Corruption Environment, FDI and Domestic Investment

Jan Hanousek,[*] Anastasiya Shamshur,[**] Jan Svejnar[†] and Jiri Tresl[‡]

December 27 2019

Abstract

Using a panel data set of 33,824 privately owned firms in thirteen European countries between 2001 to 2013, we carry out the first large-scale study of the effect of uncertainty about corruption (uncertainty about the need to make unofficial payments to public officials) on investment of multinational enterprises (MNEs) and domestic firms. With datasets of manager interviews and firms' financial and accounting statements we find that higher corruption uncertainty is not associated with lower investment by MNEs operating in a given country, but is associated with lower investment in domestic firms. In all models, investment by MNEs is also unaffected by the level of corruption, while in domestic firms this depends on model specification. Our results are robust to other uncertainties and provide new insights into the effect of corruption on investments, the behavior of MNEs versus domestic firms in corrupt environments, and the relevance of real option theory to international business. They also suggest that policy toward domestic firms should aim at reducing corruption uncertainty (e.g., by having all permits issued by one office).

Keywords: MNEs, FDI, real option theory, investment; corruption; uncertainty; private firms; panel data; Europe

JEL Classification: C33, D24, G32, L60, L80, M21

[†] Corresponding author. School of International and Public Affairs, Columbia University, 1401 International Affairs, MC 3328, 420 West 118th Street, New York, NY 10027, Tel. 212-854-0135, Fax 212-854-1229. E-mail: js4085@columbia.edu

[*] CERGE-EI, Charles University and the Academy of Sciences, Prague and CEPR, London. CERGE-EI, Charles University, Academy of Sciences, Politickych veznu 7, P.O. Box 882, 111 21 Prague, Czech Republic. Telephone (+420) 224-005-119; Fax: (+420) 224-005-444; E-mail: jan.hanousek@cerge-ei.cz

[**] Norwich Business School, University of East Anglia, Norwich; CERGE-EI, Charles University and the Academy of Sciences, Prague. Norwich Business School, University of East Anglia, Norwich, Norfolk, NR4 7TJ, UK. Telephone (+44) 1603-591459; E-mail: a.shamshur@uea.ac.uk

[‡] Business School, University of Mannheim, 68161 Mannheim, Germany; CERGE-EI, Charles University and the Academy of Sciences, Prague. Telephone (+ 49) 0621-181-1516; E-mail: jtresl@mail.uni-mannheim.de

We would like to thank Michael Spence, Ernst Maug, Eric Theissen, Oliver Spalt, Jan Bena, Stephen Ferris, Andrea Patacconi, Jack Rader, Stepan Jurajda, Randy Filer, Demian Berchtold, Emre Unlu, Yannik (Max) Schneider, and participants of various conferences, including the European Economic Association 2017, European FMA 2017, SEAM 2017, IMES 2017, International Trade & Finance Association 2017, ISEO 2017, SFA 2017, and seminars held at the University of Mannheim, University of Missouri, CERGE-EI, University of East Anglia, and Mendel University for valuable insights. The research was supported by GAČR grant No. 16-20451S. The usual disclaimer applies.

1. Introduction

The international business (IB) literature on corruption and investment primarily draws on and further develops two large literatures. The first examines the effects of corruption on investment and economic growth and finds that these effects are negative and may depend on the type and origin of firms (e.g., Mauro, 1995; Wei, 2000; Cuervo and Cazurra, 2006 and 2008; Weitzel and Berns, 2006; d'Agostino, Dunne and Pieroni, 2016). The literature focuses on country-level measures of the level of corruption and chiefly argues that corruption acts as a tax on investments. The second important literature is the real options theory (ROT) pioneered by Pindyck (1993) and Dixit and Pindyck (1994), further developed by Bloom, Bond and Van Reenen (2007), and recently reviewed with respect to the IB area by Chi, Li, Trigeorgis, and Tsekreros (2019). It points out that investment decisions are sensitive to uncertainties. In line with this theoretical prediction, general economic uncertainty and uncertainty shocks have been found to reduce investment (e.g., Leahy and Whited, 1996; Bloom, Bond and Van Reenen, 2007; Bloom, 2009), and more recently a negative investment effect has also been found with respect to specific sources of uncertainty — policy uncertainty (Baker, Bloom and Davis, 2016; Gulen and Ion, 2016) and political uncertainty (Julio and Yook, 2012).

