Corruption and Cross-border Investment in Emerging Markets: Firm-Level Evidence

Beata S. Javorcik (University of Oxford and CEPR)[*]

and

Shang-Jin Wei (Columbia University, NBER and CEPR)[**]

Abstract: This paper studies the impact of corruption in emerging markets on the mode of entry and volume of inward foreign direct investment using a unique firm-level data set. It examines two effects of corruption simultaneously: a reduction in the volume of foreign investment and a shift in the ownership structure. Corruption makes local bureaucracy less transparent and hence acts as a tax on foreign investors. Moreover, corruption affects the decision to take on a local partner. On the one hand, corruption increases the value of using a local partner to cut through the bureaucratic maze. On the other hand, corruption decreases the effective protection of investor's intangible assets and lowers the probability that disputes between foreign and domestic partners will be adjudicated fairly, which reduces the value of having a local partner. The importance of protecting intangible assets increases with investor's technological sophistication, which tilts the preference away from joint ventures in a corrupt country. Empirical evidence shows that corruption reduces inward FDI and shifts the ownership structure towards joint ventures. Technologically more advanced firms are found to be less likely to engage in joint ventures.

Key Words: Corruption, Developing countries, Foreign direct investment, Multinational firms

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[*] Reader in Economics, Department of Economics and Christ Church, University of Oxford, Manor Road Building, Oxford OX1 3UQ, UK. Email: beata.javorcik@economics.ox.ac.uk, home page: http://www.economics.ox.ac.uk/members/beata.javorcik/

[**] Professor of Finance and Economics, Graduate School of Business, Columbia University, Uris Hall #619, 3022 Broadway, New York, NY 10027, USA. Email: shangjin.wei@columbia.edu, home page: www.nber.org/~wei.

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I. INTRODUCTION

Theoretical and empirical literature suggests that information asymmetries constitute a significant obstacle to capital flows across international borders.[1] The negative effects of information asymmetries on capital flows have been documented in empirical studies (see Portes et al. 2001, Portes and Rey 2005, Gelos and Wei 2005). Moreover, Daude and Fratzscher (2008) have shown that cross-border direct investment is "substantially more sensitive to information frictions than investment in portfolio equity and debt securities." A high level of corruption is likely to exacerbate the information asymmetry problem. Corruption also increases the cost of doing business in other ways.[2] Thus it is not surprising that the issue of corruption has become a prominent item on the agenda of international institutions and national governments.[3]

In this paper, we study how the volume of foreign direct investment and its ownership structure may be affected by the extent of corruption. Corruption makes obtaining local licenses and permits more costly for foreign investors. Having a local partner lowers the transaction cost (e.g., the cost of securing local permits). At the same time, sharing ownership may lead to technology leakage.[4] Both costs of local permits and losses from technology leakage are positively related to the extent of corruption in a host country. When corruption level is sufficiently high no investment will take place. When corruption is low enough so that investment can take place, the foreign investor with more sophisticated technology prefers a wholly-owned form, but, holding the technological level constant, the investor is more inclined to have a local partner in a more corrupt host country.

[1] Gordon and Bovenberg (1996, p. 1059) argue that "Investors, by living and working in a particular country, know much more about the economic prospects of that country than they do about those in other countries. . . . Foreigners' lack of knowledge can result . . . in a less efficient use of real resources, due for example to their poorer ability to forecast market demand in a new setting or to deal with idiosyncratic aspects of the domestic contract law, the local distribution system and supply network, and local customs governing labor relations."

[2] For instance, Fisman and Wei (2004 and forthcoming), Fisman, Moustakerski and Wei (2008) and Javorcik and Narciso (forthcoming) provided evidence on corruption and smuggling in goods trade.

[3] See for instance, the 1999 OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions.

[4] Javorcik (2006) shows empirically that foreign investors with more sophisticated technologies are less likely to share ownership than investors possessing fewer intangible assets. She attributes this finding to concerns about knowledge dissipation that would lead to a greater loss in the case of investors with more sophisticated technologies.

We test these hypotheses using a unique firm-level data set from 22 transition economies. Our main results can be briefly summarized as follows. We show that the probability of investment taking place is negatively related to the extent of corruption in a host country. Conditional on FDI taking place, the data suggests that foreign investors are more likely to take on a local joint venture partner in a corrupt host country, possibly to save the transaction cost of dealing with local government officials. Under one set of point estimates, a decrease in corruption incidence from the level found in Azerbaijan to that prevailing in Estonia is associated with an increase in the probability of investment from 4 to 19 percent. Conditional on FDI taking place, the same amount of reduction in corruption is associated with an increase in the probability of investment taking the form of a wholly-owned subsidiary (rather than a joint venture) from 24 to 44 percent. However, other things equal, the data shows that foreign investors with more sophisticated technologies are more likely to retain full ownership of their projects rather than to engage in joint ventures. There is some limited evidence suggesting that this effect is stronger in more corrupt host countries.

Our paper is related to the literature using firm-level data to examine the choice of entry mode (for example, Kogut and Singh, 1988; Blomström and Zejan, 1991; Asiedu and Esfahani, 2001; Javorcik, 2006) and the literature examining the link between corruption and FDI flows. Papers that have investigated the impact of corruption on FDI include contributions from Hines (1995), Henisz (2000) and Wei (2000a and b). Hines (1995) was the first paper that reported a negative effect of corruption on foreign investment. His sample was, however, restricted to U.S. multinational firms. As Hines (1995) pointed out, because U.S. had been until recently the only major source country criminalizing bribery to foreign government officials, the effect of corruption on U.S. multinational firms may not be representative of the effect on the universe of foreign investors. Henisz (2000) was the first to study both the FDI market entry and ownership mode (e.g., joint ventures vs. wholly owned investments). His sample was also restricted to U.S. multinational firms, and hence could also be non-representative of the universe of multinational firms. Furthermore, Henisz examined market entry and ownership mode separately rather than simultaneously. These two decisions could potentially be inter-related. In terms of statistical results, the estimated coefficients on corruption in Henisz's paper were mostly not significantly different from zero or with a paradoxical sign in the sense that higher corruption appeared to be associated with more FDI. Wei (2000a and b)

used a data set on FDI that went beyond U.S. multinationals, but the data were aggregated at a bilateral national level rather than at a firm level. As a consequence, it could not study ownership mode and entry decisions of the multinational firms.

In contrast to these studies, we use a unique firm-level data set encompassing multinational firms from both the U.S. and other countries, which allows us to examine whether host country corruption discourages investment by foreign firms for reasons beyond investors' fear of legal penalty in the home country. In fact, we check explicitly whether U.S. investment behaved systematically differently from firms from other source countries. We find support for this view and show that US companies are more likely than investors from other countries to retain full ownership in corrupt countries, even though they are not less likely to undertake FDI in corrupt economies in an absolute sense than firms from other source countries. In this regard, the paper examines issues that could not be examined in Hines (1995) and Henisz (2000).

The particular firm-level data that we use allows us to investigate the effect of corruption in terms of firms' decision not to enter a particular market rather than in terms of reduced bilateral investment flows. If a foreign investor faces a fixed cost associated with entering a new country, then the reduction in foreign investment could be larger when the number of firms is reduced than when per firm investment is lower. In this regard, this paper can provide insight beyond Wei (2000a and b) that rely on bilateral aggregate FDI data only. Finally, in terms of the econometric approach, this paper will also differ from Henisz (2000) by examining the effects of corruption on ownership mode and market entry simultaneously.

As most countries are eager to attract foreign direct investment, understanding the determinants of FDI is important in practice as well as in theory. Moreover, for many countries, a primary benefit of FDI is the inflow of technological know-how of the foreign investor. As the technological content of a given FDI is closely related to the ownership mode of the investor (e.g., joint venture vs. sole ownership), it is also useful to understand the determinants of the ownership mode. In this paper, we study a particular determinant of FDI, namely host country corruption, that has received relatively less attention in the literature on FDI but is crucial in practice. While it is difficult to quantify precisely, casual empiricism would suggest that the cross-country variation in corruption level is probably as large as the variations in corporate tax rate or labor cost, two commonly emphasized determinants of FDI.

