THE EFFECT OF HOME COUNTRY AND HOST COUNTRY CORRUPTION ON FOREIGN DIRECT INVESTMENT

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Abstract

In this paper we analyze the effect of home and host country corruption on FDI. By using FDI outflows from a sample of East European transition economies that had virtually no outward FDI before 1995, we observe FDI flows based mainly only current investment decisions and less affected by the inertia of past investment decisions. Our model also separates the effects of corruption into those on FDI location decisions and those on FDI size. We find a linear and negative relationship between host country corruption and the likelihood of MNCs locating in that country. The relationship between home country corruption and FDI is non-linear, with both high and low levels of corruption in the home country reducing the probability of outward FDI flows. If FDI is undertaken in a given host country, the volume of FDI is not affected by host-country corruption.

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Introduction

The literature on the effect of corruption on foreign direct investment (FDI) by multinational corporations (MNCs) is both extensive and noteworthy for the lack of agreement on whether corruption influences FDI. In part, this is because there is little uniformity across studies in terms of: the reasons why FDI should be affected by corruption, the countries and times employed in estimating the effects of corruption, the econometric methods used to obtain these estimates, and the control variables used to explain FDI.

One important problem for empirical studies analyzing FDI is that most of the data of FDI flows reflect not only current decisions about home-country firms establishing new affiliates in host countries, but also a large volume of reinvested profits that are driven by past investment decisions not be related to the current drivers of FDI. As a result, data on current FDI flows from countries that have built up large stocks of FDI overseas in the past may not reflect current decisions on entry into new host countries. Thus, inferences about the relation between these FDI flows and corruption may be misleading. In this paper, we analyze the effects of corruption on FDI using FDI flows that mainly reflect current investment decisions by using as the home countries a sample of East European transition economies whose FDI outflows are mainly investment decisions related to new entry into foreign host countries because these home countries had virtually no outward FDI before 1995.

A second contribution is that we are able to disentangle the effects of corruption on two types of investment decisions: the FDI location decision, where the MNC makes a choice about whether or not to invest in a country; and the FDI volume decision, where the MNC decides how much to invest, possibly by choosing among possible modes of entry.

The earliest studies of the effect of corruption on FDI focussed on host-country corruption levels because host-country corruption was viewed as an additional cost of doing business in that country for foreign investors.[1] While a number of studies did find a negative effect of host-country corruption on FDI inflows, others failed to find a significant negative effect. Authors of studies who failed to find a significant negative coefficient for the

"corruption" variable attributed this to the fact that, under certain circumstances, for example in highly regulated economies, bribes could allow the MNC to circumvent burdensome regulations and bureaucratic obstacles at relatively little expense and thus function more efficiently. This, of course, is an application of the more general view that corruption may "grease the wheels" of business.

A second stream of literature seeks a relationship between home and host-country corruption. This approach builds on Dunning's (1998) thesis that the MNC's location may, in itself, be a firm-specific advantage in that the MNC's adaptation to its home country institutional environment and level of corruption endows it with advantages that can be exploited in foreign countries through FDI. Luo (2006) and Zahir and Zahir (2006) use Dunning's insight to explain why differences in home and host country corruption can influence FDI flows.

Empirical evidence for the interaction of home and host-country levels of corruption is mixed. Studies by Buckley *et al*. (2007) and Morck *et al.* (2008) find that China's outward FDI is slanted toward host countries that are lacking in strong market institutions and that have a high level of state involvement in the economy, characteristics that may be symptomatic of corruption (Rose-Ackerman, 1999). Since most country rankings of corruption mark China as relatively corrupt, this pattern of investment is taken as evidence that Chinese MNCs are able function effectively in similar host-country environments. On the other hand, Delios *et al.* (2005), find that the level of host-country corruption does not influence Japanese FDI to OECD countries. The use of only a single home country runs a high risk of confounding the effects of home-country corruption with other idiosyncratic home-country drivers of outward FDI. To overcome this, Cuervo-Cazurra and Genc (2008) analyze MNCs from developing countries and find that they are disproportionately investing in so-called "least developed countries" where economic institutions and governance are less well established.

Another strand of the literature seeks to estimate the effects of both home and host-country corruption by using either panel or cross-section data on FDI and home and host country corruption and economic characteristics. Habib and Zurawicki (2002) use both the host country corruption index and the absolute

[1] See Al-Sadig (2009) for a recent, if partial, review of this extensive literature. Wei (2000) takes the equivalence between corruption and higher costs for the foreign investor to its logical conclusion by estimating the tradeoff between a host

difference between home and host-country corruption indices (the *corruption distance*) in an econometric model of FDI estimated using panel data for 7 home countries and 89 host countries over a three year period. The former variable measures the costs of bribes, etc., that have to be paid by investors in a corrupt country while the second variable serves as a proxy for "psychic distance" between the two countries. The authors find that host-country corruption reduces FDI inflows, as does the absolute difference between home and host-country corruption. The greater the difference between the two countries' corruption levels, the less well equipped are the MNCs in the home country to deal with the institutional environment of the host country. While the significance of this variable is suggestive, it does not address the effect of home-country corruption *per se* on FDI flows. Studies by Sima-Eichler (2006) and Cuervo-Cazzura (2006) examine whether home countries that have agreed to impose sanctions on their MNCs that engage in bribery abroad experience a reduction of FDI to corrupt countries.[2] Both authors find some evidence that such laws do reduce FDI to corrupt countries, and Cuervo-Cazurra (2006) finds that investors from corrupt home countries have relatively higher levels of FDI in corrupt host countries. In a similar vein, Egger and Wimmer (2006) find that host-country corruption is important for intra-OECD FDI flows but not for FDI to developing countries, suggesting a non-linear home-host country corruption interaction. Wu (2006) finds that corruption in the host country, the corruption distance and the corruption distance times home country corruption all play a role in explaining FDI flows. Wei (2000), on the other hand, finds no effect of home country corruption on FDI.