In this paper, we build on these two important literatures and provide the first large-scale analysis of the impact of uncertainty about corruption (uncertainty about the need to make unofficial payments to bureaucrats to conduct business) on investment by majority foreign-owned enterprises (henceforth MNEs) and majority domestically-owned (henceforth domestic) firms. Focusing on corruption uncertainty that firms face in their environment is important because corruption is increasingly recognized as a serious problem that varies across countries and localities, and affects entry strategies and FDI allocation of MNE's (e.g., Cuervo and Cazurra, 2006, 2008; Sartor and Beamish, 2018; Rabbiosi and Santangelo, 2019). In particular, the importance of uncertainty about the level of corruption stems from corruption's illegal nature and from differences in the functioning of legal systems within and across countries. In some localities firms face corrupt environment characterized by high levels of uncertainty and risk. In others, corruption is organized and acts simply as "fast money" (see e.g., World Bank, 1997). Indeed, when the nature of "corruption exchange" is predictable, firms may treat it simply as a tax. However, when the nature and outcome of the corruption exchange is

unpredictable, the effect of this corruption uncertainty on firms' investment policies may be very large. [1]

In the literature on the harmful effects of corruption scholars generally examine the effects of the average level of corruption in a country on industry-level and national-level outcomes (Shleifer and Vishny, 1993; Mauro, 1995; Rose-Ackerman, 1999), and more recently also on firm-level outcomes (Fisman and Svensson, 2007; Fungáčová, Kochanova and Weill, 2015; Hanousek, Shamshur and Tresl, 2017). Few papers also analyze the macro effects of corruption uncertainty on FDI or on the share of private investment to GDP (Wei, 1997; Campos, Lien and Pradhan, 1999). Conceptually closest to ours is a paper by Malesky and Samphantharak (2008) who use a dataset of 500 Cambodian firms to investigate the effect of corruption-induced uncertainty on firm investment. Unfortunately, data limitations prevent the authors from drawing strong conclusions as they measure corruption uncertainty by the turnover of a political leader — a measure that is likely to reflect political uncertainty or even economic uncertainty. The authors cannot differentiate between these types of uncertainty and corruption uncertainty. They also analyze primarily small firms (median asset value of less than US$ 40,000) in selected Cambodian provinces over a short (two-year) period, with investment and asset information being self-reported by the firms and hence prone to measurement error. Finally, since the firms are generally very small and unsophisticated, they may react to corruption uncertainty in a particular way.

We extend the literature on corruption in five important ways. First, we analyze corruption *uncertainty* together with the effect of the *level* of corruption. Second, we differentiate among several sources of uncertainty — in addition to corruption uncertainty, we control for economic uncertainty, political uncertainty, and inflation uncertainty. Third, we examine separately the impact of corruption uncertainty on (a) different types of MNEs operating in the local market and (b) domestic firms. Fourth, we use firm-level financial data that are not self-reported in interviews but come from official sources. Finally, we carry out our analysis on a large panel data set of 33,824 diverse privately owned firms operating in 979 locations of 13 different countries during a relatively long (2001-2013) period. The countries are in Central-East Europe where the corruption survey was administered to the top managers by the European Bank for Reconstruction and Development (EBRD).[2]

[1] Similarly, Bloom (2009, p. 624) notes that the literature on macroeconomic shocks is generally more concerned with first-order moments (shocks) yet leaves the second-order moments (uncertainty) unexplored.

[2] Of the thirteen countries, ten are members of the European Union (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Poland, Romania, Slovakia, and Slovenia), while three are not (Bosnia and Herzegovina, Serbia and Ukraine).