We view our paper not only as a study on the determinants of FDI, but also as a check on the usefulness of existing measures of corruption. Given that corruption is elusive to measure but important conceptually, it is useful to derive and test more nuanced predictions of the economic consequences of corruption, such as its effect on the composition of FDI. This could help increase our confidence that popularly used measures of corruption are indeed meaningful and informative.

We organize the rest of the paper in the following way. Section II presents a minimalist model that highlights the effects of corruption on foreign direct investment. Section III discusses the hypotheses to be tested, the data used and the econometric model. It also presents the empirical results. Section IV concludes.

II. A MINIMALIST MODEL

While the paper is primarily an empirical investigation, we present a simple model here to motivate the subsequent tests on corruption and the FDI. Let q_k be the corruption level in host country k defined over the interval [0, ∞] and t_j the level of technological sophistication of foreign investor j, also defined to be in the interval [0, ∞]. Note that where no confusion arises, we will drop the subscripts for simplicity.

The value of setting up a wholly owned firm to the foreign investor is:

$$U(wo) = V_{wo} - C_{wo}(q_k)$$

where $C_{wo}(q)$ is the cost of securing the local permits when not having a local partner.[5] We assume that this cost increases with the corruption level in the country:

$$C'_{wo}(q) > 0$$

and $$C_{wo}(0) = 0$$

The value of setting up a joint venture to the foreign investor is:

$$U(jv) = V_{jv} - L(t_j, q_k) - C_{jv}(q_k)$$

where $L(t_j, q_k)$ is the technology leakage function and $C_{jv}(q)$ is the cost of securing the local permits to the foreign investor having a local partner. We assume that leakage is

[5] We use the label "local permits" to represent a variety of local inputs whose acquisition costs may rise as the local bureaucracy becomes less and less transparent.

more likely in countries with a higher level of corruption and the cost of leakage increases with the sophistication of technology owned by the foreign investor. Thus,

$$L_t > 0, L_q > 0,\ L_{tq} > 0$$

$$L(0,q) = 0$$

We also assume that the cost of obtaining a local permit increases with corruption level.

$$C'_{jv}(q) > 0$$

$$C_{jv}(0) = 0$$

However, we assume further that as corruption rises, the cost of acquiring local permits increases faster for a foreign investor pursuing a wholly-owned firm than one with a local joint venture partner.

$$C'_{jv}(q) < C'_{wo}(q)$$

For simplicity, we choose specific linear functional forms for $L(t,q)$, $C_{wo}(q)$ and $C_{jv}(q)$, that satisfy the conditions stated above, with an eye on yielding a parsimonious expression that can be estimated econometrically.

Let $C_{jv} = cq$

$$C_{wo} = (c+\theta)q$$

$$L(t,q) = \gamma t + \phi tq$$

where c, θ, γ and ϕ are positive constants. With these assumptions, the value of a wholly-owned investment project equals

$$U(wo) = V_{wo} - (c+\theta)q$$

And the value of a joint venture is

$$U(jv) = V_{jv} - \gamma t - \phi tq - cq$$

We will assume that $V_{wo} \geq V_{JV}$, as it seems plausible. However, our key conclusion regarding the effect of corruption on the composition of FDI does not depend on this assumption.

The investor would consider setting up a wholly-owned project in a host country if U(wo) > 0, or $q < V_{wo} / (c + \theta)$. Likewise, she would consider engaging in a joint venture if U(jv)>0, or $q < (V_{JV} - \gamma t) / (c + \phi t)$.

The foreign investor would choose a wholly-owned project over a joint venture if and only if $U(wo) > U(jv)$ or

$$V_{wo} - (c+\theta)q > V_{JV} - \gamma t - \phi t q - cq$$

Rearranging the terms, we obtain

$$t > \frac{(V_{JV} - V_{wo}) + \theta q}{\gamma + \phi q}$$

The solution is best represented in Figure 1, where the investment decision is mapped out in a two-dimensional space along the level of corruption in the host country and the level of technological sophistication of the investing firm. When corruption level q is sufficiently high, no foreign investment in any ownership form would take place. Conditional on foreign investment taking place, the foreign investor would prefer a wholly-owned form if its technology is sufficiently sophisticated. On the other hand, holding the level of technological sophistication constant, the higher the corruption (up to a limit), the more inclined the foreign investor is to set up a joint venture.

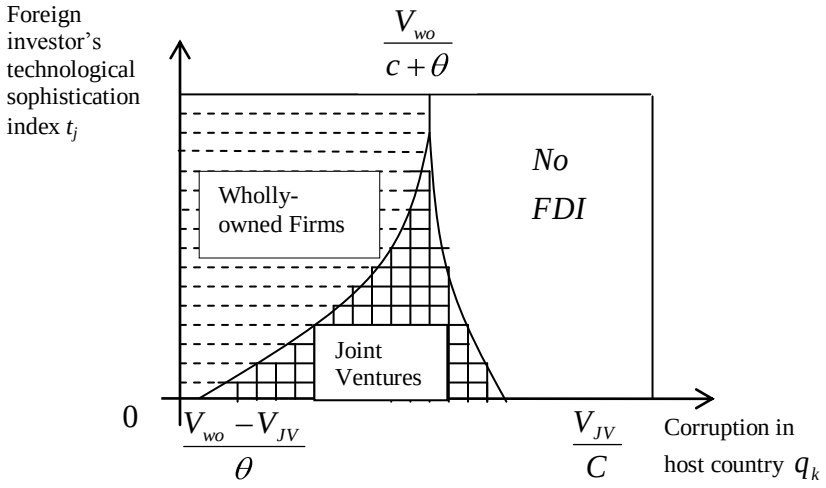

Figure 1: FDI Decision as a function of local corruption and firm's technology

III. MAIN HYPOTHESES AND EMPIRICAL EVIDENCE

In this section, we first present our main hypotheses on the connection between corruption and foreign direct investment that are distilled from the minimalist model. We then describe the empirical work in three steps: (1) the econometric specifications, (2)

some key variables (their measures and sources, with more details in a separate appendix), and (3) the regression results and their interpretations.

Main Hypotheses

The empirical work - the main focus of the paper - seeks to test the first-order implications of the model presented in the last section. However, it will ignore various second-order implications involving interaction terms and non-linear effects. To be specific, there are three primary predictions that come out of the model (as summarized in Figure 1).

First, no FDI takes place, regardless of the entry mode of the foreign firm, if the host country's level of corruption is too high (when $q > \frac{V_{JV}}{C}$). This corresponds to the "no FDI" zone in Figure 1.

Second, holding constant a foreign firm's level of technological sophistication (t), and conditional on FDI taking place, a higher level of local corruption (q) makes the foreign firm more likely choose a joint venture as its preferred mode of entry. Graphically, when one holds t constant, and moves horizontally from a low to higher values of q, one crosses from the "wholly owned" zone into the "joint venture" zone (before getting to the "no FDI" zone).

Third, holding the level of local corruption (q) constant, and conditional of FDI taking place, a higher level of technological sophistication (t) of the foreign firm would make it more likely to choose a wholly-owned form of entry. In Figure 1, when one holds q constant and moves vertically from a low to higher values of t, one crosses from the "joint venture" zone into the "wholly owned" zone.

We formulate our empirical specification in such a way that each hypothesis corresponds to the sign of a particular parameter.

Note that relative to the model, the main hypotheses are stated in a form that ignores the role of interactions between local corruption and a foreign firm's level of technological sophistication. In the later part of the empirical section, we will report some extensions in which such non-linear interactions are added to the regression specification.

