THE EFFECT OF CORRUPTION ON FDI IN ARGENTINA: HAS CORRUPTION ACTED AS A NEGATIVE DETERMINANT DISCOURAGING FDI?

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ABSTRACT

Argentina is ranked as one of the most corrupt countries in South America, although it is also the fourth largest Foreign Direct Investment recipient. We aim to study the role of corruption in attracting FDI through an empirical analysis by exploiting a database in which two alternative measures of business climate are included: the Corruption Perceptions Index (CPI) and the Index of Economic Freedom (EFI). Our result provides evidence that the high level of corruption in Argentina does not influence its inward FDI negatively because FDI mostly concentrates on the exploitation of natural resources.

CONTENTS

1. INTRUDUCTION

Corruption, intending as an obstacle to business, is rampant around the world, affecting both the public and private sector, from businesses, political parties and public officials to police, media and judicial institutions. In 2013 alone, 1 out of 4 people worldwide (27%) reported having paid a bribe in the past 12 months (Hardoon & Finn, 2013).

Bribe paying, nepotism and lack of regulatory enforcement are some of the most obvious manifestations of corruption around the globe, decreasing the quality of life of individuals and increasing the costs of those doing business. Over half of the business executives surveyed in 2009 by Transparency International reported more than a 10% increase in their business costs due to the effects of corruption. This alarming increase in costs is part of the reason why senior executives have regularly declared corruption in the private sector as a greater problem for business operations than the judicial and infrastructure problems in a country (Zinnbauer & Dobson, 2009).

In view of these figures and studies we can remark that corruption is an important factor of the business climate of a country, which turns out to be a crucial determinant of Foreign Direct Investment. This is because good rules and regulations in foreign countries motivate multinationals to invest abroad (Mottaleb & Kalirajan, 2010).

In light of this, it is not a surprise that corruption has regularly been linked to deterring effects on inward Foreign Direct Investment, given the additional cost it supposes when doing business (Wei, 2000).

Given that Foreign Direct Investment (FDI) is an important factor contributing to the growth of economies (Mauro, 1995), corruption has been an issue of growing concern, with numerous studies analyzing the relationship and the effects that corruption has on FDI around the globe (Robertson & Watson, 2004).

One of the countries with important inflows of FDI and at the same time high levels of corruption is Argentina.

Argentina is currently ranked as the third most corrupt country in South America, according to the Corruption Perceptions Index (CPI) by Transparency International, although it is also the country with the fourth highest inward FDI stock in the region. Despite numerous contributions on the effects of Argentina's policy context and the influence these have had on inward FDI, no special focus has been given on the effects that corruption is having on FDI in this country. We aim to contribute to literature by

analyzing how corruption is affecting inward FDI in Argentina and if it is in effect a negative determinant for inward investment.

Using data from Argentina between 1995-2013, we aim to establish the effect that corruption has on inward FDI in the Argentine economy, and if its inward FDI is affected negatively by the increase of corruption, as recent studies suggest (Castro & Nunes, 2013; Wei, 2000).

The present paper is divided into 5 sections, which cover the theoretical background and analysis of current literature, the context of Argentina as our country of focus, the methodology used, our empirical analysis and finally our results.

The first section encompasses the theoretical background, defining FDI and its determinants, examining the recent literature related to the subject, and introducing a brief outline of what corruption is and the main hypotheses set forth by researchers regarding its effects on FDI. The second section provides a brief outline of the situation of Argentina in the international economic context and its relevance for this study. An explanation of the methodology and data being used is set forth in the third section while the fourth section analyzes the effects of corruption on FDI in Argentina. The final section sets forth our closing conclusions regarding the results of our empirical analysis.

Our study finds empirical evidence that corruption does not impact Argentina's FDI inflows negatively, contrary to the mainstream theory. This is in part due to the large inflows of FDI related to the extraction of natural resources in this country, which are not affected negatively by corruption due to the international scarcity of these resources.

2. FDI & CORRUPTION

Foreign Direct Investment (FDI) is defined by the IMF as an international investment made to obtain a lasting interest in a resident entity of an economy that differs from the economy of the investor. FDI takes place when an investor owns at least 10% of the foreign entity he is investing in (International Monetary Fund, 1993).

Markusen, Melvin, Kaempfer, & Maskus (1995) also describe FDI as "an investment in which the investor acquires a substantial controlling interest in a foreign firm or sets up a subsidiary in a foreign country. FDI involves ownership and/or control of a business enterprise abroad." (1995: 394)

Over the past decade, FDI inflows have experienced a sharp increase, with worldwide inflows of FDI stock rising an impressive 1,123.4% between 1990-2013, as reported by data from the United Nations (UNCTAD, 2015) (Figure 1).

Figure 1. World inward FDI stock
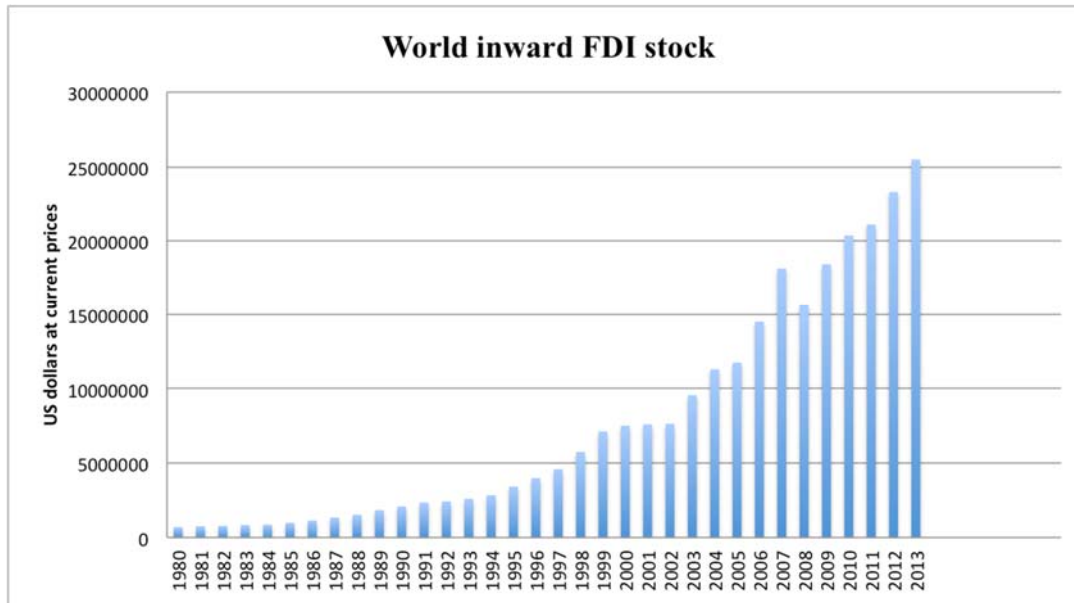
Source: UNCTAD