The evidence on home-host country corruption interactions is thus mixed. The role of the two types of corruption appears to vary with the level of development of the host countries. The role of corruption distance suggests a relationship between home and host-country corruption, but the fact that the same value of the explanatory variable can be generated by a corrupt host country and an non-corrupt home country or *vice versa*, and this variable will then have exactly the same effect on FDI seems counterintuitive. Even taking into account that the studies cited, as well as others not cited due to space limitations, use different measures of FDI (some

country's taxes on MNCs and its level of corruption, thus placing an explicit monetary cost on corruption.

using flows, others stocks of FDI) and different control variables for the economic drivers of FDI, it seems clear that the relationship between home and host-country corruption requires further study.

In this paper we examine the FDI outflows from six transition economies to 84 host countries for the period 2000-2003. Our main findings are that there is a linear and negative relationship between host- country corruption and FDI location. On the other hand, the relationship between home-country corruption and FDI location is non-linear, with both high and low levels of corruption in the home country to reducing the probability of FDI taking place in a given host country. We also find that the effects of corruption on FDI volume decisions are negative and linear, but only marginally significant.

In the next section we discuss the traditional economic drivers of FDI and the possible role that corruption in the home and host countries plays in FDI flows. In Section III we set out the data we use in our estimations and the specifications of our model. Section IV reports our empirical results and Section V reports some robustness tests of our specification. Section VI concludes.

II. The Multinational Enterprise and the Drivers of FDI

A. Traditional Driving Forces of Foreign Direct Investment

A valid estimate of the role of corruption on FDI rests on the specification of an appropriate model of the economic factors that underpin FDI flows between countries, and such a model is to be found in the theory of the MNC. The literature explaining the existence of FDI generally ascribes such activity to two motives. One is the firm's desire to serve foreign markets in the presence of trade frictions (Markusen, 1984), which it does through so–called horizontal investment, and the other, vertical investment, is the firm's desire to locate operations in a foreign country in order to obtain access to low priced non-tradable or hard-to-trade inputs (Helpman, 1984).[3] A good deal of the empirical work on aggregate, as opposed to firm-level, FDI flows between countries has been based on variations of the gravity equation (Anderson and Wincoop, 2003) known as the knowledge-capital (KK)

[2] These countries have signed the OECD Convention on Combating Bribery of Foreign Public Officials or are subject to the US Foreign Corrupt Practices Act.

[3] See Navaretti and Venables (2004) for a review of the extensive literature since the publication of these two articles.

model of MNC activity that encompasses both of the main theories of FDI. The model emphasizes relative country size, distance as a proxy for information and transport costs, and factor endowments as the key drivers of FDI. Carr *et al*. (2001) suggest that endowment differences and country size to should be interacted in the KK specification, and Egger and Pfaffermayr (2004) and Egger and Winner (2006) suggest that interaction between distance and relative factor endowments is also appropriate. Specifications of the KK model often include additional variables to incorporate factors such as tax policies that are specific to the FDI process.[4] Given the demonstrated ability of the KK model to explain bilateral FDI flows well, as well as its use in previous studies of the influence of corruption on FDI (Egger and Winner, 2006), we use it in this paper as well.

B. A Theory of Foreign Direct Investment to and from Corrupt Economies

Like much of the literature on the relationship between corruption and FDI, we also build on Dunning's (1998) insight that a firm's location is a given home country can be a source of firms-specific competitive advantage. At the level of aggregate bilateral FDI flows, the literature we have surveyed above uses this insight almost exclusively in the context of MNC-host government relations (Luo, 2006; Buckley *et al.,* 2007; Cuervo-Cuzarra and Genc, 2008).[5] Dealing with a corrupt and bribe-seeking government its home country provides the MNC with both the skills for, and lack of aversion to, bribing officials in host-countries in which they may be considering investments. Firms from less corrupt countries will lack these skills, and thus are less likely to invest in corrupt economies.

While the ability to deal with a corrupt environment may be a valuable skill that the MNC can acquire in its home country, Cuervo-Cuzarra and Genc (2008) also emphasize that MNCs from such corrupt countries often lack the firm-specific competitive advantages such as technology, brand name, organizational skills, etc. that characterize firms from less corrupt economies. While the lack of these advantages may reflect the fact that corrupt home countries are often also less-developed countries, a broader reading of Dunning's hypothesis about

[4] Blonigen (2005). We consider the role of these factors in our robustness tests in Section V.