We also extend the ROT literature dealing with the effects of uncertainty on firm-level investment. We do so by examining if corruption uncertainty – an idiosyncratic uncertainty factor -- affects the amount of investment by different types of MNEs and by domestic firms. We develop a detailed corruption uncertainty measure that varies over time by country, industry, firm size, and urban population size. Using this local measure of corruption uncertainty, we extend the ROT literature on the effects of uncertainty and uncertainty shocks on corporate investment (Pindyck, 1993; Dixit and Pindyck, 1994; Leahy and Whited, 1996; Bloom, Bond and Van Reenen, 2007; Gulen and Ion, 2016; Baker, Bloom and Davis, 2016; Kim and Kung, 2017; and Chi, Li, Trigeorgis, and Tsekrekos, 2019).

Providing a better understanding of the effects of corruption on firm outcomes is important for furthering our understanding of key issues in international business: the effect of corruption on investment of MNEs operating in host countries, the differences in investment behavior of local firms versus MNEs, and the relevance of ROT for international business. This better understanding is also relevant from the policy standpoint. Many countries and international institutions go to great lengths to deter corruption through anti-bribery regulations such as the US Foreign Corrupt Practices Act, the U.K. Bribery Act, or the OECD's Anti-Bribery Convention that criminalize the bribery of foreign public officials in international business transactions. In spite of increased transparency and strict anti-bribery regulations, corruption is found to be persistent in many economies. In the Global Fraud Survey, EY (2016) for instance concluded that corruption "represents a substantial threat to sluggish global growth and fragile financial markets." The World Bank Institute in turn estimated that already at the start of this century corruption amounted to about 5% of global GDP and thus reached about $1 trillion in any given year (Rose-Ackerman, 1999). Hence, given the global mission to mitigate the harmful effects of corruption, our research provides the first large-scale evidence on whether uncertainty about corruption affects different types of MNEs and domestic firms, and whether it should be an important part of anti-corruption strategies and policies.

As with all measures of uncertainty, measuring the portion of overall uncertainty that is attributable to corruption uncertainty is challenging. We go beyond existing studies by (a) developing the best possible measure of corruption uncertainty faced by firms in a given locality rather than as a single aggregate measure in a given country, (b) combining it with the best available firm-level data, and (c) controlling for other types of uncertainty. In particular, we construct a corruption uncertainty measure using EBRD's Business Environment and Enterprise Performance Survey (BEEPS) that provides data from interviews with top managers

of firms on a broad range of issues about the business environment and performance.[3] BEEPS has been recognized as the best multi-country dataset on corruption (see e.g., Svensson, 2005; Fisman and Svensson, 2007) and we use it to construct a measure of corruption uncertainty that reflects the variation in perception of corruption in a given local environment, defined by country, time, industry, company size, and urban population size. We merge this corruption uncertainty measure with firm-level financial and ownership data from the Amadeus database, maintained by Bureau van Dijk. As we discuss below, the Amadeus database has much better financial and ownership information for each firm than BEEPS. Hence, by combining the two sources of data we obtain a superior overall dataset for our analysis and our approach also addresses some of the potential endogeneity concerns.

We base our analysis on an unbalanced panel of 33,548 privately owned (i.e., not publicly traded) firms totaling 102,077 firm-year observations in 13 European countries during the period 2001-2013. We take advantage of the panel structure of our dataset and employ FE models that produce robust results with respect to firm and time *invariant unobserved* heterogeneity.

In line with the hypotheses that we develop in the next section of the paper, we find no relationship between *corruption uncertainty* and investment by MNEs, irrespective of whether the MNEs are from OECD versus non-OECD countries or from countries with more versus less corruption. We do find, however, a negative relationship between *corruption uncertainty* and investment by domestic firms. These results are striking and we examine them in depth in the paper.

