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Corruption as an Entry Incentive and Exit Barrier for Foreign Direct Investment (FDI)

Corrupción como incentivo de entrada y barrera de salida para la Inversión Extranjera Directa (IED)

Héctor Flores Márquez
Instituto Politécnico Nacional Escuela Superior de Economía, México
hfmarquez@hotmail.com

Omar Neme Castillo
Instituto Politécnico Nacional Escuela Superior de Economía, México
onemeco@gmail.com

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Abstract

The paper estimates the effect of corruption in the host country on flows of direct foreign investment (FDI), input and output. The objective is to demonstrate if corruption is a vehicle that attracts FDI or, on the contrary, it is a mechanism that inhibits these capitals. A panel methodology System of Generalized Methods of Moments (Sys-GMM) is used for 126 countries classified by the income level for the 1996-2016 period. It is shown that corruption has the effect of attracting inward-FDI and preventing outward-FDI, having a positive effect on net FDI. There is also a significant difference in the sensitivity of FDI to corruption among groups of countries.

Keywords: Corruption, Outward Foreign Direct Investment, Inward Foreign Direct Investment, Corruption Distance, Income Levels.

Resumen

El documento estima el efecto de la corrupción en el país anfitrión sobre los flujos de inversión extranjera directa (IED), entrada y salida. El objetivo es demostrar si la corrupción es un vehículo que atrae IED o, por el contrario, es un mecanismo que inhibe estos capitales. Se utiliza un sistema de metodología de panel de Método Generalizado de Momentos (Sys-GMM) para 126 países clasificados por nivel de ingresos para el período 1996-2016. Se muestra que la corrupción tiene el efecto de incentivar la entrada y desinhibir la salida de la IED, lo que tiene un efecto positivo en la IED neta. También existe una diferencia significativa en la sensibilidad de la IED a la corrupción entre grupos de países.

Palabras clave: Corrupción, Entrada de Inversión Extranjera Directa, Salida de Inversión Extranjera directa, Distancia de Corrupción, Niveles de Ingresos.

JEL Classification/ Clasificación: F21, F23, C23, D7, O16.

1. Introduction

FDI provides efficient capital, stimulates complementary domestic investment, facilitates the transfer of technological knowledge and management skills, creates new job opportunities, increases access to global markets for export, among other benefits. Therefore, economies and notoriously developing ones tend to establish pro-FDI measures. As a result, annual inflows of FDI represent 2.81% of world GDP in the 1996-2016 period, while outward FDI averages 2.77% of GDP.

However, the amount of FDI, both inward and outward, between countries is not distributed equitably. It is found that countries with less corruption are at the same time the main origin and destination of these capitals. For example, in 2016 the first ten global investors, excluding China, account for 77.8% of outward FDI, 42.3% of inward FDI and have low corruption rates (located in the first two deciles of the good government ranking). In contrast, the nations with the highest levels of corruption, that is, those below the average of the good governance index, barely capture 28.5% of global FDI and invest 17.5% of the total, being, except for some cases such as China or South Africa, net attractors of FDI.

In other words, economies with lower levels of corruption, generally of high income, tend to invest abroad and, particularly in lower income countries. At the same time, countries with higher levels of corruption, mainly a middle- and low-income economies, tend to attract external capital from high-income countries with more transparent economies.

This fact suggests a direct relationship between FDI and corruption, where capital moves to economies with higher levels of corruption, which contradicts the conventional paradigm.

For instance, Wei (2000a) indicates that countries with higher levels of corruption register lower inflows of FDI, while states Cuervo (2008) FDI flows less from countries with strong anti-corruption laws to countries with more significant corruption. Similarly, Canare (2017) finds that corruption hurts FDI flows for Asian and Pacific countries.

However, there is another line of argument that points out the positive effects of corruption on FDI. Wei (2000b), asserts corruption is not an obstacle to attract FDI in countries with high levels of corruption. Egger & Winner (2005) appreciates corruption as a vehicle for FDI inflows. Also, Kolnes (2016) finds that the effect of corruption is context-dependent. Therefore, corruption does

not necessarily represent a threat to FDI flows, but rather a source of power that introduces distortions in the environment in favour of this type of capital. It would seem that corruption has a positive side known as "greasing the wheel" (Graf, 1998). The fact that multinational subsidiaries (MNCs) are the world leading suppliers of bribes (IT, 2006) supports this idea.

Given the mixed evidence, the document aims to demonstrate whether corruption is a vehicle that attracts FDI ("helping hand") or, on the contrary, it is a mechanism by which both entry and exit FDI are inhibited ("grabbing hand").

The paper presents recent evidence for a more extended period (1996-2016) and a broad group of 126 countries while analysing the effects on inward and outward FDI, an approach that no study has followed. To do this, the concept of "corruption distance" (Habib & Zurawicki (2002) is used to construct an index of corruption distance that captures the difference in the levels of corruption between the source and host country. Also, the Government Integrity Index, proposed by the Heritage Foundation, which combines elements of different indexes in the literature, is used. The following section summarizes the relationship between corruption and FDI. Section three describes the variables and the econometric methodology of panel data used. Then, results are discussed, and some reflections are shown.

