillion US $ in 2015, as there has been some progress to repair the global economy performance in the short and medium term. In, 2013 investors are more optimist about global economy outlook than in the past years (A. T. Kearney, 2013) notwithstanding that there are several potential risk factors that may damage this fragile recovery of the global economy. This uncertainty causes a postponement in investments, as the investors remain conservative in their investment approaches. To better understand the progression of global FDI inflows in the following years it may be important to monitor some key factors for the global economy such as EU sovereign debt evolution, namely the unemployment rate and economic growth; the effect of the tapering of the US quantitative easing politics and a likely economic slowdown in China. These factors may impact negatively the FDI flows in the short term period and halting the economic recovery.

The global risk disparity that was seen in the last decades between the investment in developed countries and emerging countries is being reduced year over year. The political instability is clearly the biggest difference between them, as emerging countries are more risky on this area.

With respect to BRIC's, it is possible to mention that according to 2013 FDI Confidence Index by A. T. Kearney, that gathers the preferences of the biggest investors in the world, that BRIC's economies have the best present and future FDI flows prospects. China ranks in 2nd, Brazil in 3rd, India in 5th and Russia in 11th.

The benefits of Chinese privatization and liberalization policies effects over the last decades have already been incorporated by the country. China has been the largest FDI beneficiary for industrial purposes due to their low workforce cost but this cost is rising significantly year over year due to three relevant factors as local currency's appreciation, higher transport costs and higher

salaries which makes this sector less attractive to FDI in our days. Consequently, MCs are moving speedily their capital to more low-priced countries. In this way, the future FDI inflows by MCs are expected to continue rising on services in order to satisfy the demand for the new consumer class. Chinese economic growth should keep expanding through the human capital-, telecommunications- and technology- development activities.

China has to support this progress with better investment conditions to investors. In this manner the Chinese government should make an effort to decrease the country's level of corruption and insecurity problems. The higher education level should be encouraged by the government and taken as a priority, as it is low at this moment, especially on tertiary sector due to decades of previous policies focused on industrial sector, causing currently an obstacle to the China's economic potential. This issue is particularly felt on accountancy and finance for the required standard levels. It is necessary a greater banking sector robustness in order to improve the financial markets performance. Better market flexibility and efficiency measures may also attract future FDI inflows (World Economic Forum, 2013).

Brazil represents one of the most promising economic environments for this decade, as the 2014 World Cup and 2016 Olympic Games will be hosted there. Although, large protests have been carried out against the investment of billions of US $ on these world events, namely on transportation and infrastructure sector, instead of investment in health care and education which is rebelling population this trend is expected to continue. However, it is important to figure out the impact of these protests for future FDI inflows. The demand for natural resources and the increasing incomes are also factors that are likely to increase the attraction of FDI inflows in the medium term.

Regarding the major limitations for attracting FDI, those are related mainly with government action. The high level of government corruption makes

investments more risky due to lack of trust in politicians, leading to a more cautious approach by investors. The inefficient government bureaucracy and complicated tax regulations undermines goods market efficiency which require various reforms to increase country's competitive edge. The difficulty in obtaining favourable credit conditions and inadequate infrastructures are critical areas that will also need improvements in the following years.

India has to take advantage of the large market size and young workforce to attract FDI inwards. Nevertheless, there are critical areas that are very far from optimal for the development phase that the country requires. The shortages of significant economic reforms by host government to incentivize foreign capital still postpone larger FDI flows. The insufficient supply of infrastructure, the high level of corruption and bureaucracy are the most negative problems of a country that requires evolution to attract business to satisfy the tremendous country's potential for FDI inflows. Furthermore, the macroeconomic environment outlook remains negative due to high inflation and risk of sovereign debt failure, the low public health care and primary education, the workforce market efficiency and the host company low technologic level are factors that cause a negative effect on the future FDI inwards.

The last country from BRIC's on the top of preferences by investors for future FDI inflows is Russia. This country was only admitted to the WTO on 2012, in order to be integrated in global economy and reduce barriers on trade, taking advantage of the large market size and favourable macroeconomic environment. Although an improvement has been seen in the past years, Russia still faces persistent issues that limit its progress, namely on financial-, workforce- and goods-market inefficiencies. Institutions are clearly the main problem for the next stage of development, where corruption rates and regulations, excessive and inadequate bureaucracy have negative indicators. The host companies' technologic limitations, the difficulty in obtaining banking

credit and the lack of competition due to previous restrictive policies on trade are other factors that restraint the country's potential. Investors are expected to invest in Russia mainly through natural resources and services (A. T. Kearney, 2013; World Economic Forum, 2013).