We also obtain an interesting set of findings with respect to the *level of corruption*, which the previous literature has often associated with a negative effect on performance. We show that investment by all types of MNEs operating in the host countries is unaffected by the level of corruption, irrespective of whether the level is measured by our local measure of corruption or by the country-wide Corruption Perception Index (CPI) of Transparency International. The findings for domestic firms are more complicated. Using our local measure of corruption, we find that investment is not affected by the level of corruption when we also include corruption uncertainty in the regression. When we exclude corruption uncertainty, the level of corruption has a negative investment effect in simple specifications but not in more fully specified models.

[3] As we discuss later, existing studies based on the BEEPs database use this database for the construction of both the corruption and financial variables, with the recall information on the financial variables suffering from errors in variables and endogeneity issues. Moreover, existing studies do not construct a local measure of corruption uncertainty and do not control for other types of uncertainty.

Finally, we show that a higher level of corruption, measured by country-wide CPI, is associated with lower investment by domestic firms irrespective of whether our local measures of corruption and corruption uncertainty are included as explanatory variables. We interpret these findings later in the paper.

The paper is structured as follows. In Section 2 we develop the hypotheses, while in Section 3 we discuss the data and methodology. In Section 4 we present the results and in Section 5 we report the results of the robustness checks. We conclude in Section 6.

2. Developing Hypotheses

The theoretical literature on the relationship between uncertainty and corporate investment contains opposing predictions. One strand of the literature, building on the seminal work of Hartman (1972) and Abel (1983), argues that a risk-neutral competitive firm increases investments under greater uncertainty as a result of the increase in value of the marginal unit of capital. Another strand of the literature, launched by Pindyck (1993) and Dixit and Pindyck (1994), and reviewed in the IB context recently by Chi, Li, Trigeorgis, and Tsekrekos (2019), examines firm investment decisions under uncertainty from the ROT perspective.[4] According to this theory, the threshold return that justifies an investment is higher if the investment cannot be recovered or can only be terminated at a cost if conditions turn out to be less favorable than initially expected. Hence, higher uncertainty gives a stronger incentive for managers to postpone investments that can be delayed until more information is revealed, implying a negative relationship between uncertainty and investment. This relationship is attenuated during demand shocks (Bloom, Bond and Van Reenen, 2007).

The related empirical literature overwhelmingly supports the arguments proposed by Pindyck (1993), Dixit and Pindyck (1994) and subsequent contributors. Leahy and Whited (1996) for instance find that uncertainty lowers firms' investment. Bloom, Bond and Van Reenen (2007) show that uncertainty with (partial) irreversibility reduces corporate investments. Gulen and Ion (2016) find that corporate investments are lower with higher policy uncertainty in the US. Finally, Kim and Kung (2017) show that as uncertainty increases, firms

[4] Pindyck (1993) focuses on the impact of cost uncertainty on investments, a topic that is further developed in the seminal book on real options theory by Dixit & Pindyck (1994). In particular, Pindyck (1993) develops a model based on the sequential investment model of Roberts and Weitzman (1981) to study the impact of technical and input cost uncertainty on investment decisions. Technical uncertainty is the physical difficulty in completing a project while input cost uncertainty refers to either specific input cost factors or to the unpredictability of government regulation. He concludes that the investment decision is not very sensitive to technical uncertainty but very sensitive to cost uncertainty.

using fewer redeployable assets reduce investments more than firms using more redeployable assets.

In analyzing the impact of corruption uncertainty we start by noting that the level of corruption has been found to have an adverse effect on investment and growth (Mauro, 1995), but the size of this negative impact seems to vary with the type of corruption regime (Shleifer and Vishny, 1993). For example, in environments where corruption is monopolized by a rent-maximizing bureaucrat, paying a bribe ensures the desired outcome with no need to pay further bribes in the future. As there is no uncertainty about corruption, the bribe could be treated as an additional cost or tax. Yet, in environments with several bureaucrats, bribing one bureaucrat does not guarantee that others would not also demand a bribe. In this case there is uncertainty over the total cost of the bribe and eventual results. Empirical literature that tests whether corruption uncertainty affects investment is very limited. Wei (1997) examines the effect of corruption uncertainty on FDI using cross-national survey data and finds the relationship between them to be negative. Campos, Lien and Pradhan (1999) in turn show at a macro level that higher predictability of (lower uncertainty about) corruption is associated with higher investment as a percentage of GDP. Finally, as discussed earlier, utilizing a dataset of 500 small Cambodian firms, Malesky and Samphantharak (2008) report that an increase in corruption uncertainty that is presumably induced by a change of governor reduces firms' investments in subsequent periods. These authors argue that the predictability of corruption is at least as important for firm investment decisions as the amount of bribes a firm must pay.