[5] Thus Luo (2006) writes that "relationships with (host country) governments are critical" (p. 747) because "political or governmental corruption is often the main origin or cause of widespread corruption in the whole society" (p. 750).

home country effects leads to a somewhat different conclusion. Firms that operate in corrupt environments are likely to succeed if they develop skills and assets appropriate to that environment, meaning skills in dealing with a corrupt environment that provides little in the way of protection for firm-specific assets such as technology, brand names, etc. Thus, firms in such environments benefit from developing firm-specific skills for dealing with corrupt environments and from investments in their relations with politicians, but they will find investments in firm-specific advantages in technology, branding, etc. to be of little competitive value. Similarly, firms from countries characterized by low levels of corruption will find that making investments in building relationships with politicians of little competitive value while investments in technology, brand name, etc. that confer competitive advantages in a non-corrupt environment will have a high payoff. This also suggests that firms from countries that are intermediate in the corrupt-non-corrupt ranking scale will find it advantageous to invest in both types of assets. Consequently, MNCs from corrupt home countries will find it difficult to invest in host countries with low levels of corruption because competition in those countries is based on the possession of firm-specific advantages in technology, brand names, etc. Similarly, firms from low corruption countries will find that the firm-specific advantages they have developed in their home countries will be less useful in competing in corrupt countries.

Thus, we would expect that firms from corrupt countries will be less likely to invest in low-corruption countries and firms from low-corruption countries will be less likely to invest in high-corruption countries. MNCs from countries with intermediate levels of corruption however, may have a portfolio of firm-specific assets that enables them to compete effectively in both corrupt and honest countries because they have had to invest in both types of firm-specific advantages. To state this hypothesis more precisely, we expect that there is an inverse **U** relationship between host country corruption and the likelihood of FDI from that country to other countries.

Although the received theory talks about the likelihood of an MNC from a given type of home country investing in a given type of host country, much of the empirical work uses not the likelihood of the investment taking place but rather the dollar amount of investment that that goes from one country to another or on the stock of capital invested by one country in another. In our work, we separate the two decisions. We first ask whether corruption has any effect on the likelihood of investment from one country to another taking place. Once we have

determined that, we ask whether corruption has any influence on the amount of money that is invested. We are inclined toward this approach by the empirical work of Smarzynska and Wei (2002) and the theoretical insights of Zahir and Zahir (2006), both of who argue that home and host-country corruption levels influence the form of entry into foreign markets. Thus it is important to disentangle the probability of investing in a given host country from the decision on how to enter that market and, consequently, on how much to invest.

III. Estimating a Model of FDI and Corruption

In this section, we specify and estimate a model of bilateral capital flows that includes both traditional and drivers of FDI as well as the level of corruption of home and host countries.

A. Home Countries

We compiled FDI outflows by country of destination for six transition economies, Bulgaria, the Czech Republic, Estonia, Hungary, Macedonia and Slovenia. The data came from each country's central bank web site. Flows are reported in US dollars. Because of the infrequency of some of these FDI flows, we cumulated the value of bilateral FDI flows from these transition economies for the period 2000-2003. Our data are limited to these six transition economies because their central banks are the only ones among transition economies to report their FDI outflows fully by country of destination.[6] Our data show that there are no bilateral FDI outflows between numerous home and host country pairs. Specifically, 62% of the FDI flows in our sample are zero. In order to analyze the FDI location decision between a pair of countries, the dependent variable is set equal to 1 if there is an FDI flow between the two countries and to zero if there is no flow.

The use of transition countries for our sample of home countries is intentional. Most home countries used in other studies have MNCs that have engaged in outward FDI for many years, and, as a result, they have built up a large stock of FDI in many host countries. Consequently, reported outward FDI for such home countries in any year represents two types of flows: new FDI outflows representing decisions to establish new affiliates in countries where the MNC has no presence and reinvestment, divestiture, and dividend reinvestment decisions in

[6] We chose not to construct FDI outflows from other transition economies by using host country mirror statistics because of the sometimes-large differences that are frequently present between the values reported by home and host countries.

countries where the MNC already has existing operations. Although the theory relating FDI decision to host country corruption is framed in the context of decisions about the location and size of a new affiliate, most of the FDI flows used in the studies cited above reflect, to a large extent, decisions about the expansion or contraction of existing affiliates. Such decisions are based more on the so-called financial life-cycle of FDI (Brada and Tomšík, 2009) than they are on factors influencing the creation of new affiliates. In the case of the transition economies that make up our sample, however, FDI flows are much less likely to reflect their stock of existing outward FDI. Before the end of the communist era, outward FDI did not exist, and, in most of these countries, capital controls continued to play a role into the mid-1990s, thus effectively limiting outward FDI. Indeed, many of these countries' central banks did not begin reporting information on FDI and profits reinvested aboard until the mid-1990s. As a result, most of the FDI flows reported, even in the early 2000s, which is our sample period, represent decisions to establish new affiliates overseas rather than decisions about the expansion or contraction of existing operations aboard, and, thus, the FDI flows we observe are more consistent with the theory of the effect of corruption on FDI than are flows from, say, developed market economies such as the US.[7]

B. Other Data

The explanatory variables were taken from the World Bank's *World Development Indicators* CD-ROM. Although we cumulated the dependent variable over a four-year period, the explanatory variables refer to 2002, thus centering the explanatory variable over the period under observation. We were unable to obtain data for some of the host countries, and these were dropped from our sample, leaving a total of 84 host countries including all OECD countries and all the transition economies and developing countries that received FDI from our home