2. Corruption and FDI: Links

There are two general perspectives on the effects of corruption on FDI. On the one hand, the documents related to the "grabbing hand" hypothesis identify different dimensions in which corruption is damaging for these capitals. For example, Sarkar & Hasan (2001) point out that it affects both their volume and efficiency. Bray (2005) argues that corruption discourages FDI in the host country because it represents significant costs for international business, in particular, states that companies lose contracts because their competitors pay bribes.

In this sense, Habib & Zurawicki (2002) consider this phenomenon as a tax on FDI in the host country, while for Alemu (2012) it introduces insecurities and uncertainty in economic relations, having, from both approaches, a negative impact on productivity (Lambsdorff, 2003). Bribes, imply an unforeseeable distortion in the discretionary use of public power, which translates into additional costs for foreign companies and, together with the resources allocated to unproductive activities -management of the corruption-, impose an extra burden on the host economy (Cieslik & Goczek, 2018). Consequently, the above leads to a reduction in the returns of investments and an increase in their variance which discourages FDI (Cieslik & Goczek, 2018).

In addition, developing countries tend to show high levels of corruption and other deficient institutional aspects that are associated with economic and political distortions that hinder the flow of human and non-human resources

(Acemoglu *et al.*, 2005), which affects the ability of corrupt countries to absorb technology and knowledge from developed nations, limiting economic growth.

Also, some documents accept the adverse effects, both in size and probability of the investment, depends on the individual characteristics of the companies. For example, higher bargaining power of firms reduces the effects of corruption (Hakkala *et al.*, 2005). For FDI location theory, the nation characteristics influence the effect of corruption. Thus, for the host economy, developed countries with high levels of corruption attract limited FDI flows (Egger & Winner, 2006), and from the investor economy perspective, the least corrupt countries invest less in those with high rates of this phenomenon (Cuervo, 2006).

In this respect, Egger & Winner (2006) observe that corruption limits FDI, but only in developed economies. Epaphra & Massawe (2017) point out that FDI from economies that criminalize corruption flows to a lesser extent to corrupt countries. Sanyal & Samanta (2008) suggest that US companies are less likely to invest in countries where corruption is widespread. Aparna & Kartikeya (2011) conclude that a 1% reduction in corruption leads to an increase in FDI flows of 9% in emerging economies, while Javorick & Wei (2009) estimate that a lower level of corruption (decrease of 4.7 points on a scale of 1 to 10) drives up FDI by 15%. Godinez & Liu (2015) argue that a negative corruption distance from host countries compared to countries of origin is associated with a significant reduction in FDI inflows, due to companies from countries with low corruption are unfamiliar to this phenomenon.

Alternatively, there is also an empirical current that defends a positive relationship between corruption and IED, called "helping hand". Glass & Wu (2002) show that the general equilibrium effects of corruption in FDI are not necessarily harmful, on the contrary, it can boost the entry of these capitals.

In this sense, Tanzi (1998) shows that more than an obstacle, corruption can become an efficient lubricant in rigid bureaucratic economies, especially in developing countries, so foreign companies buy, in this way, specific monopoly power or avoid costly regulations.

Therefore, managers rationalize corruption as an alternative source of competitive advantage in corrupt countries or as a mechanism to reduce transaction costs in highly regulated economies (Cuervo, 2016). Ohlsson (2007) states that, by paying bribes, global companies reduce bureaucratic procedures, avoid inspections, obtain preferential tax rates, receive public funds and even charge an extra price, working as a magnet of this capital.

Quazi *et al*. (2014) indicate that in developing economies with weak regulatory frameworks, there is evidence of a positive corruption-FDI relationship, although they recognize that reforms that strengthen them could reverse the effects. Bellos & Subasat (2012), in the context of Latin American and transition countries, find that high levels of corruption (in the country of origin and destination) are associated with top stocks of FDI. Explain that the distortions caused by low-quality governance can represent the mechanism of

attraction of these capitals. In particular, Henisz (2000) finds that corruption (in the host country) increases the likelihood that US companies invest abroad.

Barassi & Zhou (2012), controlling for other factors such as location, market size and costs, verify the helping hand hypothesis. However, they recognize that this effect is heterogeneous and depends on the country´s position in the FDI stock distribution. They explain that for the highest percentile the impact of corruption can be non-negative, in contrast to lower percentiles.

However, part of the literature is inconclusive with mixed results. For example, Weitzel and Berns (2006) indicate that corruption perception in the host economy does not constitute a barrier to entry for foreign investors, although it accepts adverse effects in terms of potential synergies.

While Hakkala *et al.* (2005), affirm that it depends on the strategy of foreign companies, it negatively affects the level of sales of companies oriented to the domestic market, favours the expo-oriented ones and those in both markets have not visible effect. Akcay (2001) confirms the preceding by not finding significant effects of corruption on FDI and indicates that the main determinants of these capitals are market size, tax rate, labour costs and openness of the host economy.

Finally, Petrou & Thanos (2014), estimate a U-shaped relationship, finding evidence in favour of both hypotheses, negative effects are felt when levels of corruption are low or moderate, and positive effects appear with high standards of corruption. Okada & Samreth (2010) support this idea by proposing a threshold of corruption that separates the adverse effects of positive ones in the context of FDI and economic growth relationship.

3. Methodology and data

Corruption is a socioeconomic phenomenon hard to be measured. However, literature has given particular importance to perceptions people have about corruption, the surveys that seek to establish these perceptions discriminate social and economic sectors, political attitudes and activities.