According to the United Nations and the OECD, worldwide FDI inflows had an 11% estimated increase in 2013, rising to approximately $1.46 trillion (UNCTAD & OECD Editors, 2014). This surge in FDI took place in the three main economic groupings, rising 6%, 12% and 45% in developing, developed, and transition economies respectively. (UNCTAD, 2014)

2.1. Determinants of FDI

In this section we focus on a series of determinants of FDI, organized in three groups. With FDI gaining importance and momentum, knowing which determinants are taken into account by investors when deciding whether or not to invest in a foreign country is crucial for any economy wishing to increase FDI inflows. Each of these groups of determinants may affect FDI to a larger or lesser extent according to the nature of the inward FDI that is taking place, whether it is vertical or horizontal.

It is important to note the difference between vertical and horizontal FDI when analyzing the determinants motivating foreign investment. Horizontal FDI takes place when a

company invests in a foreign firm that operates in the same industry to gain market share in the host country, and vertical FDI occurs when a multinational invests in firms related to the production process of its product, usually in order to decrease the cost of production and further export the goods they produce (Walsh & Yu, 2010).

Although investors may have different motivations that help them decide where to invest abroad depending on the type of investment they are undertaking, most firms prefer investing in countries with lower risk and uncertainty to make sure they get the expected returns.

Investors wishing to invest abroad tend to examine the business climate of a host country before engaging in FDI to know the level of uncertainty and risk therein, which includes the level of corruption. This is due to the fact that it is easier to gain profits in an economy with a business-friendly environment and low levels of corruption, reducing the risk and uncertainty of investment (Goudie & Stasavage, 1998).

Although many variables have been tested to find their relationship with FDI, not all have been found significant in affecting investment. In the following sections we detail the main determinants of FDI found significant in literature, what they represent and a brief rundown of how these variables of a country influence FDI. Through a study of Latin American countries, Sánchez-Martín, De Arce, & Escribano, (2014) identified three groups of variables as the main determinants for FDI inflows: Infrastructure, macroeconomic, and institutional variables (which includes the business climate).

2.1.1. Macroeconomic variables

Macroeconomic variables are those that indicate the economic trends of a country, such as growth, which can encourage investment when there is a growing and expanding market in a foreign country. The main macroeconomic variables studied that have found empirical evidence affecting both vertical and horizontal FDI include GDP, GDP per capita, GDP growth and openness to trade.

Mottaleb & Kalirajan, (2010) as well as Yu & Walsh, (2010) obtained economically sound results that pointed toward an increase in FDI for countries with a higher degree of trade openness, growth and the market size of their economy (measured by its GDP or GDP per capita), since expanding markets are more attractive and profitable for investors. Mottaleb & Kalirajan, (2010) proved this positive effect of macroeconomic variables on

FDI through a panel data study of 68 developing countries in Latin America, Asia and Africa for the period between 2005-2007.

Market size, understood as the potential market of an economy, is typically measured by its GDP or GDP per capita while growth potential is most commonly measured by a country's GDP growth. Most studies up to date agree that a country's market size and growth potential have a positive effect on FDI inflows, given that a larger market size and increased demand of a country motivates FDI, due to the higher profit potential and opportunities for scale economies in the host country. (Mathur & Singh, 2013; Mottaleb & Kalirajan, 2010; Walsh & Yu, 2010).

Trade openness, intending as an advocate for growth, efficiency and lower prices, has commonly been measured in studies as the sum of inflows and outflows of a country. Although there are different outcomes of these reports, typically more trade openness results in more FDI, especially concerning vertical FDI and when investors are taking advantage of low wages for production, as more openness makes it easier for an investor to import materials needed for production in a foreign country, as well as export these products from the host country to sell them abroad (Mottaleb & Kalirajan, 2010; Nunnenkamp & Spatz, 2004; Walsh & Yu, 2010). Thus said, openness to trade is not as important for horizontal FDI when the investors' aim is to serve the local market. In an empirical analysis taking data from a large number of developing countries between 1991-2000, Nunnenkamp & Spatz, (2004) found that trade openness is an essential factor for effective FDI inflows; especially for efficient FDI that improves the growth of a country.

2.1.2. Infrastructure

Good quality of a nation's infrastructure, such as telecommunications, roads, ports and water supply, has been found to increase FDI inflows to recipient countries through the reduction of operating and transport costs (Mottaleb & Kalirajan, 2010; Walsh & Yu, 2010).

Walsh & Yu (2010) proved that a better infrastructure attracts more FDI due to lower associated business costs, by finding a significant and positive impact of infrastructure on FDI when studying data from 1985-2008 for 27 countries (including Argentina) using the Generalized Method of Moments dynamic.

2.1.3. Institutional and development variables

The main development and institutional variables that affect FDI inflows include a country's business climate, which influences investors business costs, (Egger & Winner, 2005; Mottaleb & Kalirajan, 2010) and political stability (Walsh & Yu, 2010).

Political stability is seen as a determinant to attract FDI inflows, as it is common to view political instability as a risk for investment, meaning that countries with more political stability are likely to receive higher FDI inflows (Walsh & Yu, 2010).