Building on this limited evidence about the relationship between corruption uncertainty and investment, as well as on the more solid empirical evidence on the relationship between uncertainty and corporate investment, corruption uncertainty has an adverse impact on investment. We hypothesize, however, that the effect of corruption uncertainty on investments differs for domestic firms and MNEs. In particular, many empirical studies show that MNEs are careful when entering foreign corrupt markets (e.g., Wei, 2000; Habib and Zurawicki, 2002). MNEs typically also conduct research about the corruption in the host country and the legal implications, adjust their internal policies and control mechanisms to combat corruption requests, and reach favorable agreements with local authorities as a condition of entry (Boddewyn and Brewer, 1994; Doh, Rodriguez, Uhlenbruck, Collins, and Shekshnia, 2003). These internal processes and prior agreements may effectively reduce uncertainty (including corruption uncertainty) that foreign firms face in a given environment. Second, MNEs are often subject to strict anti-bribery regulation in their home country and hence reluctant to engage in corruption in the host country (Cuervo-Cazzura, 2008). This also makes them less likely to be

affected by corruption uncertainty.[5] Third, MNEs tend to follow more responsible business practices as they typically are more concerned about their reputation than domestic firms. Fourth, Mironov's (2015) in his study argues effectively that "foreign owners restrict the corrupt behavior of their managers.". Fifth, MNEs may self-select themselves into environments characterized by low corruption uncertainty and lesser impact on investment behavior. Finally, a lack of knowledge about the local environment may reduce the incentives for MNEs to get involved in corruption (Calhoun, 2002; Cuervo-Cazurra, Maloney and Manrakhan, 2007; Bell, Moore and Filatotchev, 2012; Poelhekke, 2015).

In view of the expected behavioral and institutional differences between the MNEs and domestic firms, we put forth the following two hypotheses:

H1: *Corruption uncertainty has a small or no adverse impact on investment by MNEs operating in host countries.*

H2: *Corruption uncertainty has an adverse impact on investment by domestic firms.*

3. Data and Methodology

In this section we explain how we have assembled the data for our analysis, constructed the corruption uncertainty measure, formulated our estimating equations, and selected methods for tackling the issue of potential endogeneity.

3.1. Data and Sample Construction

As mentioned earlier, our firm-level data come from two different sources. We use BEEPS data to collect information about the local environments (clusters) in which firms operate. We construct the indicator of *Corruption uncertainty* for each cluster, as described in section 3.2 below.[6] We match the clusters to firm-level data from the Amadeus database because Amadeus has much more accurate information on the financial and accounting information of firms than BEEPs.[7] Our approach ensures that we have detailed information on corruption uncertainty, as

[5] For example, Zeume (2017) shows that UK firms responded to the implementation of the UK Bribery Act 2010 by reducing the expansion of their subsidiary network in countries perceived to be corrupt. Their sales and merger and acquisition activities in such countries also declined.

[6] Detailed survey information is available at http://ebrd-beeps.com/about/

[7] Although the corruption measure provided by BEEPS is superior to country-level corruption measures (Svensson, 2005), the firm financial and accounting information, which is also part of the survey, is not fully reliable. Surveyed firms are often reluctant to reveal their financial records. For example, about 40% of firms covered by BEEPS do not report their financial information. All studies that rely on firm financial data from

well as relatively accurate financial and ownership information for each firm in our sample. Combining these two independent data sources also reduces potential endogeneity problems that could arise if each firm reported both its financial data and its perceived level of corruption — the worst-performing firms might for instance have an incentive not to report or misreport their financial information, but to complain the most about corruption (Jensen, Li and Rahman, 2010).