Econometric Spefications

Specification 1: A Single-equation Probit Approach

To start with, we use a single equation to investigate the impact of corruption on the decision of mutinational firms to enter a host country. Let FDI_{jk} be a dummy variable that takes the value of one if firm *j* chooses to invest in host country *k*, and zero otherwise. We assume that the firm undertakes the FDI project if and only if a latent variable, FDI_{jk}^{*} is positive. The latent variable depends on a vector of factors including the level of corruption in host country *k*, denoted by q_k. In other words,

$$\text{FDI}_{jk} = 1 \text{if } \text{FDI}_{jk}^{*} > 0$$
$$\text{FDI}_{jk} = 0 \text{ otherwise}$$
where
$$\text{FDI}_{jk}^{*} = X_{jk}\beta + \gamma q_k + \varepsilon_{kj}$$

q_k is thecorruption level in country *k*, X_{jk} is a vector of determinants of FDI* other than corruption, and β (vector) and γ are parameters. This equation is estimated as a probit model. In the subsequent discussion and in the regression tables, we label the above equation as the "**FDI entry equation**."

Specification 2: A System-of-Equations Double-Probit Approach

The above specification focuses on the entry decision: should a firm enter a host country with a particular set of characteristics? As our theoretical framework suggests, the mode in which a firm enters a host country (joint venture vs. sole ownership) may not be independent from its decision on whether to enter or not. Both decisions may be affected by the host country's corruption level and other characteristics. To allow for this general possibility, we also adopt a system-of-equations approach that consists of two parts. The first part, involving the investor's decision on whether to enter a particular host country, *k*, is identical to the latent-variable approach described above. The second part describes the investor's decision on the choice between wholly-owned form versus joint venture, conditional on FDI taking place.

We describe the second part more precisely here. Let $OWNERSHIP_{jk}$ be a dummy variable that takes the value of one if the foreign investment by firm *j* takes the wholly-owned form in host country *k* (conditional on the investment taking place), and

zero if the investment is a joint venture. The wholly-owned form occurs if and only if another latent variable, $OWNERSHIP^*_{jk}$, is positive.

In other words,

$$\text{OWNERSHIP}_{jk} = 1 \quad \text{if } \text{OWNERSHIP}^*_{jk} > 0 \text{ and } \text{FDI}^*_{jk} > 0$$

$$\text{OWNERSHIP}_{jk} = 0 \quad \text{if } \text{OWNERSHIP}^*_{jk} \leq 0 \text{ and } \text{FDI}^*_{jk} > 0$$

where

$$\text{OWNERSHIP}^*_{jk} = W_{jk}\theta + \delta_1 q_k + \delta_2 t_j + \upsilon_{kj}$$

t_j is an index of technological sophistication for firm j, W is a vector of determinants of the ownership structure other than host country's corruption and foreign investor's technological sophistication, θ (vector), δ_1 and δ_2 are parameters to be estimated. In subsequent discussion and in the regression tables, we label the last equation on *OWNERSHIP** as the "**ownership mode equation**."

Assuming that (ε, ν) are i.i.d normal variables with zero means and a correlation coefficient of ρ, we estimate these equations simultaneously by maximum likelihood (probit with sample selection), correcting standard errors for correlation between observations for the same host country.[6] In principle, the number of observations in the FDI decision equation will be equal to the number of firms in the sample, multiplied by the number of destination countries covered by our data set. This, however, would result in a large number of zeros on the left hand side, as many firms in our sample have not undertaken any investment projects in the region. Since a large number of zeros may be problematic, we restrict our attention to firms with at least one investment project. In the ownership decision equation, the number of observations is equal to the total number of FDI projects in the sample. Obviously, the latter number is smaller than the former because not all firms invest in all countries.

In terms of the parameterization described above, the central hypotheses that we seek to test are the following:

(a) Corruption discourages foreign direct investment, i.e., $\gamma < 0$, in the FDI entry equation;

(b) Conditional on FDI taking place and holding constant the technological level of the foreign investor, corruption encourages the joint venture form (or discourages the sole ownership), i.e., $\delta_1 < 0$, in the ownership decision equation;

[6] For a formal exposition of the model, see Greene (2000, p. 857) and references therein.

And (c) conditional on FDI taking place, a more technologically advanced firm is more likely to adopt a wholly-owned form, i.e., $\delta_2 > 0$ in the ownership decision equation.

Data

Foreign Direct Investment Data

Our empirical work employs a unique firm-level data set based on a survey conducted by the European Bank for Reconstruction and Development. In January 1995, a brief questionnaire was sent out to all companies listed in the *Worldscope* database to inquire about investment projects in transition economies in Central and Eastern Europe.[7] Responses were obtained from 1,405 firms. Three hundred eighty one respondents had actually invested and further 70 firms planned to invest in the region.[8] To avoid a large number of zeros on the left-hand side, we only utilize the information on those 451 firms that decided to invest in at least one country in the region.[9] Further, we exclude firms in service sectors and extractive industries since they are likely to be subject to prohibitions of foreign entry or restrictions on the extent of foreign ownership.[10] This leaves us with the final sample of 262 firms. The distribution of projects across the host countries as well as the list of source countries is presented in Table 1.

The survey inquired about the form of the project: a joint venture with a local partner (JV), acquisition or greenfield. For the purposes of this study, we treat all projects not associated with JVs as wholly owned. The questionnaire did not ask for the exact ownership shares between foreign and local partners for joint ventures, nor the timing nor the size of the investment, which is unfortunate for us. Since inflows of FDI were

[7] *Worldscope* is a commercial database that provides detailed financial statements, business descriptions, and historical pricing information on thousands of public companies located in more than fifty countries.
[8] It is assumed that firms that perceived the survey as more relevant, i.e., having invested or planning to invest in the region, were more likely to have answered the survey. At least for firms that invested in Poland – the largest destination for FDI in the sample, there is no systematic difference between firms that answered the survey with those that did not in terms of size (proxied by asset value and sales), ratios of advertising expenditure or R&D to total sales, share of foreign owned assets in total firm assets, or share of foreign sales in total sales.
[9] We have also done the analysis with all the firms and found qualitatively the same results.
[10] In the presence of such restrictions, studying the determinants of the FDI entry mode would not be very meaningful.

negligible prior to 1989, the investments covered in our sample took place (or were planed to take place) between 1989 and 1995.[11]

Measures of Corruption

A key regressor in our analysis is a host country's corruption level. Corruption, by its very nature, is difficult to measure precisely. There are a few measures available "on the market," all of which are subjective perceptions.[12] There are three types of such indices. The first is based on surveys of individual "experts" (typically every country is rated by one expert). Popular examples of this type include the Business International (BI) Index used in Mauro (1995), Wei (1997 and 2000a) and others, and International Country Risk Group (ICRG) index used by, for example, Ades and Di Tella (1999) and Wei (2000a). The second type is based on surveys of firms. Typically multiple firms per country are surveyed, and the average answer for each country is used as the value of corruption index for that country. Relative to the first type, this type of indices reduces the impact of the idiosyncratic errors of individual respondents. Most popular indices of this type include the Global Competitiveness Report (GCR) index by the World Economic Forum and the World Development Report (WDR) index by the World Bank. Both GCR and WDR indices were used in Kaufmann and Wei (1999). Unfortunately, many of these indices such as the BI, GCR and ICRG indices, do not cover enough transition economies to be useful for our examination. The third type is to pool together information from several existing indices by averaging or using other statistical extraction methods. The a widely known index of this type is the one compiled by the Transparency International (TI), an international non-governmental organization dedicated to fighting corruption. To correct several methodological shortcomings of the TI index, Kaufmann, Kraay and Zoido-Lobaton (1999) developed a different composite corruption index from existing indices using an unobserved component method.