Business climate, intended as the economic environment (including rules and regulations) in which to do business, is one of the main institutional variables of a country and it is frequently analyzed by studying the economic stability, quality of institutions, and corruption level of a host economy. Through a panel data study of 68 developing countries between 2005-2007, Mottaleb & Kalirajan, (2010) concluded that countries with a better business environment are likely to attract more FDI inflows (2010).

When the quality of institutions is good in a host economy, it leads to growth, which in turn encourages FDI, while a country with bad institutions usually enjoys less FDI due to the higher cost of doing business (Blanco, 2012; Castro & Nunes, 2013; Nunnenkamp & Spatz, 2004; Walsh & Yu, 2010).

Corruption, although hard to measure accurately, is a component of a country's business climate that has aroused a lot of attention within the past two decades, with studies confirming over and over again that this variable is statistically significant and has important effects on FDI (Al-Sadig, 2009; Blanco, 2012; Castro & Nunes, 2013; Egger & Winner, 2005; Mathur & Singh, 2013; Mauro, 1995; Mottaleb & Kalirajan, 2010; Okada & Samreth, 2010; Robertson & Watson, 2004; Wei, 2000). There are two main lines of results in this field, which we will discuss in the next subsection: those that endorse the negative relationship and those that endorse the positive relationship between corruption and FDI. Most of these studies conclude that corruption has a negative impact on inward FDI due to the uncertainty and risk it entails for foreign investors.

As a brief summary of the previous discussion, Figure 2 reflects the main FDI determinants described above, indicating in which way they affect FDI, as either a positive (+) or negative (-) determinant, according to recent studies.

Figure 2. FDI determinants
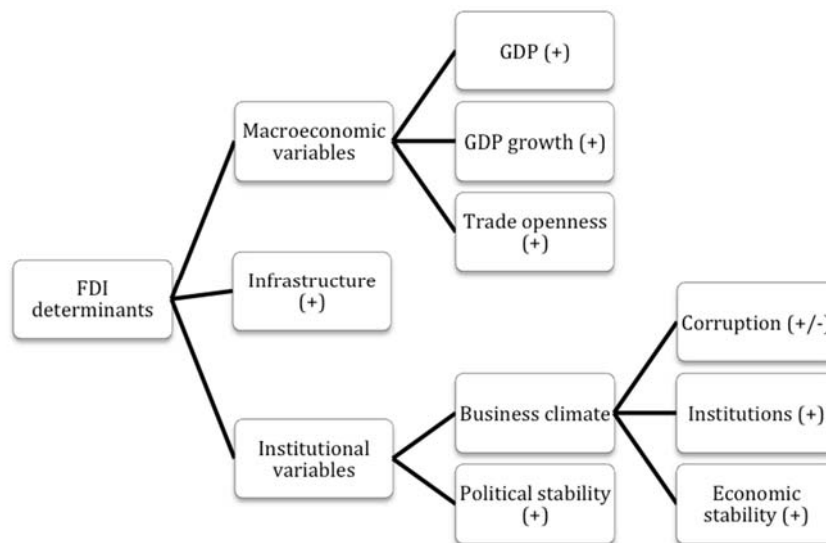
Source: Own compilation. Variables that affect FDI inflows positively (+) and negatively (-)

Since corruption is the topic of our paper and given the importance that this variable has for investors, the next section is devoted exclusively to analyzing corruption in depth as well as expanding on what researchers have established thus far.

2.2. Corruption

Corruption is a country risk factor that adds uncertainty to new endeavors because of the additional and sometimes hidden costs it entails.

Transparency International has defined corruption as "the misuse of entrusted power for private gain" (2003:xix) summing up perfectly the broad spectrum that this variable encompasses.

Results from the 2013 Global Corruption Barometer, a Transparency International survey of over 114,000 people in 107 countries around the world, revealed that more than half of respondents (53%) believe that corruption has increased in the past 2 years, while only 18% think it decreased. To top that off, an alarming 27% of respondents admit having paid a bribe while interacting with public services and institutions within the past 12 months (Hardoon & Finn, 2013).

When it comes to the rating of perceived corruption around the world, over two thirds of countries were ranked above 50 in a scale from 0-100 (with 100 being the most corrupt), according to the Corruption Perception Index 2014 by Transparency International. This proves that not even the rich countries are immune to the effects of corruption (Castro &

Nunes, 2013).

The scope of the effects of corruption should not be underestimated. Corruption not only harms individuals by unfair wealth distribution (Goudie & Stasavage, 1998), it can also decrease the amount of investment in a country (Mauro, 1995; Wei, 2000), stunt economic growth (Mauro, 1995), generate political instability in a nation (Wei, 2000), as well as affect the quality of the infrastructure therein (Castro & Nunes, 2013).

Much has been written over the past 20 years regarding the effects of corruption on FDI inflows in a host country, as the result of a myriad of studies, hypotheses, and conclusions that have varied considerably contingent on the study in question (Al-Sadig, 2009; Robertson & Watson, 2004).

Two main hypotheses are currently held by researchers when explaining the effects of corruption on FDI, arguing that corruption can be either a "grabbing hand" deterring FDI, and seen as an additional cost to enter the market of a host country, or act as a "helping hand" spurring it forward (Egger & Winner, 2005).

The first and most widespread hypothesis is that corruption influences FDI negatively in a host country, acting as a "grabbing hand". Numerous studies have provided empirical evidence that FDI inflows to a nation are indeed impacted negatively by corruption levels therein, given that investors may view corruption as an additional risk factor, adding to the cost of doing business in the foreign country (Al-Sadig, 2009; Blanco, 2012; Castro & Nunes, 2013; Mathur & Singh, 2013; Mauro, 1995; Robertson & Watson, 2004; Wei, 2000). For example, Mathur & Singh, (2013) proved this hypothesis through a panel study for the period between 1980-2000 using data from 29 host countries, including Argentina. Their empirical evidence concluded that FDI was lower in countries with higher levels of corruption perception.

The second branch of study argues the hypothesis that FDI increases with the amount of corruption in a host country, acting as a "helping hand" for investment, facilitating the process of government procedures and cutting through red tape for foreign investors, thus triggering FDI (Egger & Winner, 2005; Okada & Samreth, 2010). Using a sample of 73 countries for the years 1995-1999, Egger & Winner, (2005) revealed through a panel data study that FDI increases with the level of corruption, both in the short and long term.