[7] Another advantage of our selection of home countries is that the newness and small volume of their FDI outflows makes host-country corruption endogenous. Kwok and Tadese (2006) and Al-Sadig (2009), for example, argue that host-country corruption is in part the result of FDI and thus should be treated as endogenous, requiring panel data.

countries and for which data were available.[8] Like many of the studies cited above, our home and host country corruption measure is the Transparency International corruption perception index (CPI) for the year 2002.[9]

C. The FDI Location Choice Model

We model the FDI decision as a two stage process. First, in what we call Location Choice Model, the investor selects the host countries in which to invest. Then, using what we call the Volume Choice Model, she determines the amount to be invested. The basic model we use to capture the traditional economic drivers of bilateral FDI flows is the KK model. We propose the following version of the KK model to analyze FDI location choice:

$$FDIpro_{ij}^{*} = \alpha + \beta KK_{ij} + \gamma_1 Corru_i + \gamma_2 Corru_j + \varepsilon_{ij} \quad \text{Eq. 1}$$

$$FDIpro_{ij} = 1 \; if \; FDIpro_{ij}^{*} \geq C \quad \text{Eq. 2}$$

$$FDIpro_{ij} = 0 \; if \; FDIproL_{ij}^{*} < C \quad \text{Eq. 3}$$

where $FDIpro_{ij}^{*}$ is a non-observable variable that measures the incentives for investors in country *i* to undertake FDI in country *j*. Investors in country *i* will invest in country *j* only if the economic, social and political conditions in the two countries make the investment sufficiently advantageous. If the propensity to invest is larger than the threshold value C, *($FDIpro_{ij}^{*} \geq C$),* then we will observe FDI from county *i* to country *j*. $FDIpro_{ij}$ is a dummy variable equal to 1 if country *j* receives FDI from country *i* and 0 otherwise. The variables of KK_{ij} represent characteristics of countries *i* and *j* as specified by the KK model, $Corru_j$ is the host country level of corruption, $Corru_i$ is the home country level of corruption, and ε_{ij} is the random error.

[8] The database is available from the authors.

[9] Cuervo-Cazurra (2006), Smarzynska and Wei (2002) and Wei (2000) are among the studies that find that substituting other measures of corruption for the CPI does not change their conclusions regarding the effect of corruption on FDI. Thus, we do not perform robustness tests using other corruption indicators.

According to the knowledge-capital model (KK), the main drivers of FDI are: (1) absolute and relative country size, (2) transportation costs (distance) as well as foreign plant set-up costs, and (3) relative factor endowment differences. The larger the home and the host countries' GDPs, the more probable it is that there should be FDI flows from country *i* to country *j*. In part, this is because a large host-country domestic market creates opportunities for capturing economies of scale and scope that promote the exploitation of firm-specific competitive advantages based on R&D, branding and the finer subdivision of production. A larger host-country GDP attracts FDI because the costs of undertaking FDI are to some extent fixed, and thus investors will find larger host countries more profitable if they wish to expand sales at the least cost. Large economies are also likely to have a greater variety of specialized factors of production and resources that the foreign investor will find attractive.

Following Egger and Winner (2006) we use the following variables to control for relative country size:

$$SUM_{ij} = GDP_i + GDP_j$$

$$GDP2_{ij} = 1 - (GDP_i / SUM_{ij})^2 - (GDP_i / SUM_{ij})^2$$

where GDP_i and GDP_j are the GDPs of the home and host countries in billions of 1995 US$ respectively.

The role of distance between countries is ambiguous. On one hand, FDI is used to overcome high transportation costs for low-value bulky goods or for non-tradable services, and in this case distance between the home and host countries has a positive effect on FDI. On the other hand, proximity also has a positive effect on FDI because proximity implies similar tastes and consumption patterns, promoting FDI used to increase sales in the host country. The literature on FDI suggests that not only is proximity a driver of FDI, but that adjacency of the home and host countries is also a particularly important stimulus to FDI. Consequently, in our model we use both distance and adjacency as separate explanatory variables so that:

$DIST_{i,j}$ = distance in thousands of km between the capitals of countries *i* and *j*

$ADJ_{i,j}$ = 1 if countries *i* and *j* are adjacent, 0 otherwise

The existence of international factor endowment differences is an important motive for FDI (Helpman 1984; Markusen and Maskus 2002). Following Egger and Winner (2006) we control for factor endowment differences using the absolute value of the differences between home and host countries per capita GDPs:

$$SK_{ij} = abs\left(\frac{GDP_i}{POP_i} - \frac{GDP_j}{POP_j}\right)$$

We use several variables to test for the effects of corruption on FDI flows. The first of these, $Corru_i$ is the value of the Transparency International Corruption index for host country *i*. In order to analyze possible non-linear effects of corruption on FDI we analyze three alternative specifications of our model in equation 1-3 as follows:

$$FDIpro_{ij}^{*} = \alpha + \beta KK_{ij} + \gamma_1 Corru_i + \gamma_2 Corru_j + \gamma_3 Corru_i^2 + \gamma_4 Corru_j^2 + \varepsilon_{ij} \quad \text{Eq. 4}$$

$$FDIpro_{ij}^{*} = \alpha + \beta KK_{ij} + \gamma_1 Corru_i(10 - Corru_i) + \gamma_2 Corru_j + + \varepsilon_{ij} \quad \text{Eq. 5}$$

$$FDIpro_{ij}^{*} = \alpha + \beta KK_{ij} + \gamma_1 Corru_j(10 - Corru_j) + \gamma_2 Corru_i + \varepsilon_{ij} \quad \text{Eq. 6}$$