Given the nature of the Amadeus database, we use unconsolidated financial statements to avoid double-counting of firms and subsidiaries or operations abroad, and to exclude firms that report only consolidated statements. We create our dataset from seven bi-annual versions of Amadeus and special historical queries. We do so because Bureau van Dijk tends to eliminate historical firm-level data after ten years, as well as historical data on firms that become inactive, merge, or change identification. We exclude firms in the financial intermediation sector and insurance industries (NACE codes 64–66) because they have a different balance sheet and a specific liability structure. Firm-level variables are trimmed at the 1% and 99% levels and are defined as follows:

Gross Investment is calculated as fixed assets (FIAS) minus lagged fixed assets plus depreciation (DEPRE), scaled by total assets. *Ln(Total Assets*) reflects firm size and is measured as the natural logarithm of total assets (TOAS) in US$ million. *Cash Flow* is calculated as profits/loss plus depreciation (CF) divided by total assets (TOAS). *Sales Growth* is sales (TURN) minus lagged sales scaled by lagged sales. *Ln (Employees)* is the natural logarithm of the number of employees (EMPL). *Leverage* is calculated as long-term debt (LTDB) + current liabilities (CULI), scaled by total assets (TOAS). Country-level variables are extracted from the Global Financial Development Database (GFDD). In our analysis, we use *Private Credit*/*GDP* defined as private credit scaled by GDP, where private credit is the deposit by money banks and other financial institutions; *Market Cap*/*GDP* is the ratio of the value of listed shares on the national stock exchange divided by GDP; and *GDP Growth* is the annual percentage nominal growth rate of GDP denominated in the local currency.

Finally, to ensure that the corruption uncertainty effect we estimate is not driven by economic or political uncertainty, we also estimate specifications in which we control for these sources of uncertainty. The most popular measure of economic uncertainty used in the literature is stock market volatility, which has been demonstrated to have a strong counter-cyclical

BEEPS suffer from this selection bias. Therefore, merging BEEPS to the Amadeus database helps us to overcome this problem and obtain financial and ownership information for firms that is not self-reported.

relationship with real economic activity (Bloom, 2009). We therefore collect information on monthly stock market volatility for each country in the sample. Czech (PX) and Slovak (SAX) stock market indices are obtained from the respective stock market exchange websites. The stock market index information for Latvia (OMXR) and Estonia (OMXT) come from Nasdaq. The rest of the stock market indices are obtained from Bloomberg as follows: Slovenia (SBITOP), Bosnia and Herzegovina (BIFXX), Croatia (CROBEX), Bulgaria (SOFIX), Hungary (BUX), Poland (WIG), Romania (BET), Serbia (BELEXLIN), and Ukraine (UX). As a second proxy for economic uncertainty we use inflation uncertainty. Inflation uncertainty affects any costs that are associated with unexpected inflation and it has been demonstrated that an increase in inflation uncertainty may hinder investments (Huizinga, 1993). Following Ghosal and Ye (2015), we estimate inflation uncertainty as the squared residual from an AR (2) forecasting model of inflation, where we measure annual inflation as the change in the Consumer Price Index.

In Panel A of Table 1 we provide the summary statistics for domestic firms and MNEs for the main variables that we use in our analysis. As may be seen from the table, MNEs operate in less corrupt local environments than domestic firms in terms of the corruption mean and uncertainty. In Panel B of Table 1 we report the number of observations by industry. The largest number of observations comes from manufacturing and represents more than 40% of the MNE and domestic firm samples. The second largest industry group is transportation and storage which represents more than 20% of each sample. In Panel C we show the number of observations by country and year. In the sample of MNEs, Romania has the largest number of observations at 2,073 and Hungary the smallest, at 6. In the sample of domestic firms, Ukraine has the largest number of observations at 41 360 , while Latvia has the smallest number at 100. The sample spans the period from 2001 to 2013, with the highest coverage being in 2011 for MNEs and 2009 for domestic firms.