The conflicting above-mentioned theories are not the only ones regarding corruption and FDI, as some researchers claim that corruption has decreased in significance when it comes to explaining FDI in general (Egger & Winner, 2006). Al-Sadig, (2009) also supports the hypothesis that the negative effects of corruption on FDI inflows decrease

when there is good institutional quality that penalizes illegal activities in the host country, arguing that institutions are a variable of more importance than corruption for investing firms.

Under this perspective, we find it interesting to deal with the issue of identifying the relationship between FDI and corruption in Argentina, since Argentina has one of the highest levels of corruption in South America and despite that, it is also one of the largest FDI recipients of the region.

3. FDI AND THE CASE OF ARGENTINA

In 2014, Transparency International ranked Argentina as the third most corrupt country in South America, only ranking better than Ecuador and Venezuela. In the international context Argentina scored 107th place out of 175 countries when it comes to lack of corruption. Ecuador and Venezuela ranked 110th and 161st respectively (Transparency International, 2014a).

According to the Global Corruption Barometer, individuals in Argentina view political parties as the most corrupt institution, with 78% of respondents believing them to be corrupt. Public officials and civil servants come in a close second, with 77% of respondents blaming them of corruption. The parliament, police and judiciary are also perceived as very corrupt in this country, with 72%, 70% and 65% of respondents claiming corruption in these institutions respectively (Transparency International, 2013). Although the perception of corruption in Argentina is worse than the world average, this country is still one of the main recipients of FDI flows in South America, experiencing a year over year increase and ranking fourth place after Brazil, Chile and Colombia, receiving 8% of the total inward FDI stock in this region (UNCTAD, 2015).

Figure 3. Inward FDI stock in Argentina
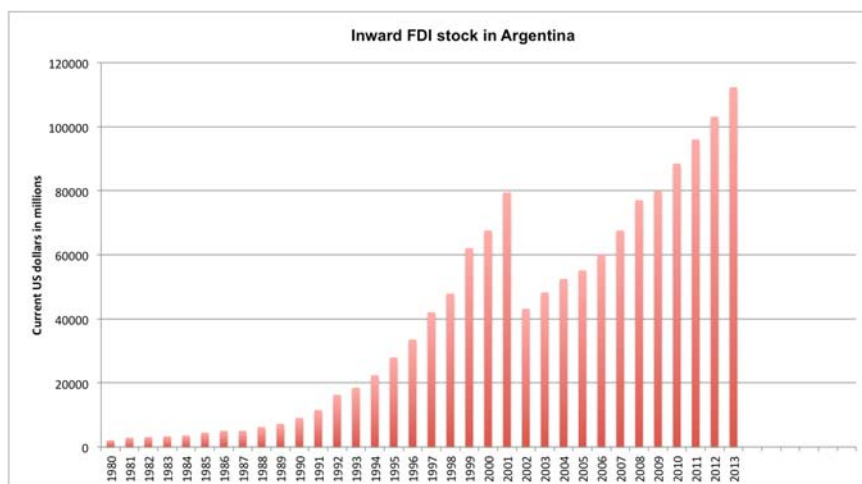
As seen in Figure 3, Argentina experienced a severe shock in FDI stock in December 2001, due to its debt crisis, leading to a sharp decrease of inward FDI in 2002 as well as other catastrophic results in every aspect of the Argentine economy (Caballero, 2011; Nofal, Nahon, & Fernandez, 2010).

However, an impressive recovery took place between 2004 and 2008, not only regarding FDI, but also in terms of economic growth, competitiveness and demand, allowing Argentina to reach the previous level if inward FDI. Despite the economic crisis that hit the world in 2009, inward FDI stock to Argentina has continued to increase, placing it among the top recipients of FDI in South America (Nofal et al., 2010) (Figure 4).

Figure 4. Inward FDI stock in South America 2013 by country
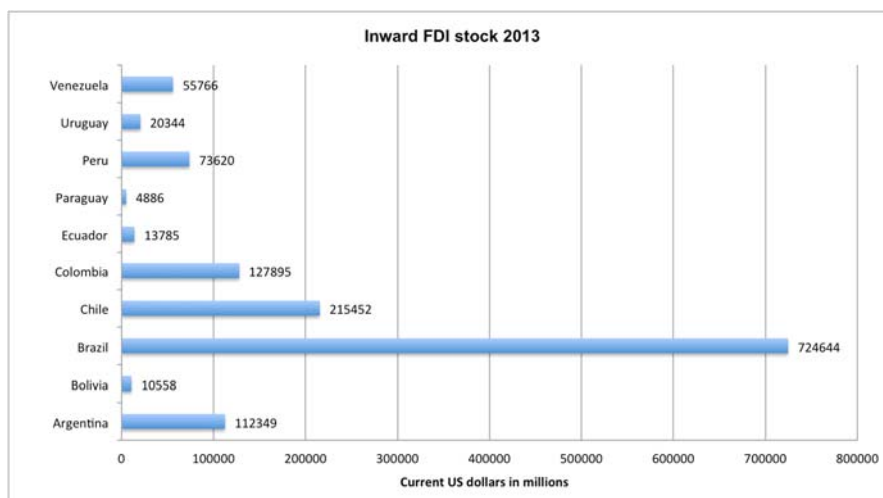
This increase in FDI inflows which placed Argentina among the top FDI recipients in the region is also connected to the market size of the country: in 2013 Argentina's market size (measured by GDP per capita) was the third largest in South America, with only a small difference with respect to the ones of Uruguay and Chile, which held the leading position in the region, as observed in Figure 5.