Equation 4 includes squared values of the corruption variables for the home and the host countries to allow for the non-linearities suggested by other studies. In the model described by equation 5, we test for an inverse **U** relation between FDI and corruption of the home country as captured by the term $Corru_i(10 - Corru_i)$, while controlling for home country corruption. Similarly, our model in Equation 6, includes $Corru_j(10 - Corru_j)$ capturing the possible inverse **U** relationship between the likelihood of investment and host-country corruption and FDI. A positive γ_1 coefficient in equation 5 or equation 6 implies that the relation between the probability of FDI and the corruption level of the country has an inverse **U** shape.

C. FDI Volume Choice Model

Given the location choice for FDI, we propose the following model, to analyze the volume of FDI from transition economies:

$$FDI_{ij} = \delta + \kappa KK_{ij} + \lambda_1 Corru_i + \lambda_2 Corru_j + \nu_{ij} \quad \text{Eq. 7}$$

FDI_{ij} in this model is the observed FDI outflow from country *i*, the home country, to host country *j*. As before, our base specification for the traditional drivers of FDI is the KK model, and so we include in Equation 6 the previously defined variables: $SUM_{ij}, GDP2_{ij}, DIST_{ij}, ADY_{ij}$, and SK_{ij}. As in the case of the location choice model we also include the variables $Corru_i$ and $Corru_j$ in order to capture a possible effect of host and home country corruption on FDI outflows. We also use the same non-linear formulation of the effect of corruption discussed above.

D. Estimation Results

We model the FDI decision process by means of a probit estimation because in our sample has 265 zero observations and 161 non-zero observations. The probit estimation uses all the observations and sets the dependent variable, $FDI_{i,j}$, equal to one if there was a positive FDI flow from country *i* to country *j* and to zero otherwise. The marginal effects of the parameter estimates from the FDI Location Choice Model are reported in Table 1.

First we estimate the KK model without corruption. Higher GDPs in the home and host country increase the probability that FDI between the two countries will take place. This is reflected in the positive coefficients of SUM and GDP2, although only SUM is significant in this case. The coefficient for factor endowment differences, as measured by SK, has the correct sign but is marginally significant in our regression.[10] Adjacency also significantly increases the probability of FDI, and greater distance between the two countries reduces the likelihood that one will invest in the other. Our results are consistent with the KK model, and absolute and relative country size and transport costs (distance) as well as foreign plant set-up costs are important determinants of FDI location decisions.

Second, we report in Table 1 the KK model with corruption as specified by Equation 1. Most of the coefficients for the variables suggested by the KK model are very similar to the previous results and the

[10] Egger and Winner (2006) also find an insignificant effect on FDI using SK; they include interaction terms of SK with SUM and GDP2 that are significant. We refrain for using such interaction terms because they cause high multicollinearity given the cross sectional nature of our study,

coefficients for corruption of both home and host countries are positive and significant. The McFadden R^2 coefficient is larger, increasing from 0.0821 to 0.117. From these results we conclude that, *ceteris paribus*, the level of corruption of home and host countries negatively influences the probability of FDI outflows. Next we investigate whether the relation between home and host country corruption and FDI is linear. Consider the results of our model defined in Equation 4, the non-linear corruption model 1. This model includes quadratic values of the corruption variables. We find no evidence of quadratic effects for the corruption level of the host country. However, the coefficient for the quadratic term of the home- country corruption is significant and negative, implying a non-linear relation. The values of the two parameters suggest that reductions in corruption in the home country only increase FDI up to a certain level but further decreases in corruption decrease the likelihood of FDI outflows.

In order to further investigate this non-linear relation we estimate the model presented in Equation 5, which includes the variable $Corru_i(10-Corru_i)$, while controlling for host country corruption. The results, presented in Table 1 as non-linear corruption model 2, confirm the hypothesis that there is an inverse **U** shaped relation between FDI location choice and home-country corruption. Finally, we present estimation results for model of Equation 6, which includes the variable $Corru_j(10-Corru_j)$ while controlling for home country corruption, as non-linear corruption model 3 in Table 1. The coefficient for this variable is not significant, confirming a linear relation between FDI location and host-country corruption.

In Table 2, we present results of the Volume Choice Model of Equation 7. The estimation is performed by OLS for the 161 country pairs that have non-zero FDI outflows[11]. As before, we first estimate the KK model without corruption as a base case. We find that the main driver of the volume of FDI is the size of the home and host country markets, measured by GPD (variable SUM). The distance between the two courtiers is also an important driver of FDI volume. The coefficient for factor endowment differences, as measured by SK is not

[11] In unreported results, we check for the possibility of selection bias using the Heckman (1979) selection model. The selectivity regressor is not significant difference from zero, so we report simple OLS results. Unreported results are available from the authors upon request.

significant in our regression, which suggests that, in our sample, market-seeking investments predominate over resource-seeking investments.