(Insert Table 1 here)

3.2. Corruption Uncertainty Measure

Existing measures of corruption tend to be aggregate in nature and lack conceptual precision about specific sources of corruption. Moreover, they are based on samples and methodologies that change over time. For example, the CPI of Transparency International measures the average level of (only) public sector corruption at the country-level, as perceived by “experts”. Between 2000 and 2008 the number of countries included in this index doubled from 90 to 180 and the

number of independent sources used to construct the index varied between 7 and 13. The World Bank Worldwide Governance Indicators (WGI) measure corruption perception in the public and private sectors, as perceived by experts and opinion polls. WGI is centered every year around 0, which means that changes capture only shifts in individual countries' relative position. Between 2000 and 2008 the number of included countries increased from 196 to 208, while the median number of sources per country increased from 6 to 11.

In our study, we avoid the above issues by taking advantage of two properties of the BEEPs survey. First, the BEEPs survey allows us to clearly define the source of corruption and therefore does not lack conceptual precision. Second we can take advantage of the time series properties of the corruption source because the survey questions are identical over several waves of the survey.[8] In particular, we generate the local measure of corruption and corruption uncertainty on the basis of a question about the business environment in which the firm operates. From each firm, we obtain the top manager's response to the following survey statement/question: *"It is common for firms in my line of business to have to pay some irregular "additional payments or gifts" to get things done with regard to customs, taxes, licenses, regulations, services, etc."* The responses are on a scale from 1 (Never) to 6 (Always), which we normalize to fall in the closed interval between 0 and 1. Based on these responses, we infer the average likelihood that a firm in a given survey wave, country, 2-digit industry, firm size, and urban population size (henceforth cluster) encounters requests for bribery in its business transactions.

Following the logic of Bloom (2009), we construct our corruption uncertainty measure as the standard deviation of a given answer (x) to the above survey statement/question. In particular, we create a numerical variable [(x-1)/6] and calculate the standard deviation of the answers in each cluster. *Corruption uncertainty* is thus defined for each local environment by country, industry (2-digit ISIC rev 3.1) in the corresponding BEEPs wave (2000–2002, 2003–2005, 2006–2009, and 2010–2013), firm size (firms with 2–10 employees, firms with 11–49 employees and firms with more than 50 employees), and urban location (capital, city with more than 1 million inhabitants and city with less than 1 million inhabitants).[9] Higher corruption uncertainty in the cluster indicates larger differences in the firms' perception of the level of corruption in their environment (cluster). For example, in 2010 a Polish firm with 11-49

[8] We provide more information about the BEEPS dataset in Appendix II.

[9] In comparison, the country-level indicators of corruption exhibit very little variation over time and could often be captured by country-, region- or industry-specific fixed effects, thus making it difficult to single out the effect of corruption.

employees located in Warsaw and operating in the construction industry faced an average level of corruption of 0.133 and corruption uncertainty of 0.231. At the same time, a similar Croatian firm located in Zagreb and operating in the construction industry faced a corruption level of 0.280 and corruption uncertainty of 0.303.

3.3. Econometric Model

In analyzing the effect of uncertainty on corporate investment, we build on the work of Asker, Farre-Mensa and Ljungqvist (2015) and Erel, Jang and Weisbach (2015) who model the investment decision of privately owned firms.[10] In particular, we start with estimating a FE investment equation that is similar to that of Erel, Jang and Weisbach (2015), but is augmented with our corruption variables:

$$\begin{aligned} &Gross\ Investment_{it} \\ &= \alpha_0 + \beta X_{it} + \gamma_0\ Mean\ Corruption_{\ rt} + \gamma_1\ Corruption\ Uncertainty_{rt} + \\ &\delta Macro_{ct} + \tau_t + f_i + \varepsilon_{it}, \end{aligned} \tag{1}$$

for all i = 1,…, N (firm index); t = 2001,…, 2013 (time index); r = 1,…, R (cluster index), c = 1,…, c = 1,…, C (country index).