The widely used institutional sources are the Corruption Perceptions Index (CPI) prepared by Transparency International, the Global Competitiveness Report of Geneva, the Economic and Political Risk Consultancy of Hong Kong, the governance indicators of the World Bank and the Government Integrity Index (GII). The latter is a subcomponent of the Economic Freedom index conducted by the Heritage Foundation. The GII is used as a proxy for corruption since it incorporates elements link to this phenomenon (about perception as well as of its combat), becoming a robust index.

It is worth noting that corruption indices both score and, even recognizing that indices themselves show the relative position of each country, also ranks economies. Nevertheless, the corruption data used in this study are the scores.

The lack of consensus regarding the effects of corruption on FDI requires alternative explanations link to other factors such as physical distance since it represents a determinant location factor for capital (the higher the distance, the greater the FDI, and vice versa).

Habib & Zurawicki (2002) extend this idea to corruption distance to explain the effect on FDI. According to Cieslik & Goczek (2018), since no country is free of corruption, international investment flows respond to the differences between corruption levels and between the expected frequency of this acts, otherwise, they would tend to be exclusively located in economies free from this risk. That is, what is relevant for the investor is not the level of individual corruption in each country -host and home-, but the net difference between them.

Furthermore, differences -positive or negative- between home and host economies in terms of corruption can have significant effects on attraction of foreign capitals to the host economy, that represents a relatively unknown business environment. On this relative basis, is how the investor decides whether or not to invest in a given foreign country. In concrete, positive (negative) difference translates into a greater (lower) transaction costs and risk associated with operating in an "unknown" business environment (Brouthers & Brouthers, 2001), which, in turn, could lead to lower (greater) FDI inward (outward) flows. In this way, the concept of corruption distance used here is simir to proposed by Godinez & Liu (2015).

To consider the net differences in corruption, a corruption distance index is proposed that calculates separately the positive and negative differences. That is, an index with a negative value is obtained for the host country of FDI compared to countries with lower corruption (CDI1). In contrast, index will have a positive value when compared to more corrupt economies (CDI2). By doing this, positive distances are prevented from being offset by negative ones, thus reducing the net distance that would lead to biased estimates.

CDI is the average value of the differences in Government Integrity Index (GII) between the host economy and the countries of origin of those capitals. A negative corruption distance shows a worse relative position of host nation, while a positive distance reflects a better relative situation for the host economy. Formally,

$$CDI1_{it} = \sum \frac{GII_{it} - GII_{yt}}{n^{-}} \qquad (1)$$

Where, $GII_{it} < GII_{yt}$, $CDI1_{it}$ is average negative corruption distance index of country *i* (host) at time *t*, GII_{it} is the GII of country *i* at time *t*, and GII_{yt} is the GII of *y*-th country (those with lower corruption levels than country *i*) at time *t*, and n^{-} is the total number of *y*-countries. Alternatively,

$$CDI2_{it} = \sum \frac{GII_{it} - GII_{yt}}{n^{+}} \quad (2)$$

Where, $GII_{it} > GII_{yt}$, $CDI2_{it}$ is the average positive corruption distance index of country *i* (host) at time *t*, GII_{it} is the GII of country *i* at time *t*, and GII_{yt} is the GII of *y*-th country (those with higher corruption levels than the country *i*) at time *t*, and n^{+} is the total number of *y*-countries.

Since the interest of the paper is to determine the effect of corruption in the attraction of FDI, the relevant dependent variable are the flows of FDI (*FDI*) that comprise capital provided, either directly or through other related enterprises, by a foreign direct investor to an enterprise, or capital received from an investing enterprise by a foreign direct investor (UNCTAD, 2007). In addition, Following UNCTAD (2007) FDI three components are: i) equity capital, that is, the foreign direct investor's purchase of shares of an enterprise in a country other than its own, ii) reinvested earnings, which comprise the earnings not distributed as dividends by affiliates, or earnings not remitted to the direct investor, and that are reinvested, and, iii) intra-company loans or intra-company debt transactions, referred to short- or long-term borrowing and lending of funds between direct investors (parent enterprises) and affiliate enterprises. The data are retrieved from UNCTAD's Foreign Direct Investment Statistics.

Likewise, the study splits FDI in function of flows direction. Thus, estimations consider by separate two additional dependent variables: inward FDI (*IFDI*), defined as the net increases in liabilities of the host economy, and outward FDI (*OFDI*), that reflects net decreases in assets of home economy.