Next we evaluate the effect of home and host country corruption of the volume of FDI outflows. We estimate a linear corruption model that includes corruption levels for the home and host country and the nonlinear corruption models used in the analysis of location choice. None of these corruption models provides strong evidence of corruption being an important determinant of the volume of the FDI outflows. Home country corruption is the only significant corruption variable, implying that home-country corruption reduces the amount invested, presumably due to different choices about the mode of entry. This may be due to the fact that MNCs from less corrupt countries will seek to internalize market-oriented firm-specific advantages by using wholly owned affiliates as the preferred mode of entry into foreign markets. We conclude that while home and host-country corruption influence the likelihood of FDI flows from one country to another taking place, corruption has a minor effect on the size of the investments that are undertaken.

IV. Robustness Checks

In this section we evaluate the robustness of the results of our models of FDI. As described in Section III, the benchmark model we use to analyze FDI is the knowledge-capital (KK) model. The KK model is not able to explain FDI location decisions completely, and we showed that the unexplained part of that decision is influenced by the level of corruption in the home and host countries. In this section we provide evidence that our results are not driven by the omission of other motives for bilateral FDI flows that have been used in the FDI literature. Our analysis focuses in three alternative drivers of FDI: differences in home- and host-country tax rates, the special appeal for foreign investors of host countries that are tax havens, and finally investments motivated by money laundering. [12]

A. Tax differences

[12] In unreported results we also explore the effects of similarities in home and host country cultural and political backgrounds. We find a positive effect on FDI location when the home country and the host country where part of the same country in the past (e.g., the Czech and Slovak Republics), but our conclusions about the effect of corruption are robust to this specification. Results are available from the authors.

Because MNCs are interested in the maximization of profits post-tax, home and host- country tax rates should have an impact on location decisions. The literature on tax effects on FDI is extensive, and summaries can be found in the Ruding Report (see Commission of the European Communities (CEC) 1992), Hines (1997, 1999), Devereux and Freeman (1995) and Blonigen (2005). More recent studies analyzing the effect of tax differences on FDI include Buettner and Ruf (2007), Devereux, Lockwood, and Redoano (2008), and de Mooij and Ederveen (2008). The basic idea behind all these studies is that MNCs' location decisions are influenced by international differences in tax rates. Failure to control for the effects of different tax regimes would result in omitted-variable bias if the differences in tax rates were highly correlated with the level of corruption.

To examine whether our results are driven by host-country tax rates, we construct a variable that measures the tax differences between home and host countries as:

$$tax_{ij} = corporate\ tax\ rate_i - corporate\ tax\ rate_j$$

where the subscripts i and *j* represent the home and host country respectively. Our tax variable is based on the corporate tax rates in existence in 2003, and these are reported in Appendix 1.[13] If tax_{ij} is an important driver of FDI, we expect it to have a significant effect on FDI flows. We first analyze the effect of the tax variable in the framework of our final location choice model as given by Equation 7. The results are reported in Table 3 as the tax differences model.

Tax differences play a significant role in FDI location. As expected, the coefficient of tax_{ij} is positive, meaning that greater tax differences imply a higher probability of FDI. The pseudo R^2 increases from 0.123 to 0.134. After including the tax proxy, the marginal effect of the host country level of corruption remains invariable and significant. However, the marginal effect of $Corru_j(10 - Corru_j)$ decreases from 0.066 to 0.049, but remains significant. These results imply that both tax differences and corruption levels influence decisions about the

[13] We obtain the corporate tax rate from KPMG Tax rate survey 2003. Of the 84 countries in our sample, 61 are included in this survey. For the countries not included in the KPMG survey, we obtained data from a variety of other sources.

location of FDI, but in different ways. Controlling for tax differences does not change our FDI location model's conclusions.

B. Tax havens

Countries attract FDI not only because income earned locally is taxed at favorable rates, but also because host countries' tax policies can facilitate the avoidance of tax payments by foreign –owned firms altogether. According to the OECD, four factors identify a country as tax haven:[14] the jurisdiction imposes no or only nominal taxes on foreign-owned firms; there is a lack of transparency; there are laws or administrative practices in place that prevent the effective exchange of information for tax purposes with other governments on foreign taxpayers benefiting from low or nonexistent taxation; and there is no requirement that the activity of the foreign-owned firm be substantial. Hines and Rice (1994) show the effect of "fiscal paradises" or tax havens on US MNCs' location decisions. A comprehensive analysis of tax haven countries can be found in Diamond and Diamond (2002), and Dharmapala and Hines (2009) explore the factors influencing whether countries become tax havens.