In this paper, we use three corruption indices that have adequate coverage of the transition economies. The first one is the WDR index, which is based on a survey undertaken in 1996 by the World Bank in preparation of the *World Development Report*

[11] "Several CEECs [Central and Eastern European countries] had already allowed minority foreign participation in joint ventures in the 1970s and 1980s, but this opportunity was not attractive enough to foreign investors. Except for a few showpieces, foreign investment started to flow only after the transformation to market economy had been launched" (Hunya, 1997, p. 286).

[12] See Wei (2001) for a discussion of the various corruption indices.

1997. The survey covered 3,866 firms in 73 countries. The rating is based on the response to Question 14 which asked: "Is it common for firms in my line of business to have to pay some irregular, 'additional' payments to get things done?" The respondents were asked to rate corruption on a scale from 1 to 6 with 1 denoting "always" and 6 "never." To facilitate interpretation of the results we re-scaled the variable in the following way: re-scaled WDR index = 7 – original WDR index. Thus, a higher value corresponds to a higher level of corruption. The main advantage of this index is that it is based on a consistent methodology and data collected by the same source.

The second measure is based on the information obtained by Peter Neumann (1994), a journalist at a German business publication *Impulse*, from people with business experience in each host country, mainly German exporters. He interviewed on average ten individuals (or minimum three) per country with a guarantee of strict confidentiality. The measure is supposed to indicate the proportion of the transactions that involved corrupt payments.[13]

The third corruption measure was compiled by Kaufmann, Kraay and Zoido-Lobaton (KKZ) and is described in detail in their 1999 publication. Basically, their composite index of corruption extracts information from seventeen different sources. To do this, they assume that the available individual corruption ratings reflect both some true but unobserved level of corruption and sampling variations and perception errors. The unobserved "true" level of corruption can be backed out statistically (assuming a linear unobserved component specification). The resulting estimates of corruption range from –2.5 to 2.5, with a mean of zero and standard deviation of one. The higher the estimate for each country, the less corrupt and better governed the country. Again, for this paper, we re-scale the index so that a higher value corresponds to a higher level of corruption.[14]

The three measures of corruption are presented in Table 3. Note that each measure has its own advantages and disadvantages. The WDR index comes from a single survey; hence the underlying methodology is more uniform across countries. On the other hand, the KKZ measure utilizes information from many more sources than WDR, hence, idiosyncratic errors from any particular data source may be mitigated. The Neumann index was constructed in 1994 and therefore is "pre-determined" relative to the

[13] Neumann's index was used by Ades and Di Tella (1997).
[14] The KKZ index can be viewed as a more sophisticated and improved version of the Transparency International Corruption Perceptions index.

information on FDI (derived from a 1995 survey). It is also supposed to be more "objective." However, the timing of the Neumann index is probably not a huge advantage as the relative rankings of corruption levels across countries are unlikely to change very much in a five year span. For example, the International Country Risk Group (ICRG) corruption index covers eight countries in our sample. The Spearman rank correlation coefficients for these countries are 0.98 between the 1994 and 1996 values, and 0.94 between the 1994 and 1998 values, respectively. Hence, as far as these countries are concerned, the relative rankings are fairly stable in the 1990s. The actual values of the Neumann index reported in Column 4 of Table 2 suggest that it also involved subjective judgment rather than a true tabulation of the fraction of (German) exports with corrupt payments. Given the relative comprehensiveness of the KKZ index and its well-documented statistical methodology, we think that the KKZ index is probably the best of the three. For complete disclosure, in the subsequent analyses, we will report results with all three measures.

It should be noted that our estimation would produce a negative sign on the corruption variable if corruption *per se* was not affecting the choice of entry mode but its level was positively correlated with the restrictions on the extent of foreign ownership. To the best of our knowledge, however, in none of the countries in the sample there exists legislation specifically forbidding full ownership by foreign investors in manufacturing sectors. For instance, in the USSR a presidential decree issued as early as October 1990 allowed foreign wholly owned companies to be established in the form of branches or subsidiaries. The decree also created the legal basis for foreign investors to buy out existing Soviet enterprises as these were privatized (McMillan 1996, p. 50). In Hungary, Act XXIV of 1988 on the Investment of Foreigners in Hungary allowed non-Hungarian companies to own equity up to 100% (WTO, 1998). In Poland, the 1988 Law on Economic Activity with the Participation of Foreign Parties also permitted 100 per cent foreign equity participation (GATT, 1992).

In many transition economies, however, FDI in sectors such as production of military equipment and extraction of natural resources has been subject to restrictions on the extent of foreign ownership.[15] Therefore, we exclude firms in these sectors including

[15] See Dunning and Rojec (1993) for a description.

coal, gas and oil industry from our sample. Since service sectors tend to be more restricted than manufacturing, we focus on firms in manufacturing sectors only.

Another crucial variable in our regressions is a measure of investor's technological sophistication. We follow the literature in constructing a standard proxy, namely, the ratio of a firm's R&D expenditure to the value of sales. Technological sophistication has been shown to be positively correlated with the probability of investment taking place (see Markusen, 1995) and negatively associated with the probability of investment project being a joint venture (Asiedu and Esfahani, 2001; Javorcik, 2006).

Since the literature on FDI stresses the importance of all intangible assets, not just those related to technologies, as an alternative to technological sophistication we use investor's advertising intensity. An established brand name, a widely-recognized trademark or a reputation for the quality of products may be as valuable to a producer as a sophisticated technology, thus protecting these intangible assets may play a key role in the choice of entry mode. We proxy investor's advertising intensity using selling, general and administrative expenses as a percentage of sales.[16]

Additionally, we control for firm size, production diversification and the distance between home and host countries. As larger firms have more resources, they are more likely to engage in FDI. Similarly, firms with less diversified production structure may be forced by competitive pressures in their home countries to search for new markets. The lack of familiarity with the market and its legal/institutional environment is likely to increase with the physical distance, thus the costs associated with undertaking FDI are likely to be higher for more distant host countries.[17] Moreover, Blomström and Zejan (1991) suggest that larger firms are more likely to take higher risks and thus more often choose full ownership. Their empirical results, however, lead to the opposite conclusion. Stopford and Wells (1972) point out that more diversified firms may be more tolerant towards minority ownership and thus more likely to engage in JVs, which is confirmed by Meyer (1998). Finally, Kogut and Singh (1988) show that cultural distance is positively related to the probability of a JV, which suggests that a local partner is more useful in a less familiar environment. Figures on all firm specific variables come from the *Worldscope* database.

[16] This measure was employed by, for instance, Stopford and Wells (1972), Grubaugh (1987) and Javorcik (2004).
[17] See Markusen (1995) for a survey of FDI determinants.

The FDI decision equation also includes several additional regressors, such as a host country's GDP, GDP per capita and a measure of openness to trade and corporate tax rates in the host country. We expect to find that the probability of investment is positively related to the market size (GDP) and purchasing power of local consumers (GDP per capita) and negatively correlated with tax rates.[18]

All variables are described in more detail in the Appendix, while summary statistics are listed in Table 3. Firm size, GDP, GDP per capita, distance and openness enter the model in logarithmic form.

Preliminary Results – FDI Entry Decision Alone

We report first the single-equation probit estimation that focuses solely on the investors' decision to enter a host country. Table 4 presents the estimation results with each column corresponding to a regression employing a different corruption measure.

In the first three columns, we use a firm's ratio of R&D expenditure to total sales as a proxy for its relative technological rank. We find that foreign investors that are large, have a less diversified production structure and possess more intangible assets are more likely to invest in transition economies. Large domestic market and smaller distance to investor's home country are correlated with a greater likelihood of investment. GDP per capita, openness to trade and corporate tax rate do not appear to have a statistically significant effect in most cases.

More essential for the current paper, we find that corruption in a host country is always negatively associated with the probability of foreign investment for all three measures of corruption. However, this effect is statistically significant only when corruption is proxied by the WDR and KKZ indices.