The key factor for BRIC's to preserve their attractiveness of FDI inflow in the future is based in the ability to maintain their low wages, large market size and bright growth prospects. The optimization of market flexibility and improvement of macroeconomic conditions may be important to attract more FDI in future.

All BRIC's economies are seen as powerful players for future FDI inflows, but China and Brazil seem to have better prospects for the future.

According to 2013 FDI Confidence Index by A. T. Kearney, China as the world's most populous country is attracting FDI to satisfy their fastest-growing consumer market demand and to reinforce the global positioning of host companies. Thus, foreign investors are shifting their investment from manufacturing due to large rise of workforce costs in the last decade to the services sector.

Brazil emerges as a major destination for FDI inflows due to the large-scale sports events that will occur on 2014 and 2016, which forecasts an investment up to 200 billion US $ only in infrastructure and transports sectors. The relevant progression on trade openness facilities and the vast raw materials sources are also described as factors that attract foreign capital. On the other hand, the manufacturing sector, especially on automobile area accounted roughly half of FDI to Brazil on 2012 and this trend is expected to continue due to the cheap workforce costs.

Although India has a huge potential for larger FDI inflows due to an extensive market, youthful workforce and rapid growing population it still has a slow evolution on economic reforms that are fundamental to provide a better

environment for foreign investors. India is seen as a technological manufacturing center and IT services provider with long-term market potential. There is evidence of an increasing presence of MCs on retail industry which may raise future FDI inflows to the country.

Russia, since the entry to the WTO on 2012 reduced FDI limitations to investors, which created an opportunity to raise future FDI inflows. The abundant resources in oil and natural gas are still attracting the main foreign capital even though there is a rising importance of the services sector on FDI.

4. 'Host' countries determinants of FDI inward in BRIC's

This study estimates a set of potential determinants variables that may influence the FDI inward to the 'host' country, based on the reviewed literature. For this research on BRIC's and based on the classification of FDI determinants by UNCTAD (see Appendix 5), these variables may be aggregated into the following broad categories: Market Size, Market Growth Potential, Trade Openness (Market-related economic determinants); Macroeconomic environment, Exchange Rate Valuation, Political Stability (Policy variables); Clustering Effects (Business variables); Natural Resources Availability (Resource-related economic determinants); and Labour Cost (Efficiency-related economic determinants).

Market Size

A larger market creates the opportunity for potential consumption and trade. Countries with larger consumer market attract more FDI inflow than smaller ones. MCs, in order to serve the local market are more interested in produce in the 'host' country to satisfy the local demand rather than exploring the low costs of Labour which in turn generate economies of scale, due to lower production costs in 'host' countries. This variable is more relevant for horizontal than vertical MCs. This is one of the most consensual determinants among researches and is expected to be a positive and significant determinant of FDI inflow. The most accurate measure is Gross Domestic Product (GDP) (Walsh & Yu, 2010; Ranjan & Agrawal, 2011).

Consequently, larger market size of the 'host' country is expected to attract more FDI.

Market Growth Potential

Higher market growth rates indicates better economic prospective and provides confidence to foreign investors. This determinant may be measured by GDP growth rates.

Hence it is expected that a 'host' country with high and continuous growth rates receive more investment than a country with volatile growth rates.

Trade Openness

An 'host' country that decreases the bureaucracy level, that have more liberal policies and present conditions for trade is expected to increase FDI inflows, particularly horizontal MCs that creates facilities abroad. Several studies presented that trade is more complementary than the substitute of FDI. This determinant is expected to be a positive and significant determinant of FDI inward, as it is demonstrated in the studies carried out by Ranjan & Agrawal (2011) and Walsh & Yu (2010). These last authors found the service sector to be significant. Trade Openness may be measured by the ratio of Export plus Import divided by GDP.

'Host' countries with better liberal policies and trade procedures are used to attract more FDI inflows.

Macroeconomic Environment

Investors are averse to uncertainty, so a 'host' country with stable macroeconomic condition is expected to attract more FDI inward. Investors in a unstable country face issues concerning the legal framework and contract enforceability that increases the inherent risk associated to its presence in the

'host' country and could bring added cost that were not foreseen. Sayek (2009) based on his study on developed countries concluded that there were low (high) volume of FDI inward in period were the inflation rates were high (low).

The most part of the researches attribute the Inflation rates as measure of Macroeconomic environment and concluded that there is a positive and strong correlation between Inflation rate and Economic Instability, so this study assume the Inflation Consumer Prices as the proxy for this determinant.

Thus, an increase inflation rate is expected to decrease the FDI inward.