Besides, based on the literature review of FDI determinants grouped in three categories -political framework, economic conditions, and business facilitations– the model incorporates other variables linked to this approach. In particular, a business environment characterized by uncertainty tends to reduce investment returns, limiting the inflow and outflow of FDI. Under this idea, the State of Law (*SL*) and Regulatory Efficiency (*RE*) indices are included as variables that capture the business climate. The first is a measure of property rights and judicial effectiveness,[1] and the second as a measure of

1 The property right component assesses the extent to which the legal framework of a country allows people to freely accumulate private property, guaranteed by clear laws that the government effectively enforces. The more active the legal protection of the property, the higher the score of a country (0-100). Legal frameworks that function well are essential to protect citizen rights against unlawful acts committed by third parties, including governments and influential individuals. This protection requires efficient and fair judicial systems to ensure that laws are fully respected, and appropriate legal action is taken against violations. The index has a scale of 0 to 100, the higher the judicial effectiveness, the higher the score.

business, labour and monetary freedom.[2] Likewise, the Government Size index (*GS*) that captures the tax rate, financial health and government spending is used since they are essential for attracting FDI (Singh & Jun, 1996).[3] Finally, due the high degree of complementary between FDI and foreign trade, two alternative variable relative to commercial openness are included. Thus, the Open Market index (*OM*) and International Trade (*IT*) are considered to take into account the effects of trade in foreign direct investment.[4]

Additionally, Gross Domestic Product of the previous year (GDP_{t-1}) and the unemployment rate (*U*) are used as variables that reflect the domestic consumption capacity of the country and the cost of labour, respectively. The unemployment rate is directly related to the labour cost (higher wage levels reduce labour demand and therefore increases the unemployment rate). A positive relationship of the unemployment rate with the outward FDI (OFDI) and negative with inward FDI (IFDI) is expected. Also, GDP_{t-1} is expected to have positive effects over IFDI and negative over OFDI (higher domestic consumption capacity favours IFDF and disinhibits OFDI).

Data of these two variables are obtained from the World Bank database. Due to data availability, the study covers the 1996-2016 period and 126 countries, classified by income level (according to the World Bank)[5], shown in table 1 (displayed in Annex).

An econometric model is constructed based on the methodology used by Angeles and Camarillo (2014). Three different specifications are followed under the estimation of the Generalized Method of Moments (sys-GMM) system, which encompasses a regression equation in both differences and levels, which

2 The business freedom score for each country is a number between 0 and 100, where 100 indicates the freest business environment. The score used 13 subfactors, all weighted equally, using data from the World Bank Doing Business report. The labour freedom component is a quantitative measure that considers several aspects of the legal and regulatory framework of a country´s labour market, including regulations on minimum wages, laws that inhibit layoffs, compensation requirements and regulatory restrictions on hiring and hours worked, it goes on a scale of 0 to 100 where the highest score represents greater freedom in that market. Monetary freedom combines a measure of price stability with an evaluation of the controls exercised over them. Price stability without intervention is the ideal state for the free market. The Index range is 0-100, with higher scores representing greater monetary freedom.

3 The Government Size Index is a weighted average among its components (tax rate, financial health and government spending). On a scale of 0 to 100, a higher score represents a larger government size

4 Trade freedom is a composite measure of the scope of tariff and non-tariff barriers that affect imports and exports of goods and services. In an economically free country, there would be no restrictions on the flow of investment capital. Individuals and companies could move their resources without restriction inside and outside the country in specific activities. Such an ideal economy would receive a score of 100. *IT* is calculated by dividing the value of imports and exports over a period by the gross domestic product for the same period. Data are obtained from the World Bank Database.

5 The Analytical Classification Methodology of the World Bank presented in the World Development Indicators is used, which is based on the per capita Gross National Income (PCGNI) in US dollars. The taxonomy has four levels based on the data for the 2005 year, namely: low income (PCGNI≤875 dollars), low-middle income (875 < PCGNI≤3,645 dollars), high-middle income (3,645 < PCGNI≤10,725 dollars), and high income (PCGNI > 10,725 dollars).

incorporates each specific set of instrumental variables. The proposed model analyses net FDI, OFDI and IFDI.

Since there are differences in income level between the countries, the existence of individual effects is assumed. Two auxiliary models are constructed to evaluate the initial assumption, fixed effects (EF) and random effects (EA). The Lagrange multiplier test of Breusch and Pagan (BPLM) is carried out, which is designed to evaluate the random effects.[6]

To deal with autocorrelation, the methodology used by Angeles & Camarillo (2014) is followed. It explores the possibility the problem arises due to the wrong model specification, so a dynamic panel data model is proposed (DPDM) adding a lagged dependent variable in the following way:

$$FDI_{it}=\alpha_i+\gamma FDI_{it-1}+\sum_{k=1}^{n}\beta_k X_{kit}+\eta_i+u_{it} \quad (3)$$

$$OFDI_{it}=\alpha_i+\gamma OFDI_{it-1}+\sum_{k=1}^{n}\beta_k X_{kit}+\eta_i+u_{it} \quad (4)$$

$$IFDI_{it}=\alpha_i+\gamma IFDI_{it-1}+\sum_{k=1}^{n}\beta_k X_{kit}+\eta_i+u_{it} \quad (5)$$

Where *X* is a vector of explanatory variables previously introduced. The inclusion of a lagged dependent variable incorporates a source of persistence over time, that is, the correlation between the regressor γ and the error term *uit*. Also, individual effects η_i characterize DPDM because of heterogeneity among individuals. Thus, it is necessary to apply different test procedures for equations 3, 4 and 5.