In the last three columns, we use a firm's advertising intensity – the ratio of its advertising expenditure to its total sales – as a measure of its technological leadership. The basic results are very similar to those in the first three columns. In particular, host country corruption is always negatively related to the probability of a multinational firm's entry into the market. Of the three measures of corruption, WDR and KKZ indexes of

[18] Because of data constraints, we use statutory tax rates even though effective tax rates might be more appropriate. However, Wei's (2000a) findings indicate that substituting the former tax rates with the latter has a negligible effect on the results.

corruption are statistically significant. In other words, the notion that host country corruption deters foreign firms from entering the market finds some support in our data.

It may be useful to provide a quantitative assessment of the corruption effect. For illustration, we use the point estimate in Column 3 (when corruption is measured by the KKZ index). A decrease in corruption incidence from the level found in Azerbaijan (high) to that prevailing in Estonia (quite low) is associated with an increase in the probability of foreign investment from 4 to 19 percent. Given that there are many other factors influencing the FDI entry decision, this estimated effect is not trivial. To summarize, the preliminary evidence so far suggests that the level of corruption in a prospective location plays an important role in one's investment decision.

Joint Estimation of the FDI Entry and the Ownership Mode Effects

As we argued earlier, the effects of corruption on FDI entry and on ownership mode decisions are better estimated jointly using the two equations described before as Specification 2. The estimation results are presented in Table 5. Each column in the table represents the result of a different maximum likelihood estimation. The coefficient estimates from the FDI entry decision equation are reported in the top panel of the table, while the coefficient estimates from the ownership mode equation are in the lower panel. Similar to Table 4, a firm's technological leadership is proxied by its R&D intensity in the first three columns and by its advertising intensity in the last three columns.

As one can see from the top panel of Table 5, the results of the FDI entry decision are broadly consistent with those in Table 4. In particular, the corruption variable always enters with a negative sign, and is statistically significant in four out of the six regressions. Hence, the data suggests that host country corruption is likely a deterrent to foreign investment.

Our subsequent discussion will focus on the lower panel of the table, where the results on the ownership mode decision are reported. We find that the coefficient on corruption is always negative and statistically significant in three out of six regressions. The negative sign is consistent with the hypothesis that corruption encourages a foreign investor to form a joint venture with a local partner (possibly to save on the transaction cost in dealing with government officials). The coefficients on measures of the foreign investor's technological sophistication are positive and significant at the one percent level in all regressions, suggesting that firms with better technology or more established brand

names are more reluctant to use local partners, which supports the hypothesis that concern for technological leakage in a joint venture grows with the firm's degree of technological sophistication.

We can again illustrate the quantitative magnitude of the corruption effect on the ownership structure using the point estimate in Column 3 (when corruption is measured by the KKZ index). A decrease in corruption level from the level found in Azerbaijan (high) to that prevailing in Estonia (quite low) is associated with an increase in the likelihood of a wholly-owned foreign investment, conditional on FDI taking place. More precisely, the probability of foreign investment adopting the form of a wholly-owned subsidiary increases from 25 to 44 percent. If we use the WDR corruption index instead (Column 1 in Table 5), the probability of a wholly-owned foreign investment increases from 27 to 44 percent.

In Table 6, we present a series of robustness checks.[19] The specifications presented in the table correspond to Columns 1-3 in Table 5, but to save space we report only the coefficients on corruption. First, we exclude investors from distant countries (Singapore, Brazil, Malaysia, South Africa and South Korea) as they may be less familiar with the region, or may be attracted to a particular host country only for some strategic reason and thus may be less concerned about corruption. Doing so does not change our previous conclusions. Second, we restrict our attention to European investors only. Their proximity and better knowledge of the region may suggest a different response behavior and less sensitivity to corruption. It does not appear to be the case, however, as the estimation results on the subsample of European firms are essentially identical to our earlier findings. Third, to limit the number of zeros on the left-hand side, we exclude host countries with fewer than 10 FDI projects. The results are robust to this restriction.[20] Fourth, to limit the number of cases when the dependent variable is equal to zero, we exclude firms with less than two FDI projects in the region. Again, doing so does not affect our conclusions. Finally, we check whether our findings on the entry mode are robust to controlling for the economic size of the host country. We find that the total

[19] We thank an anonymous reviewer for suggesting these robustness checks.

[20] If we restrict the sample to the six countries that had an Association Agreement with the European Union by the end of 1995 (the year in which our sample was collected), we cannot reject the hypothesis that corruption does not matter for FDI entry decisions. This could mean that corruption is not a significant factor for multinational firms when they consider investment in EU accession countries. At the same time, there might not be enough variation in these six host countries, so that a lack of statistically significant coefficient could also be due to a lack of statistical power.

GDP and the GDP per capita do not appear to play an important role in the choice of entry mode and that their presence does not change our conclusions with respect to corruption and the entry mode.[21]

In Table 7, we also examine the interplay between corruption incidence and investors' intangible assets by including the interactive term between firms' technological sophistication (or advertising intensity) and host country corruption in the ownership mode equation. A positive sign on the interaction term would be consistent with the following hypothesis: foreign investors are generally more inclined to form joint ventures in a corrupt country, but their interest in joint ventures decreases with their level of technological sophistication because of the concern that intellectual property protection becomes problematic in a more corrupt country.

The results presented in Table 7 give limited (weak) support to this hypothesis. The interaction term bears a positive sign in five out of six regressions but it is significant only in one instance. However, in regressions that do not include the measures of technological level or advertising intensity by themselves, the coefficient on the interactive term is positive and statistically significant in all cases (not reported to save space).

Do U.S. investors behave differently from investors from other countries? As mentioned at the beginning of the paper, Hines (1995) suggests that (before the OECD anti-bribery treaty went into effect in 1999) US multinationals were more likely to avoid joint ventures in corrupt countries than investors of other nationalities. To test this hypothesis, we include in both equations a dummy variable for US investors and an interaction between the dummy and corruption level. The results are presented in Table 8. We find no evidence that American firms invest less in corrupt countries, which is consistent with the results of Wei (2000a). We find, however, some evidence that while US companies tend to be more interested in joint ventures than investors from other countries, they are indeed more averse to joint ventures in corrupt host countries (this is consistent with Hines, 1995). The interaction between the US dummy and the corruption measure bears a positive and significant coefficient in three out of six regressions. Under the US Foreign Corrupt Practices Act of 1977, American investors are legally liable (and

[21] Moreover, the Akaike information criterion suggests that the specifications presented in the lowest panel of Table 6 are preferred to a specification not controlling for the level of corruption. This is also true of all specifications in Table 5.

thus can be fined or jailed) if their local joint venture partners pay bribes. This might have induced them to engage less in joint ventures.

IV. CONCLUSIONS

This paper studies how a foreign investor's decision to undertake FDI and the choice of the entry mode are affected by the extent of corruption in a host country. Corruption makes local bureaucracy less transparent and hence adds to the cost of doing business. Moreover, corruption affects the decision to take on a local joint venture partner. On the one hand, corruption increases the value of a local partner to a foreign investor. On the other hand, foreign investors with sophisticated technology may worry about leakage of technological know-how or its misuse by joint venture partners and are thus less inclined to form a joint venture.

These trade-offs are illustrated using a minimalist theoretical framework. The model predicts that when corruption level is sufficiently high, no foreign investment in any ownership form would take place. Conditional on foreign investment taking place, the foreign investor would prefer a wholly-owned form if its technology is sufficiently sophisticated. Holding the level of technological sophistication constant, the higher the corruption (up to a limit), the more inclined the foreign investor is to set up a joint venture.