Exchange Rate Valuation

Empirical studies about this determinant are mixed. Froot & Stein (1991), cited by Walsh & Yu (2010) found evidence that a weaker 'host' country currency led to an increase of FDI inward, due to more accessible country's assets to purchase and production lower cost to MCs. On other hand, MacDermott (2008) had the opposite result for this determinant in his study on 55 countries between 1980-1997, that concluded that a weaker 'host' country currency had a negative correlation with FDI inward which was likely to happen due to low interest rates and high inflation. This determinant may be measured by Nominal Effective Exchange Rate.

Thus an 'host' country currency depreciation is expected to increase the FDI inflows.

Political Stability

This determinant is very relevant and consists in the political environment conditions that MCs face abroad, in terms of personal security and companies' fixed assets. This determinant reflects the government performance and if its policies are influenced by unconstitutional events or even destitution of country's leadership, caused by violence or terrorist groups.

In theory, a 'host' country with a stable government who is able to govern without suffering outside pressures is expected to attract more FDI inward.

Results concerning this determinant are somewhat mixed probably due to the lack of a proper data and consensual measures. For instance, Kim (2010), cited by Severiano (2011: 3) studied empirically the effect of political stability and concluded that political stable countries largely invest in countries with low level of political stability. This result confirm the theoretical Lucas paradoxal (1990) which demonstrates that the capital flows from the rich and developed countries to the poor and undeveloped ones, due to the effect of diminishing returns of capital that explains that companies have larger product margins in poor countries until the ratio capital-Labour reaches equilibrium. Lucas also stated that capital flows are just restricted by political risks.

On the other hand, Schneider & Bruno (1985) concluded for his study on aggregate investment flows in the beginning of 1970's period, for developing economies, that the political instability significantly influences FDI inflows.

This determinant will be measured by Political Stability and Absence of Violence Index from World Governance Indicators database.

Hence, a political instable 'host' country is expected to decrease FDI inflows.

Clustering Effects

There is an evidence of this effect when there is a 'follow the leader' reaction that is motivated after the entrance of the first MC in a foreign market. This situation may be caused by common projects between MCs or clear market signs about prospective business environment conditions in 'host' country to initiate production operations. Consequently, clustering with other companies creates an agglomeration effect generating economies of scale and developing the network between customers and suppliers. Various studies found empirical

evidence of agglomeration effects which emphasized that new FDI is attracted by existing FDI in 'host' country of an economic area (Walsh & Yu, 2010; Severiano, 2011). This determinant may be measured by Stock of FDI.

New FDI is expected to be performed close of an existing FDI.

Natural Resources Availability

This determinant seems important especially on BRIC's, as they are resource-abundant and there is a lack of research on this potential determinant of FDI inward. Hence, I it is added to the model to verify whether it is significant or not in the attraction of FDI and what is the expected sign of this determinant in FDI inward.

Although in theory the abundance of natural resources in a 'host' country is expected to attract FDI inflows there are studies that prove the opposite. For instance, Jadhav (2012) carried out a study on the effect of this determinant in FDI inward and concluded that Natural Resources Availability was significant at 5% level of significance and that had negative effect on total FDI inflow. The author used as indicator the share of minerals and oil in total export from the database provided by World Integrated Trade Solution.

For this study, I will measure this determinant by Total Natural Resources Rent (in % of GDP), in order to obtain a positive sign between this determinant and FDI inward.

The availability of natural resources in 'host' country is expected to attract FDI inflows.

Labour Cost

Lower Labour force costs in 'host' country are expected to move production from developed countries to less developed ones. Most part of investors are interested in efficiency-seeking activities. The availability of qualified Labour

and wage-adjusted Labour productivity are more relevant than the 'host' country cheap Labour cost. Usually lower wages in 'host' country decrease the overall Labour cost, so FDI is expected to increase with lower wages. Although there are not unanimous empirical results among investigators the attractiveness of FDI into 'host' country is related with the result of the trade-off between Labour costs and qualification level.

Even though there is a lack of data for this determinant which constitutes difficulties for this research I will measure this determinant by Average wage rate.

Hence, lower wage costs in 'host' country are expected to attract more FDI inward.

5. Methodology

5.1 Design

The main goal of this study is to identify potential determinant variables of FDI inward to Brazil and their relevance in other BRIC's economies.

In order to have a better comparison of the variables, I will transform all variables that display a trend by use of logarithms.

Three models are introduced. The baseline macroeconomic model specification used across the initial model consists in the dependent variable FDI Inflow and the independent variables Market size, Market Growth Potential, Macroeconomic Environment, Trade Openness, Natural Resources Availability, Exchange Rate Valuation and Clustering Effects which present a better data. This will be the base for Model 1, which will be extended to focus on the comparison between Brazil and the other BRIC's economies in terms of potential determinant variables on FDI inward.

In Model 2, the variable Labour Cost is added to Model 1. The available time period for this variable is between 1995 and 2011.