In consequence, to estimate these equations, the Generalized Method of Moments (GMM) proposed by Arellano & Bover (1995) is used. The estimation method eliminates the country effects η_i expressing the dynamic equation in first differences as:

$$FDI_{it}-FDI_{it-1}=\gamma(FDI_{it-1}-FDI_{it-2})+\sum_{k=1}^{n}\beta_k(X_{kit}-X_{kit-1})+(u_{it}-u_{it-1}) \quad (6)$$

$$OFDI_{it}-OFDI_{it-1}=\gamma(OFDI_{it-1}-OFDI_{it-2})+\sum_{k=1}^{n}\beta_k(X_{kit}-X_{kit-1})+(u_{it}-u_{it-1}) \quad (7)$$

$$IFDI_{it}-IFD1_{it-1}=\gamma(IFDI_{it-1}-IFDI_{it-2})+\sum_{k=1}^{n}\beta_k(X_{kit}-X_{kit-1})+(u_{it}-u_{it-1}) \quad (8)$$

The lagging levels of FDI_{it} are not correlated with the error term in the first difference.[7] The method uses lagged endogenous variables as instruments

6 The null hypothesis is the individual specific variance equals zero, that is, H_0: $\sigma^2_u=0$.
7 With the condition of moments $E(FDI_{i,t-s}\Delta u_{it})=0$, $E(OFDI_{i,t-s}\Delta u_{it})=0$, $E(IFDI_{i,t-s}\Delta u_{it})=0$, for $t=3, \ldots, N$ and $s\geq 2$.

to control the endogeneity of the lagged dependent variable, reflected in the correlation between this variable and the error term in the new equation. This version of GMM is known as the difference estimator.

Nevertheless, Blundell & Bond (1998) argued that the GMM estimator obtained after the first differentiation has finite sample bias and reduced precision. The limitations of the estimator are due to the lagged levels of the series provide weak instruments for the first difference. To improve the properties of first difference GMM estimator, they use an extended GMM estimator, based on the moment condition:[8] $E[\Delta FDI_{it-1}(\eta_i + u_{it})] = 0$. That is, there is no correlation between the FDI_{it} lagged differences and the specific effects of the group.

Therefore, the method uses lagged differences of γ_{it} as instruments for the equations in levels, in addition to lagged levels of γ_{it} as instruments for the first difference equations. The extended method is known as system GMM (sys-GMM). It encompasses a regression in both differences and levels, each with its specific set of instrumental variables. The sys-GMM not only improves accuracy but also reduces the finite sample bias.

The GMM estimates, both in differences and the system, assume that u_{it} disturbances are not correlated in series. Then, there would be evidence of first-order serial correlation in differentiated residuals u_{it}-u_{it-1}, but there would be no second-order serial correlation in differentiated residuals (Doornik *et al.*, 2002). This argument is central because the consistency of the GMM estimator depends on the fact that $[\Delta u_{it} - u_{it-2}] = 0$. Consequently, the autocorrelation tests up to second order must be carried out.

4. Results

Table 2 reports the results (Displayed in Annex). It is observed that the BPLM test rejects the null hypothesis for the case of FDI and IFDI and accepts the hypothesis for OFDI, that is, there are individual effects in the two first models.

To evaluate the suitability between models (FE or RE) the Hausman test for specification is applied.[9] The *p*-value obtained from the Hausman test is less than 0.05 and, therefore, the null value is rejected, for FDI and IFDI estimates, which indicates that the RE estimates are inconsistent and the FE would be more appropriate.

efore adopting the EF model, the existence of first-order serial correlation is evaluated, so an AR test (1) is performed. The modification of Bhargava *et al.* (1982) for the Durbin-Watson test (modified DW) and Baltagi-Wu LBI test (1999) are used. In the three estimates, both tests reject the null hypothesis

8 For OFDI estimation $E[\Delta OFDI_{it-1}(\eta_i + u_{it})] = 0$ and for IFDI $E[\Delta IFDI_{it-1}(\eta_i + u_{it})] = 0$.
9 The null hypothesis is regressors X_{kit}, and the unobservable individual specific random error ε_i are not correlated, that is, H_0: $Corr(X_{kit}, \varepsilon_i) = 0$.

of no first-order serial correlation.[10] At the same time, the AR(2) test does not reject the null hypothesis that the first differentiated residual error is not correlated in second-order series.

Also, to assess the validity of the instruments, the Sargan test of overidentified restrictions proposed by Arellano & Bond (1991) is performed. Results in Table 2 show that the test cannot reject the validity of the instruments.

A dichotomous variable is constructed to capture differences between countries, one for each group of countries classified by income level. Thus, $DL = 1$ if the country belongs to low-income group and 0 if it does not belong, $DML = 1$ if the country belongs to the low-income group and 0 if it does not, $DMH = 1$ if the country belongs to the medium-high income group and 0 if it does not, and, $DH = 1$ if the country belongs to the high-income group and 0 if it does not. The F-test allows exploring whether the dichotomous variables belong to the model.[11] The additional regressors are statistically different from zero ($p = 0.000$) for the three regressions (FDI, OFDI and IFDI). The results of the sys-GMM model show that the corruption distance index one (*CDI1*) and two (CDI2) are statistically significant for all the specifications.[12] However, differences in the sign are found. In the case of CDI1, for the FDI and OFDI, the relationship is negative, while for inward investment it is positive. On the contrary, in the case of CDI2 for the FDI and OFDI, the relationship is positive, while for inward investment it is negative.