We test these hypotheses using a firm-level data set on FDI in Eastern Europe and the former Soviet Union in the 1990s. The data provides some support for these hypotheses. For example, using the KKZ corruption measure, we find that an increase in corruption from the (low) level in Estonia to the (high) level in Azerbaijan would reduce the probability of foreign investment by 15 percentage points. Conditional on FDI taking place, the same increase in corruption is found to increase the probability of joint venture versus wholly-owned foreign firms from 25 to 44, nearly doubled. These empirical patterns are broadly consistent with the predictions of the theoretical framework. In addition, we find that, other things equal, American investors are somewhat more reluctant to form joint ventures in more corrupt countries, possibly because of the U.S. Foreign Corrupt Practices Act of 1977.

Regarding joint venture firms, our data set does not have information on the exact ownership shares between foreign and local partners. It may be useful in the future to

work out the effect of corruption on majority- versus minority-owned joint ventures and test it with some more refined data.

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APPENDIX

Firm specific variables used in the empirical analysis come from *Worldscope* which is a commercial database providing detailed financial statements, business descriptions, and historical pricing information on thousands of public companies located in more than fifty countries. They pertain to 1993 or the closest year for which the information was available and refer to worldwide operations of each firm. Below we present a more detailed description of the variables.

- *Firm R&D intensity:* measured by R&D expenditure as a percentage of net sales. Source: *Worldscope*
- *Firm advertising intensity:* measured by selling, general & administrative expenses as a as a percentage of net sales. Source: *Worldscope*
- *Firm size*: measured by a firm's sales in millions of US dollars. Source: *Worldscope*
- *Production diversification*: measured by the number of four digit SIC codes describing a firm's activities. Source: *Worldscope*
- *GDP* and *GDP per capita*: data for 1993. Source: EBRD (1994)
- *Corruption WDR Index:* WDR rating is based on the response to question 14 in the WDR survey which asked: "Is it common for firms in my line of business to have to pay some irregular, "additional" payments to get things done?" The respondents were asked to rate corruption on a 1 to 6 scale with 1 denoting "always" and 6 "never." To facilitate interpretation of the results we rescaled the variable in the following way: rescaled WDR = 7 – original WDR. Thus, higher values correspond to a higher level of corruption. Source: The World Bank, unpublished.
- *Corruption KKZ Index:* Composite index based on 194 measures of governance from seventeen different sources. See KKZ (1999) for a detailed description. Rescaled KKZ index = 2.5 – original KKZ index. Source: KKZ, 1999.
- *Corruption Neumann Index:* The proportion of exports by certain German firms to a host country that involved corrupt payments. The index value of 1 corresponds to 10% of transactions involving corrupt payments, 2 to 20%, etc. Source: Neumann (1994).
- *Distance:* logarithm of distance in kilometers between the capital cities. The primary source is Rudloff (1981), supplemented by Pearce and Smith (1984). In the case of

following countries the average distance from the main cities was used: Argentina (Buenos Aires, Cordoba, Rosario), Australia (Canberra, Sydney, Melbourne), Canada (Toronto, Vancouver, Montreal), Russia (Moscow, St. Petersburg, Nizhni Novogorod). The data for Nizhni Novogorod is from http://www.unn.runnet.ru/nn/whereis.htm. For the United States Kansas City, Missouri was used, for Netherlands De Bilt, Slovakia Poprad, Switzerland Zurich. Distances between Taiwan and other countries are from Shang-jin Wei's NBER web site: www.nber.org/~wei.

- *Openness:* the sum of exports and imports as a share of GDP. The average value for 1991-95 has been used. Source: The World Bank's WDI database.
- *Corporate tax rate:* in percentages; if several rates apply, the highest one was used. Source: PricewaterhouseCoopers.

TABLE 1. DISTRIBUTION OF PROJECTS BY HOST COUNTRY

Host country	No of JV projects in the sample	No. of wholly owned projects in the sample	Total no. of projects in the sample
Albania	3	1	4
Azerbaijan	1	1	2
Belarus	5	3	8
Bulgaria	16	13	29
Croatia	7	4	11
Czech	55	53	108
Estonia	16	8	24
FYR Macedonia	2	1	3
Georgia	4	2	6
Hungary	50	48	98
Kazakhstan	10	6	16
Latvia	13	6	19
Lithuania	8	5	13
Moldova	2	0	2
Poland	84	51	135
Romania	21	12	33
Russia	83	31	114
Slovak Republic	26	19	45
Slovenia	13	5	18
Turkmenistan	1	0	1
Ukraine	20	5	25
Uzbekistan	5	1	6
TOTAL	**445**	**275**	**720**

Source countries (listed in the decreasing order of importance in the sample): United Kingdom, United States, Germany, France, Finland, Switzerland, Denmark, Norway, Netherlands, Austria, Sweden, Belgium, Canada, Japan, Australia, Italy, Greece, Ireland, Portugal, Singapore, Spain, Brazil, Malaysia, South Africa and South Korea.

TABLE 2. CORRUPTION MEASURES

	WDR	KKZ	Neumann
Albania		3.5	
Azerbaijan	4.6	3.5	6
Belarus	4.2	3.2	4
Bulgaria	4.6	3.1	4
Croatia		3.0	4
Czech Republic	2.8	2.1	4
Estonia	2.2	1.9	2
Macedonia, FYR	3.1	3.0	8
Georgia	4.2	3.2	4
Hungary	2.6	1.9	6
Kazakhstan	4.3	3.4	4
Latvia	3.9	2.8	4
Lithuania	3.3	2.5	0
Moldova	4.2	2.9	
Poland	3.1	2.0	4
Romania		3.0	6
Russian Federation	3.8	3.1	8
Slovak Republic	4.1	2.5	4
Slovenia		1.5	2
Turkmenistan		3.8	4
Ukraine	3.4	3.4	4
Uzbekistan	4.4	3.5	4
Mean	3.7	2.8	4.3

Source: see the Appendix

TABLE 3. SUMMARY STATISTICS

Variable	No. of obs.	Mean	Std. Dev.
GDP	22	21,391	41,029
GDP per capita	22	1,429	1,471
WDR Corruption Index	18	3.7	0.7
KKZ Corruption Index	22	2.8	0.6
Neumann Corruption Index	20	4.3	1.9
Corporate tax rate	21	29.5	6.5
Distance between source and host countries	7,752	5,314	3,412
Firm size	252	3,375,906	11,000,000
Production diversification	255	4.6	2.0
Firm Technological Intensity	158	3.2	3.6
Firm Advertising Intensity	173	19.7	11.5

TABLE 4. CORRUPTION AND ENTRY DECISION: SINGLE-EQUATION PROBIT

	WDR	Neumann	KKZ	WDR	Neumann	KKZ
Firm size	0.135***	0.124***	0.126***	0.184***	0.167***	0.169***
	(0.023)	(0.021)	(0.021)	(0.023)	(0.023)	(0.023)
Production diversification	-0.077***	-0.079***	-0.077***	-0.062***	-0.069***	-0.061***
	(0.022)	(0.020)	(0.020)	(0.017)	(0.016)	(0.015)
Firm R&D intensity	0.032***	0.036***	0.036***			
	(0.009)	(0.009)	(0.009)			
Firm advertising intensity				0.014***	0.013***	0.014***
				(0.003)	(0.002)	(0.002)
GDP	0.452***	0.536***	0.616***	0.412***	0.516***	0.575***
	(0.056)	(0.109)	(0.081)	(0.043)	(0.098)	(0.078)
GDP per capita	0.096	-0.037	-0.381**	0.059	-0.044	-0.421***
	(0.070)	(0.114)	(0.150)	(0.054)	(0.096)	(0.132)
Corruption	-0.190***	-0.011	-0.552***	-0.277***	-0.043	-0.648***
	(0.056)	(0.053)	(0.155)	(0.054)	(0.047)	(0.149)
Distance	-0.343***	-0.381***	-0.337***	-0.331***	-0.367***	-0.316***
	(0.060)	(0.066)	(0.059)	(0.058)	(0.064)	(0.054)
Corporate tax	0.006	-0.008	-0.005	0.006	-0.015	-0.008
	(0.006)	(0.015)	(0.010)	(0.006)	(0.013)	(0.007)
Openness	0.218*	0.214	0.398	0.035	0.030	0.219
	(0.130)	(0.340)	(0.281)	(0.106)	(0.351)	(0.281)
Intercept	-5.420***	-5.113**	-3.302**	-4.676***	-4.633**	-2.475
	(1.160)	(2.147)	(1.687)	(1.079)	(2.216)	(1.579)
Log likelihood	-857.9	-990.2	-1000.6	-895.5	-1035.9	-1041.4
No. of obs.	2808	2964	3276	3060	3230	3570
Chi^2	788.9	449.5	518.6	1150.1	492.2	444.0
Prob > Chi^2	0.00	0.00	0.00	0.00	0.00	0.00
Pseudo R^2	0.30	0.25	0.27	0.30	0.23	0.26