Regarding Model 3, the Political Stability variable is added to Model 1. There are few studies about this variable due to the lack of data and difficulty of measurement. Notwithstanding, I will use the Index that is provided by The Worldwide Governance Indicators project reports from World Governance Indicators to obtain my results. The available time period for this variable is between 1996 and 2012.

Although I identified in the literature review other potential determinants variables that could influence the FDI inward such as Institutions, Labour

Market Flexibility and Infrastructure facilities it was not viable to include them due to lack of reliable data.

5.2 The Model and Data

In order to capture the effect of the potential determinants variables that influence the FDI inward to BRIC's I develop an econometric model. Secondary data collected from multiple sources for BRIC's is used. Data is collected annually for the period of 1989 to 2012.

The model can be formulated as:

$$\mathbf{FDI\_INFLOW}_{it} = \alpha + \beta 1\ \mathbf{GDP}_{it} + \beta 2\ \mathbf{GDP\_GROWTH}_{it} + \beta 3\ \mathbf{INFLAT}_{it} + \beta 4\ \mathbf{TRAOP}_{it} + \beta 5\ \mathbf{NAT\_RESOURC}_{it} + \beta 6\ \mathbf{EXCH\_RATE}_{it} + \beta 7\ \mathbf{CLUSTER}_{it} + \beta 8\ \mathbf{AVER\_WAGE}_{it} + \beta 9\ \mathbf{POLIT\_STAB}_{it} + \mathbf{e}_{it}$$

Where,

The dependent variable of this study is the logarithm of ***FDI_Inflow*** (BoP in current USD) for country *i* at time *t* and it was obtained from UNCTADstat database.

$\boldsymbol{GDP}_{it}$, represents market size and is proxied by the logarithm of the Gross Domestic Product in current USD for country *i* at time *t*. Data was obtained from World Development Indicators database.

GDP_GROWTH $_{it}$, represents market growth potential and is proxied by the percentage growth rate of GDP at market prices based on constant local currency for country *i* at time *t*. Data was obtained from World Development Indicators database.

INFLAT $_{it}$, represents macroeconomic environment and is proxied by the percentage Inflation rate based on the Consumer Price Index for country *i* at time *t*. Data was obtained from World Development Indicators database.

TRAOP $_{it}$, represents trade openness and is proxied the merchandise trade as a share of GDP for country *i* at time *t* and is calculated by the sum of merchandise exports and imports divided by GDP in current USD. Data was obtained by World Development Indicators database.

NAT_RESOURC $_{it}$, represents natural resources availability and is proxied by the total natural resources rents (oil-, natural gas-, coal-, mineral-, and forest-rents) in percentage of GDP for country *i* at time *t*. Data was obtained from World Development Indicators database.

EXCH_RATE $_{it}$, is the nominal effective exchange rate for the country *i* at time *t* under study against a basket of currencies of trading partners. This data was obtained from Bruegel database.

CLUSTER $_{it}$, represents the clustering effects and is proxied by the logarithm of the inward FDI stock at current prices and current exchange rates in millions USD for the country *i* at time *t*. This data was obtained from UNCTADstat database.

AVER_WAGE $_{it}$, represents the labour cost and is proxied by the logarithm of the gross average nominal monthly wages in local currency units for country *i* at time *t*. This data was obtained from International Labour Organization database.

POLIT_STAB $_{it}$, represents the political stability and is proxied by the Political Stability and Absence of Violence/Terrorism Index for country *i* at time

t. This Index is provided by The Worldwide Governance Indicators project reports from World Governance Indicators.

$e_{it,}$ denotes the unobserved error term associated for country i at time *t*.

Appendix 6 presents the descriptive statistics output for the selected variables.

6. Results

The objective of this research is to identify the potential determinants that influence the FDI inward to Brazil when compared with the influence that is possible to observe for BRIC's. In an initial phase, I estimate the potential determinants of FDI inflow on BRIC's. In a second phase, I compare the estimation obtained for Brazil with BRIC's. Table 1 shows results for the model of FDI determinants, as specified in the previous section.

Model estimations were adjusted under the Breusch-Pagan / Cook-Weisberg test in order to be more robust and I have estimated the linear regression of the models supported by the heteroskedasticity assumption using standard errors robust for heteroskedastic bias correction.

The Table 1 below presents the results. Results show that Macroeconomic Environment, Trade Openness, Natural Resources Availability and Clustering Effects are statistically significant determining FDI for the basis model (Model 1). In Model 2 and Model 3, the variable Market Size, which unexpectedly appeared in the Model 1 as not significant, is statistically significant at 5% level of significance and has a positive coefficient sign for these models. This confirms the literature review. Besides this variable, Trade Openness appears significant for Model 2 and Clustering Effects for both Model 2 and 3.