Figure 5. GDP per capita in South America 2013
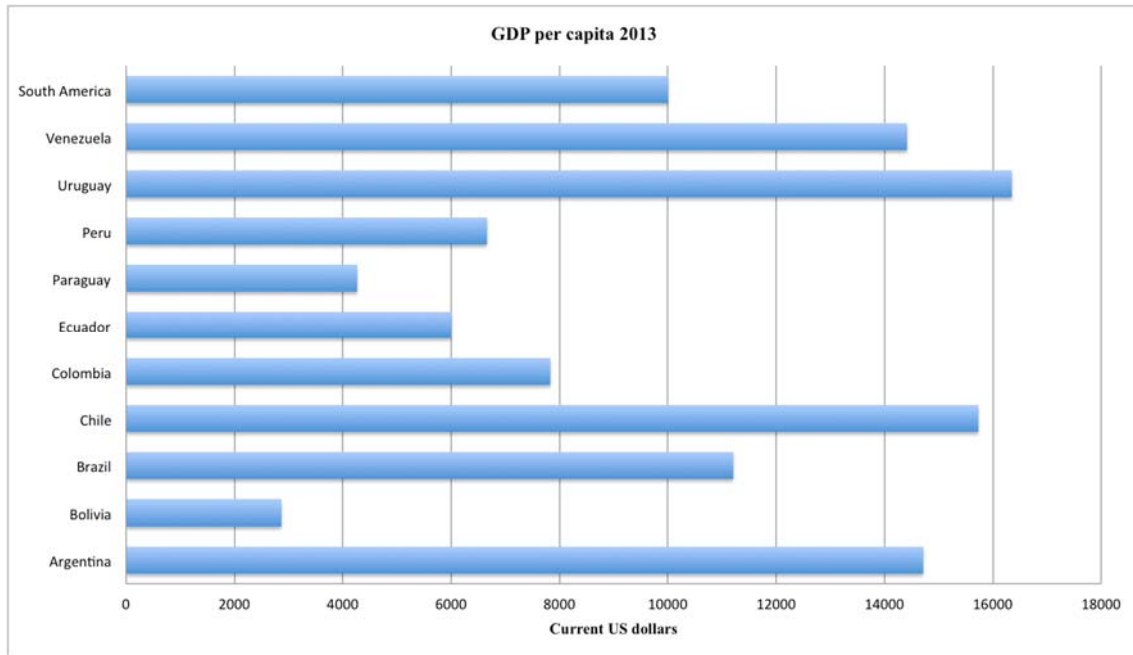
Source: World Bank

As for FDI composition by sector, the oil and gas sectors in Argentina have been especially relevant in hosting FDI (Chudnovsky & López, 2008), by accounting for over 22% of the total inward FDI stock in 2008, as illustrated in Figure 6, and in accordance to Argentina's Central Bank (Nofal et al., 2010).

Investment in these sectors generally corresponds to vertical FDI, meaning that multinationals invest to extract the natural resources without the intention of selling them to the host country market.

Figure 6. Argentina's inward FDI stock by sectors, 2008
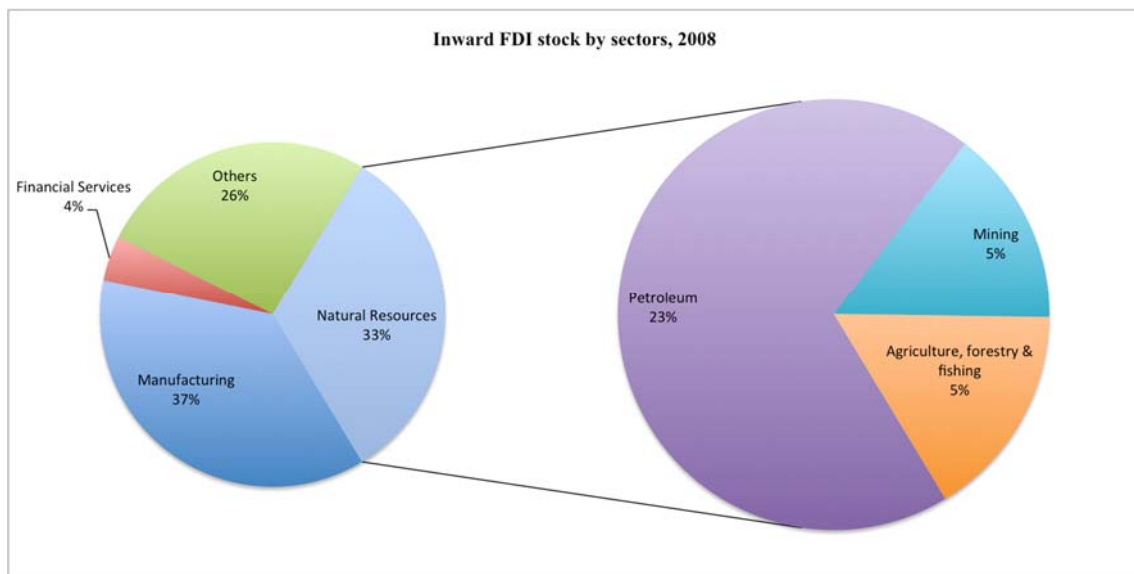
Source: Own compilation, using data from Argentina's Central Bank, (2015)

In the next section we proceed with a breakdown of the methodology and variables used for this empirical analysis to understand how corruption affects investment in Argentina.

4. METHODOLOGY: EMPIRICAL ANALYSIS

To analyze the extent to which the business climate in Argentina impacts FDI entry we focus on selected variables, such as the Corruption Perception Index (CPI) and the Index of Economic Freedom (EFI) as a measure of this country's business climate.

The present report intends to shed light on the impact of corruption on inward FDI in Argentina through a linear regression model, by analyzing relevant data such as corruption, FDI, GDP and GDP per capita. GDP and GDP per capita were chosen due to the numerous studies that conclude that these variables have a significant effect on FDI (Walsh & Yu, 2010). We study the time-series between 1995-2013 for which we have availability of data regarding corruption in Argentina.

4.1. Data and variables

We build and original database by merging Argentina's FDI inflows, GDP and two separate corruption indices to study the effects of corruption on FDI.

Data on Argentina's inward FDI stock and inward FDI stock per capita have been collected from the United Nations Conference on Trade And Development (UNCTAD) for the years 1994-2013. In the following sections we will refer to "inward FDI stock" simply as FDI. All FDI data is in US dollars ($).