Standard errors corrected for clustering for host countries are listed in parentheses. ***, **, * denotes significance at 1, 5, 10% level, respectively

TABLE 5. CORRUPTION, ENTRY AND OWNERSHIP STRUCTURE: A JOINT ESTIMATION

	WDR	Neumann	KKZ	WDR	Neumann	KKZ
FDI ENTRY EQUATION						
Firm size	0.135***	0.124***	0.126***	0.184***	0.167***	0.169***
	(0.023)	(0.021)	(0.021)	(0.023)	(0.023)	(0.023)
Production diversification	-0.077***	-0.080***	-0.077***	-0.062***	-0.069***	-0.061***
	(0.022)	(0.020)	(0.020)	(0.017)	(0.016)	(0.015)
Firm R&D intensity	0.032***	0.036***	0.036***			
	(0.009)	(0.009)	(0.009)			
Firm advertising intensity				0.014***	0.013***	0.014***
				(0.003)	(0.002)	(0.002)
GDP	0.451***	0.529***	0.617***	0.412***	0.513***	0.575***
	(0.060)	(0.110)	(0.081)	(0.045)	(0.098)	(0.078)
GDP per capita	0.099	-0.025	-0.382**	0.059	-0.0389	-0.423***
	(0.077)	(0.117)	(0.150)	(0.060)	(0.099)	(0.132)
Corruption	-0.189***	-0.009	-0.553***	-0.277***	-0.042	-0.650***
	(0.056)	(0.053)	(0.155)	(0.0540)	(0.048)	(0.149)
Distance	-0.342***	-0.379***	-0.337***	-0.331***	-0.367***	-0.316***
	(0.060)	(0.066)	(0.058)	(0.058)	(0.064)	(0.054)
Corporate tax	0.006	-0.008	-0.005	0.006	-0.014	-0.008
	(0.007)	(0.015)	(0.010)	(0.006)	(0.013)	(0.007)
Openness	0.215	0.196	0.399	0.035	0.023	0.221
	(0.136)	(0.340)	(0.281)	(0.107)	(0.350)	(0.281)
Intercept	-5.419***	-5.070**	-3.301**	-4.675***	-4.621**	-2.466
	(1.161)	(2.161)	(1.684)	(1.070)	(2.224)	(1.565)
OWNERSHIP MODE EQUATION						
Firm size	0.038	-0.006	0.025	0.120***	0.116***	0.136***
	(0.034)	(0.032)	(0.033)	(0.033)	(0.036)	(0.032)
Production diversification	-0.068***	-0.051***	-0.062***	-0.049**	-0.042*	-0.047**
	(0.018)	(0.017)	(0.017)	(0.021)	(0.021)	(0.020)
Firm R&D intensity	0.082***	0.079***	0.091***			
	(0.011)	(0.011)	(0.012)			
Firm advertising intensity				0.040***	0.038***	0.040***
				(0.004)	(0.004)	(0.004)
Corruption	-0.193	-0.111***	-0.350***	-0.130	-0.058	-0.264**
	(0.132)	(0.040)	(0.114)	(0.133)	(0.045)	(0.131)
Distance	0.057	0.118	0.074	-0.066	-0.054	-0.068
	(0.083)	(0.086)	(0.083)	(0.075)	(0.082)	(0.074)
Intercept	-0.597	-0.271	-0.462	-1.595**	-1.625**	-1.671**
	(0.515)	(0.421)	(0.459)	(0.714)	(0.764)	(0.691)
Rho	-0.038	-0.306***	0.023	0.003	-0.116	0.060
	(0.180)	(0.091)	(0.096)	(0.171)	(0.111)	(0.107)
No. of obs.	2808	2964	3276	3060	3230	3570
censored	2360	2484	2791	2614	2754	3089
uncensored	448	480	485	446	476	481
Chi^2	97.88	101.28	80.06	338.88	155.00	227.53
Prob > Chi^2	0.00	0.00	0.00	0.00	0.00	0.00
Log Likelihood	-1136.2	-1284.0	-1296.5	-1168.0	-1325.6	-1331.6

Standard errors corrected for clustering for host countries are listed in parentheses. ***, **, * denotes significance at 1, 5, 10% level, respectively

TABLE 6. ROBUSTNESS CHECKS: A JOINT ESTIMATION

	Excluding firms from Singapore, Brazil, Malaysia, South Africa and South Korea			Excluding non-European firms		
	WDR	Neumann	KKZ	WDR	Neumann	KKZ
FDI ENTRY EQUATION						
Corruption	-0.195***	-0.011	-0.560***	-0.231***	-0.013	-0.619***
	(0.054)	(0.054)	(0.155)	(0.060)	(0.060)	(0.179)
OWNERSHIP MODE EQUATION						
Corruption	-0.187	-0.109**	-0.343**	-0.145	-0.106**	-0.343***
	(0.132)	(0.039)	(0.113)	(0.132)	(0.035)	(0.092)
No. of obs.	2754	2907	3213	1764	1862	2058

	Excluding host countries with fewer than 10 projects			Excluding firms with less than two FDI project in the region		
	WDR	Neumann	KKZ	WDR	Neumann	KKZ
FDI ENTRY EQUATION						
Corruption	-0.199***	0.024	-0.659***	-0.231***	-0.013	-0.619***
	(0.056)	(0.079)	(0.158)	(0.060)	(0.060)	(0.179)
OWNERSHIP MODE EQUATION						
Corruption	-0.166	-0.111**	-0.310**	-0.145	-0.106**	-0.343***
	(0.124)	(0.042)	(0.117)	(0.132)	(0.035)	(0.092)
No. of obs.	1716	2184	2184	1764	1862	2058

	Controlling for economic size in the Ownership Mode Equation		
	WDR	Neumann	KKZ
	R&D intensity		
FDI ENTRY EQUATION			
Corruption	-0.182**	-0.011	-0.547***
	(0.056)	(0.054)	(0.142)
OWNERSHIP MODE EQUATION			
Corruption	-0.095*	-0.074	-0.405**
	(0.049)	(0.077)	(0.148)
GDP	0.215***	0.032	0.313
	(0.062)	(1.849)	(0.197)
GDP per capita	0.342***	0.213	-0.041
	(0.057)	(0.258)	(0.231)
No. of obs.	2808	2964	3276

Standard errors corrected for clustering for host countries are listed in parentheses. ***, **, * denotes significance at 1, 5, 10% level, respectively.
All specification include the same control variables as Columns 1 – 3 in Table 5.