Consequently, increasing corruption levels in comparison with countries that have lower levels of corruption, which worsen the position in the corruption distance index one, discourages FDI and OFDI. In line with these results, the increasing corruption levels in comparison to countries that have higher levels of corruption, which decrease the position in the corruption distance index two, discourages FDI and OFDI. In case of FDI and OFDI evidence of the "grabbing hand" hypothesis is found, just like in Petrou & Thanos (2014).

For the case of the entry investment the positive effects of corruption on inward investment found are in line with the evidence of "helping hand", just like in Petrou & Thanos (2014). In this sense, corruption is seen as a vehicle for IFDI (Egger & Winner, 2005), although it contrasts with stated by Canare (2017).

The positive relationship means that IFDI moves in the same direction as the CDI1. Therefore, an increase in corruption distance implies an increase in the *i*-country corruption levels (concerning to the countries whit lower levels of corruption) and tends to increase the import of this capital.

In the same terms, the negative relationship means that IFDI moves in the opposite direction of CDI2. Therefore, an increase in corruption distance implies

10 The modified DW-statistic values are: FDI = 1.304, OFDI = 1.725, and IFDI = 1.264. The values of the Baltagi-Wu-LBI statistic are FDI = 1.379, OFDI = 1.804, and IFDI = 1.421.

11 The null hypothesis is additional coefficients are equal to zero, that is, β_{0i} is a constant intersection β_0 for all country groups (H_0: $\beta_{0i} = \beta_0$).

12 With a level of significance of $\alpha = .05$, .05 and .01. respectively in the case of CDI1, and $\alpha = .01$ in the case of CDF2

a decrease in the *i*-country corruption level (concerning to the countries whit higher levels of corruption) and tends to decrease the import of foreign capital.

However, given that FDI and OFDI are negatively related to corruption, in relation to the least corrupt countries, if this socioeconomic phenomenon is limited or reduced in the home country, especially in relative terms, it could generate distortions in favour of the country with the highest corruption -in this case the host country-, possibly attracting more foreign capital. Thus, corruption is identified as a second-level optimum (Hongxin *et al.*, 2003).

In this way, whether when a country is comparatively more corrupt than its counterparts -negative distance-, or less corrupt than them -positive distance-, the increase in corruption tends to attract more FDI (IFDI). Then, following Espinoza & Torres (2004), in terms of economic efficiency, illegal options can be more profitable and appropriate than legal ones, so foreign investors would seek to take advantage of this. This idea is in line with Blundell & Roulet (2017) for whom the introduction of anti-bribery laws, particularly adhering to the OECD Anti-Bribery Convention, significantly reduces FDI flows in corrupt regimes.

As reported in the literature, corruption by itself seems to have ambiguous effects on FDI flows (Weitzel & Berns 2006). However, this phenomenon becomes relevant for capital decisions when investors consider relative corruption, it could encourage IFDI or discourage domestic investment, making it seeks international destination. Then, results agree with the view that corruption serves as oil that lubricates the imperfections of markets, especially where bureaucratic barriers are more significant (Dreher & Gassebner, 2013).

Likewise, lagged FDI (FDI_{t-1}), IFDI ($IFDI_{t-1}$), and OFDI($OFDI_{t-1}$), are statistically significant with positive signs. This argument means that the previous year´s FDI flows, both inward and outward, have a positive influence on future FDI flows.

Similarly, the GDP is statistically significant for all the models, so that country´s domestic consumption capacity has a positive impact on FDI and IFDI flows. These results are similar to Artige & Nicolini (2006), which affirm that market size, measured by GDP or per capita GDP, is a central determinant of FDI in econometric studies. However, a negative sign was expected for OFDI, since higher internal consumption could boost domestic investment and discourage capital to exit, which is not fulfilled. The estimated effect of market size is less relevant to attract these capitals than that associated with corruption, which is in line with Epaphra & Massawe (2017).

The State of Law Index is positive and statistically significant for direct outward and inward investment. Low levels of corruption are generally associated with high-level stadiums of the state of law since strong institutions and low impunity prevail. This fact would discourage IFDI from less corrupt countries, but foster OFDI to more corrupt economies.

Regulatory Efficiency is again statistically significant for the three models and in all cases with a positive sign. This outcome is line with theory as regulatory efficiency reduces uncertainty for investments. In contrast, Government Size

Index seems to have no relation with FDI since in no case is it statistically significant. This result is unexpected since the vast FDI literature identifies fiscal incentives and tax rate as factors influencing its dynamics.

International trade variable is statistically significant for OFDI and IFDI. In line to what is expected, it presents a positive relationship, higher levels of international trade (imports and exports to GDP ratio) are accompanied by an increase of outward and inward FDI. A plausible explanation is that foreign investment tends to stimulate exports from investing countries as well as to induce host country imports from the FDI-home country. Similar findings are discussed in Ahmad *et al.* (2018), Franco (2013) and Chaisrisawatsuk & Chaisrisawatsuk (2007).

At the same time, Open Market Index is statistically significant for FDI and OFDI. However, contrary to what is expected, it presents a negative relationship, higher levels of trade openness hurt FDI and IFDI flows. This result is explained by the fact that wide markets opening generates domestic competition among capitals, which can press FDI outcome and, therefore, limit further foreign capital flows (Ho *et al.*, 2013). In any case, Charkrabarti (2001) states there is mixed evidence on the importance of openness, measured mainly by the ratio of exports and imports to GDP, when determining FDI.