Argentina's GDP and GDP per capita data were retrieved from the World Bank (2015a, 2015b) for the period between 1993-2013. GDP values are also expressed in US dollars ($).

The level of corruption in Argentina is observed through two separate indices, the Corruption Perceptions Index (hereafter CPI) and the Index of Economic Freedom (henceforth EFI).

The CPI is a compilation of evaluations and surveys from dependable sources on the perceived corruption of the private sector, gathered by Transparency International. Transparency International states that "[t]he CPI is the most widely used indicator of corruption worldwide", adding weight to the choice of this variable (Transparency International, 2014d). Although this index uses subjective data and it is based merely on perceptions, its validity is grounded on the extensive use of this index as a source of information for analysts, academics and investors around the world (Arndt & Oman, 2006; Davis & Ruhe, 2003; June, Chowdhury, Heller, & Werve, 2008).

The original CPI varies throughout the years due to the use of different methodologies, previously being scaled from 0 to 10 between 1995-2011 and currently scaled from 0 to 100 since 2012, with the value 0 corresponding to "highly corrupt" in both cases. To standardize the scale we multiplied the CPI corresponding to the years 1995-2011 by 10 to make it comparable to the values we observe between 2012-2014.

The EFI consists of the weighed average of the score of 10 economic freedom measurements (which will be detailed later) from third-party sources, calculated by the Heritage Foundation. This index incorporates subjective as well as objective elements in its calculation and is scaled from 0 (repressed) to 100 (free), covering the years 1995-2015. Its reliability is based on the fact that the Heritage Foundation public policy research institute is "the most broadly supported think tank in America" (Heritage Foundation, 2015)

Since the original CPI and EFI indices are scaled from 0 - 100 with 100 meaning "very clean" and "free" respectively, we rescaled them in this way: '100 - original index' to make the data more intuitive having the same proportionality, with a higher index signifying higher levels of corruption and less economic freedom.

A dummy variable (henceforth DUM) is added to the model to control for the debt crisis that took place in Argentina in 2002. This variable takes the value 1 in 2002, and shares the value 0 on all other years between 1993-2001 and 2003-2013.

4.2. Corruption indices

Before beginning our analysis using the above-mentioned model, we must understand the difference between both of the indices that are used to measure corruption in this study (CPI and EFI), as they both represent different ways of perceiving the business climate and the corruption reality in Argentina.

To understand where these differences arise we must first take a look at what each index captures when evaluating a country to know how to best interpret the obtained results.

4.2.1. CPI

The CPI, compiled by Transparency International, measures the level of perceived corruption of the public sector by combining data from a selection of reliable sources, such as calculations and surveys performed by credible institutions for individual countries. These surveys are in turn answered by experts, analysts and business people who are knowledgeable about the country in question, allowing us to receive sound insights on the perceptions of corruption in each nation.

These surveys cover topics related to administrative and political corruption with questions that range from the extent of bribes to public officials and embezzlement of public funds to the punishment for corruption, and the effectiveness of anti-corruption efforts (Transparency International, 2011, 2014a, 2014c, 2014e). The amount and sources of these surveys vary from year to year, with 11 institutions providing 12 data sources for the CPI 2014 report (Transparency International, 2014c).

4.2.2. EFI

The EFI, compiled by the Heritage Foundation, measures a total of 10 economic-freedom indicators and rates countries by averaging these 10 scores equally, with each of them having the same weight toward the final index score. This means that apart from measuring corruption, the EFI also covers 9 other aspects of country freedom: property

rights, fiscal freedom, government spending, business freedom, labor freedom, monetary freedom, trade freedom, financial freedom and investment freedom. These indicators of economic freedom measure a broader spectrum of a country's business climate than the CPI, which focuses exclusively on corruption.

The scope of this index is to shed light on the categories of factors composing the business climate: rule of law, limited government, regulatory efficiency and open markets.

The score of each of the 10 economic factors that affect freedom are calculated using quantitative and qualitative data from third party sources, as well as experimental surveys instead of only being based on perceptions.

4.2.3. Differences between the two indices

The strategy to measure corruption with two indices (CPI and EFI) may potentially result in different analyses outcomes when using one index rather than the other, due to the disparity between the calculation methodologies used to compute each index.

In the case of defining the determinants of FDI, by representing corruption with the EFI we introduce a "noise" in the estimation, because this index encompasses several other factors of the business climate beyond corruption.

As the name indicates, the CPI is by far more precise in terms of perceived corruption than the EFI, because it focuses only on this determinant.

Given the difficulty to measure corruption effectively due to its innate intangibility, using perception data to calculate the magnitude of corruption is many times more reliable (because of providing detectible insight solely regarding corruption) than using more objective data, such as the amount of prosecutions. Using less perceptional data "reflect[s] less on the prevalence of corruption in a country and more on other factors, such as freedom of the press or the efficiency of the judicial system" (Transparency International, 2011). This was summed up nicely in Robertson & Watson, (2004) "Interestingly, Singapore's very high per capita conviction rate of bribery is misleading when compared to lower rates in developing countries in Africa and Latin America" (2004: 394). Other authors, such as Arndt & Oman, 2006 recommend using perception-based and fact-based indicators in conjunction with each other (Arndt & Oman, 2006).

The reasoning behind the election of both of the above-mentioned indices was motivated with the objective of adding robustness to the conclusions set forth in the following models by observing the results of our analyses with different variables, as well as

comparing the different results obtained when using a variable that exclusively measures corruption and one that does not.

The subsequent sections include results obtained by using both corruption variables, although with more importance placed on the results obtained by the CPI.

5. ECONOMETRIC RESULTS

Table 1 depicts the descriptive statistics of our variables of choice. As we can remark, the CPI and EFI vary considerably, with a huge difference in each of the statistics.

When observing the minimum and maximum values of each of our corruption variables (CPI and EFI) the lower values used by the EFI to evaluate Argentina are seen clearly, with the values of this index ranging from 25.3-55.9, while the values for the CPI are between 47.6-75. This big difference stems from certain economic measurements of freedom used in the calculation of the EFI, such as trade freedom and fiscal freedom that Argentina is performing well in, and which has decreased the overall EFI despite Argentina's high levels of corruption (Heritage Foundation, 2013).