TABLE 7. JOINT ESTIMATION WITH INTERACTION TERMS

	WDR	Neumann	KKZ	WDR	Neumann	KKZ
FDI ENTRY EQUATION						
Firm size	0.135***	0.124***	0.126***	0.184***	0.167***	0.169***
	(0.023)	(0.021)	(0.021)	(0.023)	(0.023)	(0.023)
Production diversification	-0.077***	-0.080***	-0.077***	-0.062***	-0.069***	-0.061***
	(0.022)	(0.020)	(0.020)	(0.017)	(0.016)	(0.015)
GDP	0.451***	0.529***	0.617***	0.412***	0.513***	0.575***
	(0.060)	(0.110)	(0.081)	(0.045)	(0.098)	(0.078)
GDP per capita	0.099	-0.026	-0.382**	0.059	-0.039	-0.424***
	(0.077)	(0.117)	(0.150)	(0.060)	(0.099)	(0.132)
Firm R&D intensity	0.032***	0.036***	0.036***			
	(0.009)	(0.010)	(0.009)			
Firm advertising intensity				0.014***	0.013***	0.014***
				(0.003)	(0.002)	(0.002)
Corruption	-0.189***	-0.009	-0.553***	-0.277***	-0.042	-0.651***
	(0.056)	(0.053)	(0.155)	(0.054)	(0.048)	(0.149)
Distance	-0.342***	-0.379***	-0.337***	-0.331***	-0.367***	-0.316***
	(0.060)	(0.066)	(0.058)	(0.058)	(0.064)	(0.054)
Corporate tax	0.006	-0.008	-0.005	0.006	-0.014	-0.008
	(0.007)	(0.015)	(0.010)	(0.006)	(0.013)	(0.007)
Openness	0.214	0.195	0.398	0.035	0.023	0.221
	(0.137)	(0.341)	(0.281)	(0.107)	(0.350)	(0.281)
Intercept	-5.419***	-5.068**	-3.301**	-4.675***	-4.621**	-2.464
	(1.161)	(2.162)	(1.684)	(1.070)	(2.224)	(1.563)
OWNERSHIP MODE EQUATION						
Firm size	0.038	-0.004	0.025	0.120***	0.116***	0.132***
	(0.034)	(0.032)	(0.033)	(0.033)	(0.036)	(0.032)
Production diversification	-0.068***	-0.052***	-0.062***	-0.049**	-0.042**	-0.044**
	(0.018)	(0.017)	(0.016)	(0.021)	(0.021)	(0.019)
Firm R&D intensity	0.060	0.104***	0.046			
	(0.054)	(0.031)	(0.054)			
Firm R&D * Corruption	0.006	-0.005	0.017			
	(0.015)	(0.005)	(0.021)			
Firm advertising * Corruption				0.000	0.000	0.017*
				(0.010)	(0.002)	(0.009)
Firm advertising intensity				0.040	0.037***	0.001
				(0.031)	(0.012)	(0.020)
Corruption	-0.218	-0.090**	-0.426***	-0.129	-0.063	-0.643**
	(0.145)	(0.038)	(0.147)	(0.312)	(0.061)	(0.252)
Distance	0.057	0.112	0.075	-0.066	-0.053	-0.066
	(0.084)	(0.088)	(0.084)	(0.075)	(0.081)	(0.075)
Intercept	-0.510	-0.370	-0.261	-1.597	-1.598**	-0.753
	(0.436)	(0.397)	(0.434)	(1.194)	(0.747)	(0.900)
Rho	-0.042	-0.293***	0.017	0.003	-0.117	0.067
	(0.1808)	(0.092)	(0.097)	(0.171)	(0.107)	(0.106)
No. of obs.	2808	2964	3276	3060	3230	3570
censored	2360	2484	2791	2614	2754	3089
uncensored	448	480	485	446	476	481
Log likelihood	-1136.16	-1283.83	-1296.22	-1168.04	-1325.62	-1329.87

TABLE 8. ARE US INVESTORS DIFFERENT? JOINT ESTIMATION

	WDR	Neumann	KKZ	WDR	Neumann	KKZ
FDI ENTRY EQUATION						
Firm size	0.132***	0.121***	0.122***	0.181***	0.163***	0.165***
	(0.023)	(0.021)	(0.021)	(0.024)	(0.023)	(0.023)
Production diversification	-0.065***	-0.068***	-0.067***	-0.058***	-0.066***	-0.060***
	(0.022)	(0.020)	(0.020)	(0.016)	(0.014)	(0.014)
Firm R&D intensity	0.032***	0.037***	0.037***			
	(0.009)	(0.009)	(0.009)			
Firm advertising intensity				0.013***	0.013***	0.013***
				(0.003)	(0.002)	(0.002)
GDP	0.459***	0.536***	0.613***	0.420***	0.515***	0.571***
	(0.057)	(0.106)	(0.078)	(0.042)	(0.093)	(0.074)
GDP per capita	0.085	-0.065	-0.363**	0.045	-0.069	-0.408***
	(0.077)	(0.120)	(0.156)	(0.059)	(0.098)	(0.133)
Corruption	-0.163***	0.003	-0.480***	-0.263***	-0.036	-0.600***
	(0.062)	(0.054)	(0.177)	(0.063)	(0.048)	(0.169)
Distance	-0.483***	-0.561***	-0.490***	-0.462***	-0.517***	-0.444***
	(0.063)	(0.072)	(0.076)	(0.073)	(0.071)	(0.076)
Corporate tax	0.004	-0.008	-0.006	0.004	-0.015	-0.009
	(0.006)	(0.014)	(0.010)	(0.006)	(0.012)	(0.007)
Openness	0.185	0.187	0.355	0.013	0.009	0.184
	(0.136)	(0.318)	(0.277)	(0.098)	(0.327)	(0.275)
US dummy * Corruption	0.148	-0.012	0.064	0.178	0.009	0.086
	(0.142)	(0.040)	(0.161)	(0.149)	(0.039)	(0.146)
US dummy	0.006	0.722***	0.385	-0.158	0.497**	0.219
	(0.490)	(0.227)	(0.466)	(0.498)	(0.201)	(0.413)
Intercept	-4.333***	-3.602*	-2.294	-3.587***	-3.275	-1.526
	(1.175)	(2.090)	(1.735)	(1.134)	(2.198)	(1.626)
OWNERSHIP MODE EQUATION						
Firm size	0.035	-0.009	0.024	0.121***	0.115***	0.137***
	(0.036)	(0.034)	(0.035)	(0.033)	(0.035)	(0.032)
Production diversification	-0.057***	-0.047***	-0.053***	-0.043**	-0.040*	-0.044**
	(0.019)	(0.017)	(0.017)	(0.020)	(0.022)	(0.019)
Firm R&D intensity	0.083***	0.080***	0.093***			
	(0.012)	(0.012)	(0.013)			
Firm advertising intensity				0.040***	0.039***	0.040***
				(0.004)	(0.004)	(0.004)
Corruption	-0.246*	-0.097**	-0.444***	-0.173	-0.034	-0.316**
	(0.140)	(0.044)	(0.091)	(0.147)	(0.050)	(0.134)
Distance	0.010	0.070	0.029	-0.101	-0.107	-0.095
	(0.088)	(0.098)	(0.081)	(0.069)	(0.085)	(0.062)
US dummy * Corruption	0.569***	-0.044	0.634**	0.463*	-0.109	0.386
	(0.221)	(0.070)	(0.293)	(0.259)	(0.074)	(0.305)
US dummy	-1.682**	0.403	-1.358**	-1.396	0.720	-0.844
	(0.746)	(0.460)	(0.691)	(0.952)	(0.498)	(0.856)
Intercept	-0.089	0.018	0.061	-1.231**	-1.399***	-1.380**
	(0.520)	(0.462)	(0.531)	(0.556)	(0.541)	(0.546)
Rho	-0.088	-0.312***	-0.006	-0.030	-0.107	0.046
	(0.214)	(0.092)	(0.113)	(0.192)	(0.103)	(0.113)
No. of obs.	2808	2964	3276	3060	3230	3570
censored	2360	2484	2791	2614	2754	3089
uncensored	448	480	485	446	476	481
Log likelihood	-1123.871	-1268.027	-1282.724	-1158.142	-1314.133	-1322.982

Standard errors corrected for clustering for host countries are listed in parentheses. ***, **, * denotes significance at 1, 5, 10% level, respectively