The other variables, Market Growth Potential and Exchange Rate Valuation are not significant. The introduced variables Labour Cost and Political Stability for the Model 2 and Model 3 respectively, also revealed as not significant.

With respect of the coefficient signs of the significant variables, Market Growth Potential, Trade Openness, Exchange Rate Valuation and Clustering Effects show a positive relation with FDI, supporting the expected signs in the empirical literature. On the other hand, the variables Macroeconomic

Environment and Natural Resources Availability show a significant inverse relationship with FDI inward. Although the expected sign for Macroeconomic Environment is confirmed, the variable Natural Resources Availability shows a different sign from what was typically found in previous empirical literature. However, in the literature the empirical results are somewhat mixed, and some studies show similar results to mine (e.g., Jadhav, 2012), that the foreign capital into BRIC's economies is not resource-seeking driven.

Table 1: Output for FDI Inflow (corrected under heteroskedasticity assumption using standard errors robust) for the three models.

The dependent variable is the logarithm of the FDI Inflow. The independent variables are Market Size (logarithm of GDP), Market Growth Potential (percentage growth rate of GDP), Macroeconomic Environment (percentage Inflation rate based on Consumer Price Index), Trade Openness (sum of merchandise exports and imports divided by GDP), Natural Resources Availability (total natural rents in percentage of GDP), Exchange Rate Valuation (nominal effective exchange rate for the country against a basket of currencies of trading partners), Clustering Effects (logarithm of the inward FDI stock), Labour Cost (logarithm of the gross average nominal monthly wages in local currency units for the country) and Political Stability (Political Stability and Absence of Violence/Terrorism Index for the country). Results are obtained using OLS regressions. The results present: the coefficient estimation, the standard error (in brackets) and the degree of significance (*p*-value).

Variable	**Model 1**			**Model 2**			**Model 3**		
A	41,544	(43,698)	p=0,345	133,015	(50,645)	p=0,011	129,333	(56,073)	p=0,026
Market Size	0,215	(0,189)	p=0,258	0,595	(0,292)	p=0,047	0,721	(0,338)	p=0,038
Market Growth Potential	0,001	(0,012)	p=0,926	-0,012	(0,023)	p=0,609	-0,111	(0,189)	p=0,558
Macroeconomic Environment	-0,001	(0,000)	p=0,000	-0,002	(0,005)	p=0,761	-0,005	(0,147)	p=0,741
Trade Openness	0,021	(0,006)	p=0,001	0,012	(0,007)	p=0,080	0,007	(0,006)	p=0,261
Natural Resources Availability	-0,028	(0,011)	p=0,011	-0,019	(0,013)	p=0,159	-0,007	(0,016)	p=0,677
Exchange Rate Valuation	0,000	(0,000)	p=0,960	0,001	(0,002)	p=0,817	-0,001	(0,003)	p=0,862
Clustering Effects	0,860	(0,099)	p=0,000	0,755	(0,130)	p=0,000	0,705	(0,194)	p=0,001
Labour Cost				0,109	(0,085)	p=0,206			
Political Stability							-0,141	(0,280)	p=0,618
Number of Observations	84			63			52		
R^2	0,9181			0,9196			0,9188		

With respect to the Model 2, the variable Trade Openness remains statistically significant at 10% level of significance instead of 1% level of significance in the Model 1. The variable Clustering Effects is statistically significant at 1% level of significance for all Models.

Now, that I have the key results for the models concerning the potential determinants variables that influence the FDI inward to BRIC's, I will focus in comparing Brazil with the other BRIC's. In order to achieve that result, I will include a dummy variable taking the value one for Brazil and value zero for the BRIC's and its interaction with all other variables considered. The final output for analysing the potential determinants variables that influence the FDI inward on Brazil when compared with BRIC's on the models of this study is presented on Table 2.

The results of Table 1 are confirmed on Table 2, with exception to Macroeconomic Environment and Trade Openness on Model 1 and Trade Openness on Model 2 that did not show significance. On the other hand, on Table 2 the Exchange Rate Valuation variable is significant for the Model 1.

With respect to the potential determinants variables that influence the FDI inward on Brazil when compared with BRIC's it is possible to visualize for Model 1 that the Natural Resources Availability variable is statistically significant for both at 1% level of significance, and although the coefficient sign for this variable is negative for both, the magnitude is much higher in Brazil than in BRIC's. Trade Openness is statistically significant for Brazil at 10% level of significance and has a positive coefficient sign, while it does not seem to be for BRIC's based on the results. On the other hand, even though the variable Exchange Rate Valuation for Brazil and the other BRIC's is statistically significant at 10% level of significance, the coefficient for this variable on Brazil is almost zero. The other variables presented in the Model 1 are not significant for this study.