Another difference we can remark between both indices is that much higher scores and a lower standard deviation correspond to the CPI, implying the indicator is quite stable over time. This confirms the index disparity we mentioned above, as well as the fact that the CPI only uses data related to corruption.

The larger standard deviation observed for GDP per capita compared to FDI per capita indicates that GDP per capita experienced larger fluctuation throughout time. However, its lower median value compared to its mean establishes that most GDP per capita values were lower than average within this 1995-2013 period.

Table 1. Descriptive Statistics

Variable	Observations	Mean	Median	Minimum	Maximum	Std. Dev.
EFI	21	41.719	46.000	25.300	55.900	10.203
CPI	20	68.570	70.500	47.600	75.000	5.8547
FDI	20	6.3350e+10	6.1171e+10	2.2428e+10	1.1235e+11	2.4895e+10
GDP	21	3.1917e+11	2.8352e+11	1.0204e+11	6.0989e+11	1.3970e+11
GDPpercapita	21	8324.9	7717.5	2711.9	14715.0	3221.8
FDIpercapita	20	1638.3	1622.9	651.99	2710.7	571.07

Source: Own compilation

Our empirical analysis is implemented by means of the Ordinary Least Squares (OLS) model, using a time-series dataset to analyze the period between 1995-2013 for which we have availability of data regarding corruption in Argentina.

Our dependent variables will be FDI and FDI per capita alternatively. The absolute values inform of the country-size effect on FDI, while the per capita values inform about the true attractiveness of a country regardless of its size dimensions.

Given the concern of endogeneity between GDP and FDI when analyzing both of these variables at the same moment in time, due to the impact of FDI on the GDP of a country, and the importance of a country's GDP as a determinant for incoming FDI, (Mauro, 1995) the independent variables have been lagged to control for this endogeneity problem.

This lag has also been applied to the corruption variables (EFI and CPI), as FDI decisions take time until completion and are analyzed over a certain span of time before coming into effect, which means that past corruption levels might be a factor of concern for current FDI decisions.

Additionally, as a result of the Argentine debt crisis that started on December 2001 and greatly impacted the country during 2002, a dummy variable has been added to the model to account for this crisis and try to correct the noise that this outlier observation might cause in the model.

Equation (I) is the first proposed regression model, which will be performed twice, once with each of our corruption variables – CPI and EFI:

$$FDIpercapita_{it} = \text{ß}_0 + \text{ß}_1 GDPpercapita_{(i.t-1)} + \text{ß}_2 CPI_{(i.t-1)} + \text{ß}_3 EFI_{(i.t-1)} + \text{ß}_4 DUM + \varepsilon_{(i.t-1)} \quad \text{(I)}$$

As we can remark from the results of this OLS regression (Table 2), the positive coefficients for CPI and EFI are contrary to the widespread hypothesis that corruption decreases the amount of FDI in Argentina. The positive coefficient for CPI implies that when increasing the score of this index by one, FDI per capita in Argentina will increase by $29.23. The positive coefficient for GDP confirms that FDI increases when GDP rises, while the negative coefficient for DUM supports that the debt crisis affected FDI negatively by increasing the risk of doing business in Argentina during 2002.

Table 2. Estimation Regression I: OLS

Dep. variable: FDI per capita

Variable	(1) Coefficient	(1) Std. error	(2) Coefficient	(2) Std. error
GDPpercapita_1	0.136029***	0.0206556	0.106664***	0.0224925
CPI_1	29.2300**	10.5647	-	-
EFI_1	-	-	18.3845**	7.65223
DUM	-381.125	270.341	-369.693	284.764
Const.	-1352.76	783.108	170.168	306.58
Obs.	18		18	
R-squared	0.785279		0.764830	
Durbin-Watson	1.182313		0.836327	
P-value (F-stat)	0.00006		0.000111	

Statistically significant at 1% (***), at 5% (**) or at 10% (*).

The chosen independent variables account for 78% and 76% of the variation of FDI per capita, in the CPI and EFI model respectively.

Given that the results of (1) and (2) have a p-value below 0.01 for the GDP per capita and below 0.05 for the CPI and EFI, we can demonstrate statistical significance given 99% and 95% confidence levels respectively. This means that it is highly unlikely that these results are the outcome of spurious correlation.

However, the Durbin-Watson (DW) results are very low, at 1.18 (1) and 0.83 (2), indicating that this sample might contain positive autocorrelation of residuals. Consequently we need to work on the robustness of these results.

Despite the lack of significance of Equation I's results due to the low DW, we can notice from a glance that the model using the CPI as a measure of corruption explains the variation in FDI per capita better than the model using the EFI.

To verify the previous analysis, a second model is proposed, in which FDI and GDP are both in absolute terms. Equation II is specified by the following regression:

$$FDI_{it} = \text{ß}_0 + \text{ß}_1 GDP_{(i.t-1)} + \text{ß}_2 CPI_{(i.t-1)} + \text{ß}_3 EFI_{(i.t-1)} + \text{ß}_4 DUM + \varepsilon_{(i.t-1)} \quad \text{(II)}$$

Table 3. Estimation Regression II: OLS

Dep. variable: FDI in absolute values (current US dollars)

Variable	(3) Coefficient	(3) Std. error	(4) Coefficient	(4) Std. error
GDP_1	0.146770***	0.0186408	0.115490***	0.0209245
CPI_1	1.15381e+09**	4.04349e+08	-	-
EFI_1	-	-	8.07633e+08**	3.01910e+08
DUM	-1.45894e+10	1.04545e+10	-1.37514e+10	1.07681e+10
Const.	-5.66985e+10*	2.94047e+10	5.06333e+08	1.12672e+10
Obs.	18		18	
R-squared	0.836419		0.828792	
Durbin-Watson	1.200634		0.872593	
P-value (F-stat)	0.00000912		0.000012	

Statistically significant at 1% (***), at 5% (**) or at 10% (*).