Aside, Charkrabarti (2001) argues that salary, as labour cost indicator, has been the most controversial of all FDI determinants. In any case, estimation shows that labour cost (*U*) is statistically significant for FDI and IFDI with the negative expected sign. Then, higher wage levels reduce the benefits of foreign investment, since companies theoretically seek low labour costs compared with their home country. Simultaneously, labour cost positively affects inward FDI, which confirm the former idea. The importance of cheap labour to attract multinationals is in line with the theoretical hypothesis of dependency and modernization.

Regarding the dichotomous variables created to differentiate country groups by income, all four tend to be systematically significant, particularly for FDI and IFDI, nevertheless, there are differences between intercepts. In low and middle-low income countries, the intercept is negative -negative autonomous FDI-. Similarly, the upper and upper-middle income countries have a direct intercept, suggesting a positive autonomous FDI. This argument suggests a tendency to receive external capital, idea adjusted to reality since they are usually the primary recipients of FDI.

OFDI in countries of middle-low and middle-high with statistical significance, presents a negative autonomous investment, that is, this group of economies show a tendency not to invest abroad. Two possible explanations are associated with their relative scarcity of capital and their relatively high levels of domestic corruption that would favour them to stay.

Furthermore, a robustness check was followed. In short, the general explanatory power was maintained when the control variables were not included, also when the Government Integrity Index (GII), instead of CDI, is used as an explanatory variable (see table 2 columns 1-3). Likewise, the significance

was maintained and the signs of the coefficients remained in the same ranges. In summary, the reported specifications are well defined and robust, so they accurately reflect the effects of the flow of FDI outward and inward.

5. Conclusions

Thru a novel corruption distance indicator, the paper provides evidence on "helping hand" hypothesis for IFDI, and evidence of "grabbing hand" hypothesis for FDI and OFDI for 126 countries in the period 1996-2016. It follows that corruption at one point serves as a driving force for foreign investment from the perspective of host countries, and as a restricting mechanism for investing abroad.

In this way, since FDI is an economic growth and convergence pillar, and since it depends positively (IFDI) or negatively (FDI and OFDI) on corruption, it can be inferred that this phenomenon conditions global economic dynamic.

Likewise, corruption, which involves costs for foreign companies inverting on host countries, represents an incentive to invest, which seems to be confirmed by the strong presence of MNEs not only in high-income countries but also in economies with lower development.

In spite, this does not necessarily mean corruption is beneficial for countries and that it should not be combated since it only represents a second level equilibrium. That is, since in home and host economies, optimal conditions of non-corruption, that would theoretically imply higher FDI, are not met, foreign capitals demand a certain level of acts of corruption which means countries face social costs.

Conversely, in light of the findings, it is suggested that countries need to assume a strong position to combat it and provide adequate monitoring and control over the factors that generate corruption.

Thus, while there is evidence that corruption acts as an oil that lubricates IFDI flows, the negative consequences that this socioeconomic phenomenon has on growth or development are not explored. In this regard, it is possible that high levels of corruption limit technology spillovers to the domestic industry, so the results must be taken with moderation. A possible research agenda is to analyse relationship corruption-FDI at the sectoral level to decompose the effect and, thus, to clarify the role of MNEs in this phenomenon.

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Annex

Table 1. Country groups by income

Group	*Country*														*Per Capita Income (US dollars)*
High Income	1	Australia	8	Chile	15	Germany	22	Italy	29	Oman	36	Slovenia	43	United Arab Emirates	> 12,475
	2	Austria	9	Czech Republic	16	Greece	23	Japan	30	Poland	37	South Korea	44	United Kingdom	
	3	Bahrain	10	Cyprus	17	Hong Kong	24	Latvia	31	Portugal	38	Spain	45	United States of America	
	4	Bahamas	11	Denmark	18	Hungary	25	Lithuania	32	Qatar	39	Sweden	46	Uruguay	
	5	Barbados	12	Estonia	19	Iceland	26	Malta	33	Saudi Arabia	40	Switzerland			
	6	Belgium	13	Finland	20	Irlanda	27	New Zeland	34	Singapore	41	The Neher-lands			
	7	Canada	14	France	21	Israel	28	Norway	35	Slovakia	42	Trinidad and Tobago			
High-Middle Income	1	Algeria	6	Botswana	11	Costa Rica	16	Iran	21	Mexico	26	Dominician Republic	31	Turkmenistan	4,036-12,475
	2	Argentina	7	Brazil	12	Croatia	17	Jamaica	22	Namibia	27	Romania	32	Turkey	
	3	Azerbaijan	8	Bulgaria	13	Ecuador	18	Lebanon	23	Panama	28	Russia			
	4	Belarus	9	China	14	Fiji	19	Malaysia	24	Paraguay	29	South Africa			
	5	Belize	10	Colombia	15	Gabon	20	Mauritius	25	Peru	30	Thailand			

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Low-Middle Income	1	Armenia	7	Egypt	13	India	19	Mauritania	25	Pakistan	31	Tunisia			1,026-4,035
	2	Bangladesh	8	El Salvador	14	Indonesia	20	Moldova	26	Philippines	32	Ukraine			
	3	Bolivia	9	Georgia	15	Jordan	21	Mongolia	27	Republic of Congo	33	Uzbekistan			
	4	Cambodia	10	Ghana	16	Kenya	22	Morocco	28	Sri Lanka	34	Viet Nam			
	5	Cameroon	11	Guatemala	17	Kyrgyztan	23	Nicaragua	29	Swaziland	35	Yemen			
	6	Cotê d´Ivoire	12	Honduras	18	Laos	24	Nigeria	30	Tajikistan	36	Zambia			
Low Income	1	Benin	3	Gambia	5	Malawi	7	Mozambique	9	Senegal	11	Uganda			≤1025
	2	Burkina Faso	4	Madagascar	6	Mali	8	Niger	10	Tanzania	12	Zimbabwe			

Source: Own elaboration based on World Bank Analytical Clasificaciõn 2016.