As in the case of differences in tax rates, our model for FDI may lead to incorrect conclusions if FDI is driven by the fact that some host countries are tax havens. In order to control for this possibility, we include in our location and volume choice models a dummy variable $taxhaven_j$ that takes the value of one if the host country is a tax haven and zero otherwise. Our list of tax havens countries includes all the countries identified in Hines and Rice (1994) and Diamond and Diamond (2002). We also include the countries included in the OECD's list of non-cooperative countries in 2000. This list of countries is the same as used by Dharmapala and Hines (2009).[15]

As before, we estimate the location choice model incorporating the tax haven control. The results, presented in Table 3 under the Tax Haven model, show that the tax haven dummy variable is not statistically

[14] See the OECD web site http://www.oecd.org

[15] The tax haven countries are Bahamas, Bahrain, Belize, Cayman Islands, Cyprus, Hong Kong, China, Ireland, Lebanon, Liberia, Liechtenstein, Luxembourg, Malta, Seychelles, Singapore, and Switzerland.

different from zero. The estimated coefficients of the corruption variables are largely unchanged after including the tax haven dummy. We conclude that our FDI location choice results are not driven by the presence of tax havens countries in our sample of host countries.

C. Money Laundering Countries

Illicit money flows, meaning flows of money that is either earned through, or used for, illegal activity or moved across borders illegally are estimated at $500million to $2.85 billion (Schneider and Windischbauer, 2008). Illicit financial flows of such magnitude should have a measurable impact on the pattern of international trade and investment in ways that differ from those predicted by traditional theories.

We include in our model a dummy variable, MON_j, which is equal to one if the host country is a money-laundering center and to zero otherwise. We identify a country as a money laundering center based on the *International Narcotics Control Strategy Report 2003* of the US Bureau for International Narcotics and Law Enforcement Affairs. The money laundering countries in the sample, identified in Appendix 1, are the ones referred in the report as "Jurisdictions of Primary Concern". Based on the observation of the money laundering countries list, we hypothesize that our results about the effect of home and host country corruption levels on FDI location are independent of the condition of a host country as a money laundering centre. This is because there are many countries with relatively high taxes and low levels of corruption that are listed as money laundering centers. The estimation results presented in Table 3, under Money Laundering Model, confirm our hypothesis. The money laundering dummy has a significant role to play FDI location since the marginal effects on FDI are positive and significant. However, the marginal effects of all the corruption variables remain invariant and significant. These results imply that both corruption levels and money laundering are drivers of FDI location but they act through different channels.

V. Conclusions

Using data on FDI flows from a sample of transition economies, which give a more accurate measure of new investment decisions, we have proposed and estimated a model of FDI that incorporates home and host-country corruption. Our model separates the decision on where to invest form the decision on how much to invest.

We find that the decision on where to invest depends on both home country and host-country corruption. Corrupt host countries are less likely to receive FDI inflows than are less corrupt ones. Home country corruption influences outward FDI in a non-linear way. The most corrupt and the least corrupt home countries are less likely to undertake FDI than are countries at intermediate levels of corruption. We hypothesize that this is due to the fact that countries at intermediate levels of corruption provide a domestic environment that makes home-country MNCs invest in both market-oriented firm-specific sources of competitive advantage as well as in the acquisition of skills that enable them to operate successfully in corrupt environments. We also find some evidence that home corruption reduces the volume of FDI, possibly by favoring wholly-owned affiliates as the preferred mode of entry by MNCs from less corrupt countries.

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Table 1
Estimation of the FDI Location Choice Model
We report probit marginal effects and their corresponding p-values in parenthesis, for our location choice model described in equations 1 to 6. The data set corresponds to cumulated FDI outflows for the period 2000-2003, from Bulgaria, the Czech Republic, Estonia, Hungary, Macedonia and Slovenia to 84 host countries. The dependent variable is equal to one if there are no-zero FDI outflows between countries, and equal to zero otherwise.

	KK Model	**Linear Corruption Model**	**Non Linear Corruption Model 1**	**Non Linear Corruption Model 2**	**Non Linear Corruption Model 3**
SK	3.565 (0.09)	-4.841 (0.22)	-5.818 (0.15)	-4.816 (0.21)	2.228 (0.39)
Adjacent country	0.349 (0.00)	0.390 (0.00)	0.392 (0.00)	0.381 (0.00)	0.386 (0.00)
Distance	-0.035 (0.00)	-0.044 (0.00)	-0.047 (0.00)	-0.045 (0.00)	-0.038 (0.00)
SUM	0.066 (0.02)	0.087 (0.01)	0.090 (0.01)	0.084 (0.01)	0.075 (0.01)
GDP2	0.206 (0.22)	0.158 (0.36)	0.094 (0.58)	0.088 (0.61)	0.156 (0.36)
Corruption Host country		0.051 (0.01)	0.014 (0.82)	0.050 (0.01)	
Corruption Home country		0.085 (0.00)	0.519 (0.01)		0.083 (0.00)
Corruption Host country square			0.004 (0.49)		
Corruption Home country square			-0.048 (0.03)		
Corr Home (10- Corr. Home)				0.066 (0.00)	
Corr Host (10- Corr. Host)					-0.004 (0.42)
Pseudo R^2	0.082	0.117	0.126	0.123	0.108

Table 2
Estimation of the FDI Volume Model
We report OLS regression coefficients and their corresponding p-values in parenthesis, for our volume choice model described in equation 7. The data set corresponds to 161 non-zero FDI outflows cumulated for the period 2000-2003, from Bulgaria, the Czech Republic, Estonia, Hungary, Macedonia and Slovenia to 84 host countries.