The results obtained from Equation II in Table 3 corroborate what we found in Equation I. The only difference between these models is a slight increase of the coefficient of determination and DW in (3) and (4). This model continues to display CPI's stronger effect on FDI compared to EFI.

5.1. Double-lagged model

Despite having lagged the independent variables and adding a dummy to control for the 2002 crisis in both of the previous models, the DW remains very low in both cases, which could be an indicator of an autocorrelation problem.

To control for this autocorrelation issue that appears to affect the previous models, Equation III lags the independent variables for a second period, and is represented by the following regression:

$$FDIpercapita_{it} = ß_0 + ß_1 GDPpercapita_{(i.t-2)} + ß_2 CPI_{(i.t-2)} + ß_3 EFI_{(i.t-2)} + ß_4 DUM + \varepsilon_{(i.t-2)} \text{ (III)}$$

Table 4. Estimation Regression III: OLS

Dep. variable: FDI per capita

Variable	(5) Coefficient	(5) Std. error	(6) Coefficient	(6) Std. error
GDPpercapita_2	0.138789***	0.0196491	0.114609***	0.0227441
CPI_2	34.5951***	8.66471	-	-
EFI_2	-	-	21.4391***	7.03389
DUM	-528.508**	220.966	-478.319*	256.667
Const.	-1642.37**	639.221	99.1740	300.543
Obs.	17		17	
R-squared	0.842659		0.795711	
Durbin-Watson	1.84885		1.470216	
P-value (F-stat)	0.000017		0.000091	

Statistically significant at 1% (***), at 5% (**) or at 10% (*).

The results obtained from Equation III in Table 4 confirm a significant reduction of autocorrelation in both cases with DW improving drastically from 1.18 (1) to 1.85 (5) for the CPI model, giving it more credibility.

The necessary confidence level has also increased above 99% for our COR variables, while the one for DUM also rose to over 95%, increasing their significance.

Additionally, this model provides an improvement in R^2 from what we obtained in the previous models; with each increasing coefficient of determination amounting to a more accurate description of the influential factors regarding FDI, meaning that this model depicts reality more accurately.

These outcomes are more robust and statistically significant, providing good reasons to believe that corruption does not affect FDI negatively, thus corroborating our previous explanation.

To build upon the augmented Equation III, a fourth model is proposed (Equation IV):

$$FDI_{it} = \beta_0 + \beta_1 GDP_{(i.t-2)} + \beta_2 CPI_{(i.t-2)} + \beta_3 EFI_{(i.t-2)} + \beta_4 DUM + \varepsilon_{(i.t-2)} \text{ (IV)}$$

Table 5. Estimation Regression IV: OLS

Dep. variable: FDI in absolute values (current US dollars)				
	(7)		(8)	
Variable	Coefficient	Std. error	Coefficient	Std. error
GDP_2	0.151534***	0.0189864	0.124232***	0.0215928
CPI_2	1.37791e+09***	3.48813e+08	-	-
EFI_2	-	-	9.49854e+08***	2.78210e+08
DUM	-2.05640e+10**	8.95345e+09	-1.79453e+10*	9.83382e+09
Const.	-6.89202e+10**	2.51620e+10	-2.71129e+09	1.09756e+10
Obs.□	17		17	
R-squared	0.869646		0.848773	
Durbin-Watson	1.794634		1.525753	
P-value (F-stat)	0.00000507		0.000013	
Statistically significant at 1% (***), at 5% (**) or at 10% (*).				

As expected, Equation IV (depicted in Table 5) corroborates the results obtained in Equation III. However, Equation III (5), which takes CPI as our corruption index and uses per capita values, is chosen to explain our results, given that it is the model that provides the most sound outcome. It is also the model that has best managed to minimize the effects of autocorrelation. This indicates that size effects do not play such an important role in the country and that Argentina's attractiveness, as a recipient of FDI, is genuine.

The broader scope of data used to calculate the EFI compared to the CPI, which is simply comprised by corruption perceptions, makes the estimations with the EFI model less explanatory compared with the CPI model, as we can remark when comparing (5) and (6) from Equation III.

From what we observed in Table 4 (5), our CPI model using per capita data, 84% of the variation of FDI can be explained with our model, which includes the perceived corruption in Argentina. This adds robustness to our previous result due to the positive significant effects of corruption on FDI that have resulted from this study.

6. CONCLUSION

The purpose of this research was to study the effects that the level of corruption in Argentina have on inward FDI, and analyze if they have any significance explaining FDI in this country within the past 20 years.

The results of this study have emphasized that perceived corruption in Argentina does not deter FDI, differing from what ample literature on the subject suggests.

One of the potential reasons that could be put forward is that in Argentina (despite the high levels of perceived corruption), the positive and statistically significant coefficient of corruption might be due to the type and scope of FDI that has been predominant in this country, with multinationals investing in sectors to exploit the accessibility to the natural resources (UNCTAD, 2012).

This corresponds to vertical FDI, with firms entering the market to export the oil and minerals extracted. Given the limited availability of these resources, many firms are actually willing to make under-the-table payments to be allowed to operate in the extraction of goods in this primary sector given the large expected profits (Bjorvatn & Søreide, 2013).

To highlight the conclusions of this study, firstly, our analysis has provided ground to believe that perceived corruption does not affect FDI negatively in Argentina, despite multiple studies on the negative effects of corruption on investment. Secondly, the EFI has not proved statistically significant for this analysis, given that some of the economic-freedom factors exploited to calculate the EFI might not be relevant to Argentina's particular situation when dealing with corruption and its effect on FDI.

There are, however, some limitations in this study that should not be overlooked. Firstly, the sample size is very small, given the availability of the data used to measure corruption. Another limitation is the fact that the original CPI methodology changed between 2011 and 2012, which could cause some inconsistency when comparing the CPI scores from before and after this period, given that according to Transparency International it was not possible to compare scores over time before 2012 (Transparency International, 2014b).

There is a lot of potential for further studies on this topic, which could include cross-country analysis of bilateral inflows of FDI to Argentina from investing countries and an analysis of how corruption influences FDI inflows to Argentina by sectors or industries to find out which ones are affected most by the level of corruption throughout time.

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