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Table 2. Sys-GMM Results

	Dependent variable: FDI										Dependent variable: OFDI										Dependent variable: IFDI									
Variables, Tests	[1]		[2]		[3]		[4]		[5]		[6]		[7]		[8]		[9]		[10]		[11]		[12]		[13]		[14		[15]	
FDI t-1	0.629	*	0.699	*	0.325	*	0.324	*	0.316	*	-		-		-		-		-		-		-		-		-		-	
OFDI t-1	-		-		-		-		-		0.223	*	0.268	*	0.111	*	0.112	*	0.117	*	-		-		-		-		-	
IFDI t-1	-		-		-		-		-		-		-		-		-		-		0.548	*	0.549	*	0.111	*	0.317	*	0.311	*
GII	782.18	*	-		-87.94		-		-		698.69	*	-		291.3	*	-		-		464.23	*	-		291.3	*	-		-	
CDI1	-		93.95	*	-		-184.660	**	-231.070	*	-		89.65	**	-		-169.710	**	-194.820	**	-		40.04		-		43.030	*	10.320	*
CDI2	-		-55.79	*	-		168.360	*	186.150	*	-		-30.99		-		127.020	*	142.850	*	-		-32.85		-		-24.990	*	-11.740	*
GDP t-1	-		-		0.021	*	0.022	*	0.022	*	-		-		0.007	*	0.008	*	0.006	*	-		-		0.007	*	0.009	*	0.009	*
SL	-		-		-132.66	**	-139.790		-17.870		-		-		179.26	***	199.920	*	160.940	*	-		-		179.26	***	26.490	*	97.670	*
RE	-		-		259.69	**	258.920	***	343.880	*	-		-		188.95	*	194.600	*	325.970	*	-		-		188.95	*	69.580	*	142.468	*
GS	-		-		-301.5	*	-310.690	*	-125.050	*	-		-		-204.25	*	-206.240	*	-81.900		-		-		-204.25	*	-126.464	*	-13.320	*
IT	-		-		-60.46	***	-59.710		-		-		-		210.2	*	212.200	*	-		-		-		210.2	*	10.140	*	-	
OM	-		-		-		-		-885.090	*	-		-		-		-		-66.140		-		-		-		-		-535.86	*
U	-		-		-861.58	*	-849.780	*	-885.090	*	-		-		524.8	**	515.750	*	472.460	*	-		-		524.8	**	-354.910	*	-326.120	*
Cons	-26984.38	*	9330.664	*	-		-		-		-27202	*	7211.93	*	-		-		-		-16004	*	4817.28	*	-		-		-	
DI	-		-		-5537643	*	-5259794	*	-4971247	*	-		-		105000000	**	28700000		36900000		-		-		105000000	**	-1381646	*	-1015492	*
DmI	-		-		-956487	*	-963823	*	-992706	*	-		-		-149216		-192298	*	-15935		-		-		-149216		-240491	*	-255720	*
Dmh	-		-		134337	*	127544	*	141700	*	-		-		-146488	*	-150799	*	-143221		-		-		-146488	*	28688	*	40353	*
Dh	-		-		54941	*	41776	*	75313	*	-		-		-28320	**	-13736		-5844	*	-		-		-28320	**	23602	*	46961	*
F	-		-		[0.000]	*	[0.000]	*	[0.000]	*	-		-		[0.000]	*	[0.000]	*	[0.000]	*	-		-		[0.000]	*	[0.000]	*	[0.000]	*
AR(1)	[0.011]	**	[0.012]	**	[0.015]	**	[0.015]	**	[0.0145]	**	[0.05]	**	[0.053]	***	[0.069]	***	[0.0695]	**	[0.0684]	**	[0.005]	*	[0.003]	*	[0.069]	***	[0.005]	*	[0.0051]	*
AR(2)	[0.256]		[0.221]		[0.700]		[0.709]		[0.6985]		[0.219]		[0.301]		[0.1475]		[0.1520]		[0.1525]		[0.301]		[0.125]		[0.1475]		[0.7636]		[0.629]	
Sargan	126.37 [1.000]		126.93 [1.000]		108.05 [1.000]		106.17 [1.000]		109.19 [1.000]		115.98 [1.000]		119.74 [1.000]		104.85 [1.000]		97.496 [1.000]		97.339 [1.000]		126.75 [1.000]		126.98 [1.000]		104.85 [1.000]		113.02 [1.000]		112.01 [1.000]	

* Significant at 1 %, ** significant at 5 %. *** significant at 10 %, P-value inside brackets. Source: author's calculation based on heritage.org and the World Bank (2017).