Table 2: Output for the comparison of the potential determinants of FDI Inflow between Brazil and the other BRIC's (corrected under heteroskedasticity assumption using standard errors robust) for the three models

The dependent variable is the logarithm of the FDI Inflow. The independent variables are Market Size (logarithm of GDP), Market Growth Potential (percentage growth rate of GDP), Macroeconomic Environment (percentage Inflation rate based on Consumer Price Index), Trade Openness (sum of merchandise exports and imports divided by GDP), Natural Resources Availability (total natural rents in percentage of GDP), Exchange Rate Valuation (nominal effective exchange rate for the country against a basket of currencies of trading partners), Clustering Effects (logarithm of the inward FDI stock), Labour Cost (logarithm of the gross average nominal monthly wages in local currency units for the country) and Political Stability (Political Stability and Absence of Violence/Terrorism Index for the country). The models of this study are based in simple linear regressions and present dummy variables given by value 1 for Brazil and value 0 for the other BRIC's economies. The results present: the coefficient estimation, the standard error (in brackets) and the degree of significance (p-value).

Variable	**Model 1**			**Model 2**			**Model 3**		
α	32,060	(37,736)	p=0,399	130,439	(72,932)	0,081	74,378	(81,084)	p=0,366
β_1	73,878	(308,144)	p=0,811	-2539,35	(1911,306)	p=0,191	790,87	(868,415)	p=0,369
Market Size	-0,036	(0,195)	p=0,854	0,738	(0,215)	p=0,001	0,639	(0,278)	p=0,028
Market Size_1	1,468	(0,962)	p=0,132	2,292	(2,633)	p=0,389	1,321	(3,313)	p=0,693
Market Growth Potential	0,027	(0,020)	p=0,181	-0,009	(0,019)	p=0,642	-0,008	(0,020)	p=0,699
Market Growth Potential_1	-0,063	(0,063)	p=0,316	-0,032	(0,948)	p=0,737	-0,037	(0,080)	p=0,652
Macroeconomic Environment	-0,001	(0,003)	p=0,736	0,001	(0,002)	p=0,764	0,006	(0,017)	p=0,742
Macroeconomic Environment_1	0,000	(0,003)	p=0,955	-0,039	(0,013)	p=0,004	-0,066	(0,043)	p=0,136
Trade Openness	0,007	(0,008)	p=0,372	0,004	(0,008)	p=0,644	0,001	(0,008)	p=0,923
Trade Openness_1	0,234	(0,136)	p=0,090	0,104	(0,165)	p=0,534	0,312	(0,154)	p=0,052
Natural Resources Availability	-0,030	(0,010)	p=0,003	-0,010	(0,013)	p=0,414	-0,008	(0,010)	p=0,459
Natural Resources Availability_1	-0,490	(0,170)	p=0,005	-0,195	(0,257)	p=0,451	-0,027	(0,250)	p=0,915
Exchange Rate Valuation	0,003	(0,002)	p=0,076	0,000	(0,002)	p=0,916	-0,001	(0,004)	p=0,817
Exchange Rate Valuation_1	-0,003	(0,002)	p=0,076	0,011	(0,024)	p=0,642	0,013	(0,039)	p=0,745
Clustering Effects	1,068	(0,099)	p=0,000	0,744	(0,126)	p=0,000	0,715	(0,152)	p=0,000
Clustering Effects_1	-0,207	(0,720)	p=0,775	-1,041	(1,546)	p=0,504	0,979	(1,120)	p=0,389
Labour Cost				0,051	(0,176)	p=0,773			
Labour Cost_1				-19,278	(12,538)	p=0,131			
Political Stability							0,151	(0,394)	p=0,704
Political Stability_1							1,461	(0,910)	p=0,118
Number of Observations	84			63			52		
R^2	0,9364			0,9458			0,9426		

The Model 2 expresses that in Brazil the variable Macroeconomic Environment is statistically significant at 1% level of significance and has a negative coefficient sign, whereas it is not significant for the other BRIC's. Neither the introduced variable for the Model 2 Labour Cost, neither the other variables are significant for Brazil.

On Model 3 it is possible to visualize for Brazil that the variable Trade Openness (TRAOP) is statistically significant at 10% level of significance and has a positive coefficient sign, while it is not significant for the other BRIC's. The result of this variable is significant as it was for the Model 1.

Again, as it happened on the Model 2, neither the introduced variable for the Model 3 Political Stability, neither the other variables, are significant for Brazil.