	KK Model	**Linear Corruption Model**	**Non Linear Corruption Model 1**	**Non Linear Corruption Model 2**	**Non Linear Corruption Model 3**
SK	-666.731 (0.16)	-1230.458 (0.20)	-1226.964 (0.17)	-1171.997 (0.20)	-736.127 (0.21)
Adjacent country	138.199 (0.10)	146.032 (0.09)	146.000 (0.08)	141.639 (0.09)	146.324 (0.08)
Distance	-7.119 (0.00)	-7.592 (0.00)	-7.549 (0.00)	-7.897 (0.00)	-7.162 (0.00)
SUM	10.043 (0.02)	10.442 (0.01)	10.567 (0.01)	9.786 (0.03)	9.929 (0.01)
GDP2	101.910 (0.11)	96.530 (0.12)	98.998 (0.17)	79.822 (0.19)	96.083 (0.13)
Corruption Host country		3.518 (0.49)	3.114 (0.87)	2.412 (0.62)	
Corruption Home country		23.280 (0.06)	9.487 (0.91)		23.095 (0.06)
Corrupt. Host country square			0.041 (0.98)		
Corrupt. Home country square			1.471 (0.87)		
Corr Home (10- Corr. Home)				11.095 (0.13)	
Corr Host (10- Corr. Host)					-0.239 (0.85)
Constant	23.529 (0.24)	-92.914 (0.18)	-62.324 (0.68)	-238.281 (0.05)	-76.270 (0.33)
Adjusted R^2	0.120	0.139	0.128	0.117	0.139

Table 3
Robustness checks for the FDI Location Model
We report probit marginal effects and corresponding p-values in parenthesis, for our location choice model described in equation 5 with the additional control variables: money laundering, tax differences and tax heaven as described in the text. The data set corresponds to cumulated FDI outflows for the period 2000-2003, from Bulgaria, the Czech Republic, Estonia, Hungary, Macedonia and Slovenia to 84 host countries. The dependent variable is equal to one if there are no-zero FDI outflows between countries, and equal to zero otherwise.

	KK Model	**Base Model**	**Tax Differences**	**Tax Haven**	**Money Laundering**
SK	3.565	-4.816	-4.028	-4.192	-6.774
	(0.09)	(0.21)	(0.30)	(0.29)	(0.08)
Adjacent country	0.349	0.381	0.399	0.376	0.370
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Distance	-0.035	-0.045	-0.042	-0.044	-0.051
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
SUM	0.066	0.084	0.097	0.079	0.073
	(0.02)	(0.01)	(0.00)	(0.01)	(0.01)
GDP2	0.206	0.088	0.054	0.099	0.144
	(0.22)	(0.61)	(0.75)	(0.57)	(0.41)
Corruption Host country		0.050	0.051	0.050	0.057
		(0.01)	(0.01)	(0.01)	(0.01)
Corr Home (10- Corr. Home)		0.066	0.049	0.066	0.067
		(0.00)	(0.00)	(0.00)	(0.00)
Money Laundering					0.162
					(0.00)
Tax differences			0.006		
			(0.01)		
Tax haven				-0.052	
				(0.50)	
Pseudo R^2	0.082	0.123	0.134	0.124	0.139

Appendix 1: Host Countries' Money Laundering Status and Corporate Tax Rates

Albania (23), Algeria (30), Argentina (35), Australia* (30), Austria* (34), Azerbaijan (22), Bahamas* (0), Bahrain (0,), Belarus (24), Belgium (34), Belize (25), Bosnia and Herzegovina* (30), Brazil* (34), Bulgaria (15), Canada* (38.6), Cayman Islands* (0), Chile (16.5), China* (33), Costa Rica* (36), Croatia (20), Cyprus* (10/15), Czech Republic (31), Denmark (30), Ecuador (36), Egypt (-,), Estonia (24), Finland (29), France* (34), Georgia (20), Germany* (40), Greece* (30), Hong Kong* (17), Hungary* (18), India* (37), Indonesia* (30), Iran (25), Ireland (13), Israel*(36), Italy* (38), Japan* (42), Kazakhstan (30), Kenya (30), Korea (30), Latvia* (15), Lebanon* (15), Liberia* (35), Liechtenstein* (15), Lithuania (15), Luxembourg* (30), Macedonia (10), Malaysia (28), Malta (35), Mexico* (34), Moldova (0), Mongolia (10), Netherlands* (32), New Zealand (33), Nigeria* (30), Norway (28), Peru (27), Philippines* (32), Poland (27), Portugal (33), Romania (25), Russian Federation* (24), Serbia and Montenegro (14), Seychelles (0), Singapore* (22), Slovak Republic (25), Slovenia (25), Spain* (35), Suriname (36), Sweden (28), Switzerland* (24), Thailand* (30), Turkey* (30), Ukraine* (30), United Arab Emirates* (40), United Kingdom* (30), United States* (40), Uruguay* (35), Uzbekistan (10), Venezuela* (34)

Notes:

a. Corporate tax rates in percent for 2003 are taken from the cited Forbes and KPMG web sites. If 2003 is not available we use the first KPMG tax data after 2003 or information from countries' central banks. These rates should be interpreted with caution, since the effective tax on profits also depends critically on depreciation allowances, tax incentives, and other rules for calculating profit.

***** **=** Host country treated is a money laundering center.