7. Discussion

7.1 Conclusion

FDI has been globally accepted as indispensable for the development of the countries and has a crucial role in the world economy. My contribution to this literature was done by studying the potential determinants of FDI inward in BRIC's. I have analysed these results focusing in Brazil and comparing this country with the other BRIC's. My research is an exploratory work that raises pertinent questions regarding some determinants.

With respect to the results obtained, it is possible to identify common and significant determinant variables among the models.

Macroeconomic Environment, Trade Openness, Natural Resources and Clustering Effect are shown to be significant determinants of FDI. Also, Market Size shows significant for the extended models.

Market Growth Potential, Exchange Rate Valuation, Labour Cost and Political Stability do not show to be statistically significant determinants of FDI.

All the significant variables coefficient signs are as predicted. Although I have assumed a positive coefficient sign and a different indicator for the variable Natural Resources Availability, as the literature review presented mixed results, the conclusion was similar to previous studies, which demonstrate that an increase of this variable will decrease the total FDI inward in BRIC's.

The results demonstrate that the variable Natural Resources Availability affects negatively FDI both for Brazil and the other BRIC's. It is also possible to affirm that the magnitude of this variable is much higher in Brazil than in

BRIC's, which leads us to the conclusion that Brazil is not resource-seeking driven.

Trade Openness variable it is significant for Brazil but not for the other BRIC's.

Also, it is shown that in Brazil the variable Macroeconomic Environment is significant whereas it is not significant for BRIC's.

7.2 Future Research

Further research on FDI inflows to BRIC's should include the study of determinants such as Institutions, Labour Market Flexibility and Infrastructure facilities, variables that are not thoroughly explored due to lack of data.

The Natural Resources Availability variable for BRIC's should be more explored due to the abundance of natural resources in these economies, as there are few researches on this determinant of FDI inward. It may be important to confirm, in the future researches, the result of this study which shows that an increase on Natural Resources Availability has a negative effect on total FDI inward.

Additionally, it may be interesting to study the effect provoked by the financial crisis of 2007/8 in the FDI inward into BRIC's in detail, as there was an huge fluctuation on capital flow levels during its subsequent period, which proves that this has impacted the investor's investment planning.

To conclude, it might also be appealing to make a sector approach on FDI inward to BRIC's economies.

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Appendix

Appendix 1: Inward FDI flows, annual, 1992-2001

US Dollars at current prices and current exchange rates in millions

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Economy										
World	166.027,9	223.356,2	255.980,3	343.544,1	391.439,4	488.160,3	705.934,8	1.091.491	1.413.169	836.012,2
Brazil	2.061	1.290,9	2.149,9	4.405,12	10.791,69	18.992,93	28.855,61	28.578,43	32.779,24	22.457,35
Brazil share in global FDI Inflows	1,24%	0,58%	0,84%	1,28%	2,76%	3,89%	4,09%	2,62%	2,32%	2,69%
China	11.007,51	27.514,95	33.766,5	37.520,53	41.725,52	45.257,04	45.462,75	40.318,71	40.714,81	46.877,59
China share in global FDI Inflows	6,63%	12,32%	13,19%	10,92%	10,66%	9,27%	6,44%	3,69%	2,88%	5,61%
India	252	532	974	2.151	2.525	3.619	2.633	2.168	3.587,99	5.477,64
India share in global FDI Inflows	0,15%	0,24%	0,38%	0,63%	0,65%	0,74%	0,37%	0,20%	0,25%	0,66%
Russia	1.161	1.211	689,57	2.065,72	2.579,32	4.864,64	2.761,26	3.309,43	2.714,23	2.748,29
Russia share in global FDI Inflows	0.70%	0.54%	0.27%	0.60%	0.66%	1.00%	0,39%	0,30%	0,19%	0,33%
BRICs	14.481,51	30.548,85	37.579.97	46.142,38	57.621,53	72.733,62	79.712,62	74.374,57	79.796,27	77.560,87
BRIC's share in global FDI Inflows	8,72%	13,68%	14,68%	13,43%	14,72%	14,90%	11,29%	6,81%	5,65%	9,28%

SOURCE: UNCTAD Stat, FDI Inflows

Appendix 2: Inward FDI flows, annual, 2002-2012

US Dollars at current prices and current exchange rates in millions

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Economy											
World	626.081,3	601.246,3	734.148,4	989.617,7	1.480.587	2.002.695	1.816.398	1.216.475	1.408.537	1.651.511	1.350.926
Brazil	16.590,2	10.143,52	18.145,88	15.066,29	18.822,21	34.584,9	45.058,16	25.948,58	48.506,49	66.660,14	65.271,85
Brazil share in global FDI Inflows	2,65%	1,69%	2,47%	1,52%	1,27%	1,73%	2,48%	2,13%	3,44%	4,04%	4,83%
China	52.742,86	53.504,7	60.630	72.406	72.715	83.521	108.312	95.000	114.734	123.985	121.080
China share in global FDI Inflows	8,42%	8,90%	8,26%	7,32%	4,91%	4,17%	5,96%	7,81%	8,15%	7,51%	8,96%
India	5.629,67	4.321,08	5.777,81	7.621,77	20.327,76	25.349,89	47.138,73	35.657,25	21.125,45	36.190,4	25.542,84
India share in global FDI Inflows	0,90%	0,72%	0,79%	0,77%	1,37%	1,27%	2,60%	2,93%	1,50%	2,19%	1,89%
Russia	3.474	7.929	15.403	15.508	37.595	56.996,33	74.783	36.583	43.168	55.084	51.416
Russia share in global FDI Inflows	0,55%	1,32%	2,10%	1,57%	2,54%	2,85%	4,12%	3,01%	3,06%	3,34%	3,81%
BRICs	78.436,74	75.898,3	99.956,69	110.602,1	149.460	200.452,1	275.291,9	193.188,8	227.533,9	281.919,5	263.310,7
BRIC's share in global FDI Inflows	12,53%	12,62%	13,62%	11,18%	10,09%	10,01%	15,16%	15,88%	16,15%	17,07%	19,49%

SOURCE: UNCTAD Stat, FDI Inflows

Appendix 3: Gross domestic product based on purchasing-power-parity (PPP) share of world total (national currency), annual, 1992-2012

Country	Units	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Brazil	Percent	2,977	3,051	3,115	3,137	3,089	3,066	2,990	2,896	2,885	2,858
China	Percent	4,275	4,771	5,229	5,593	5,932	6,224	6,544	6,803	7,046	7,462
India	Percent	3,056	3,136	3,241	3,363	3,487	3,483	3,607	3,741	3,717	3,825
Russia	Percent	4,154	3,714	3,142	2,906	2,701	2,628	2,426	2,492	2,619	2,692
BRICs	Percent	14,462	14,672	14,727	14,999	15,209	15,401	15,567	15,932	16,267	16,837

Country	Units	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Brazil	Percent	2,855	2,782	2,797	2,749	2,718	2,741	2,811	2,820	2,886	2,861	2,801
China	Percent	7,921	8,396	8,792	9,307	9,974	10,824	11,570	12,720	13,370	14,102	14,738
India	Percent	3,863	4,032	4,194	4,368	4,540	4,739	4,800	5,241	5,514	5,658	5,668
Russia	Percent	2,744	2,835	2,895	2,944	3,028	3,124	3,206	2,976	2,959	2,978	2,988
BRICs	Percent	17,383	18,045	18,678	19,368	20,260	21,428	22,387	23,757	24,729	25,599	26,195

SOURCE: IMF World Economic Outlook Database, 2013

Appendix 4: Top-10 countries on Gross domestic product, current prices (Billions U.S. Dollars), 2012

Ranking position	Country	2012
1	United States	16,244.575
2	China	8,221.015
3	Japan	5,960.269
4	Germany	3,429.519
5	France	2,613.936
6	United Kingdom	2,476.665
7	Brazil	2,253.090
8	Russia	2,029.813
9	Italy	2,014.078
10	India	1,841.717

SOURCE: IMF World Economic Outlook Database, 2013

Appendix 5: UNCTAD's classification of FDI determinant

Determining Variables	Examples
Policy variables	Tax policy, trade policy, privatization policy, macroeconomic policy
Business variables	Investment incentives
Market-related economic determinants	Market size, market growth, market structure
Resource-related economic determinants	Raw materials, labour costs, labour productivity
Efficiency-related economic determinants	Transport and communication costs, labour

SOURCE: UNCTAD (2002)

Appendix 6: Stata descriptive statistics of the variables in the models

Variables	Obs	Mean	Std. Dev.	Min	Max	Coef. Var.
FDI_INFLOW	93	9,283948	1,687255	4,317488	11,72792	18,173895
GDP	96	27,40361	0,8100843	26,0009	29,75428	2,9561226
GDP_GROWTH	92	4,96018	5,464519	-14,53107	14,2	110,16776
INFLAT	92	130,1676	459,5367	-1,407892	2947,733	353,03463
TRAOP	91	32,05994	14,84282	11,67611	64,89019	46,297092
NAT_RESOURC	92	9,721148	9,36432	1,408764	43,06708	96,329364
EXCH_RATE	92	54353,56	403594,7	68,92021	3806706	742,53591
CLUSTER	92	11,12192	1,703587	5,209486	13,63265	15,317382
Aver_WAGE	63	7,59213	1,108001	5,987858	10,07293	14,594073
POLIT_STAB	56	-0,6958929	0,4764481	-1,53	0,29	-