Vector X_{it} contains firm-specific control variables — firm size, cash flow, leverage, and sales growth for firm i at time t. These firm characteristic are informative in investment equations because they have historically been viewed as capturing financial constraints (e.g., Fazzari, Hubbard and Petersen, 1988) and the expectations of investment opportunities (Bond, Klemm, Newton-Smith, Syed, and Vlieghe, 2004).

Macro denotes a set of country-level variables — total private credit to GDP, stock market capitalization to GDP, and nominal GDP growth — to control for variation in external financing availability. The year fixed effects (τ_t) control for changes in overall macroeconomic conditions.

[10] Bloom, Bond and Van Reenen (2007) examine investment decisions of 672 publicly traded UK manufacturing firms between 1972 and 1991, yielding an unbalanced panel of 5,347 firm-year observations. Asker, Farre-Mensa and Ljungqvist (2015) compare the investment behavior of privately owned US firms to that of public counterparts and their database contains more than 400,000 firm-year observations for private US firms from 2001 to 2011. Erel, Jang, and Weisbach (2015) examine investment behavior of European target firms around their acquisition. These authors also use the Amadeus database and their sample contains more than 5,000 acquisitions from 2001 to 2008.

We focus on estimating the effect on firm's investment of $Corruption\ Uncertainty_{rt}$ in cluster r at time t, while controlling for $Mean\ Corruption_{rt}$ in cluster r at time t. The coefficient of interest γ_1 captures the effect of corruption uncertainty on firm's investment, *ceteris paribus*. We also include firm fixed effects (f_i) to control for unobserved time-invariant firm heterogeneity, including the time-invariant mean corruption effect for each firm. Standard errors (ε_{it}) are robust to arbitrary heteroskedasticity.

3.4 Issues of Causality

The question that naturally arises is whether there is potential endogeneity between the firm's corruption involvement and its investment decisions. Our choice of data and estimation techniques aim to minimize this problem. First, we construct our measure of the corruption environment from a separate survey of managers (BEEPS). The potential overlap between the firms surveyed in BEEPS and the firms covered by the Amadeus database represents less than five percent. Because of this very small overlap between the databases and the fact that we are using cluster-aggregated responses of the BEEPS firms, the potential endogeneity effect is likely to be negligible. Put differently, by constructing the corruption environment variables from an out-of-sample database and by using its within cluster characteristics, our approach is similar to using a jackknife IV (Angrist, Imbens and Krueger, 1999, and Blomquist and Dahlberg, 1999). Unfortunately, given the anonymous design of the BEEPS, we cannot "leave-out" responses of particular firms -- hence using cluster means instead of true jackknife IV might leave a small remaining effect of endogeneity of the order 1/m (cluster size) for the firms existing in both AMADEUS and BEEPS.

Second, we tackle the potential endogeneity issue more generally by using FE. The FE specification produces robust results with respect to firm and time invariant unobserved heterogeneity, and which also captures the time and firm invariant element of endogeneity.

4. Empirical Results

In this section we report the results of our empirical analysis. We start by estimating equation (1) on the MNE sample of firms. In particular, we test our first hypothesis *H1* that the negative effect of corruption uncertainty on investment by MNEs operating in host countries is either not very large or is insignificant. As may be seen from Panel A of Table 2, the coefficient on corruption uncertainty is not statistically significant in any of the FE specifications,

irrespective of what we include as other explanatory variables. In column (1) we include only firm and year fixed effect, while in column (2) we also control for the effect of firm size and macroeconomic factors that capture the variation in external financing availability. In columns (3) and (4) we further account for firm characteristics previously identified as determinants of investment decisions in private firms (Erel, Jang and Weisbach, 2015). These are cash flow, number of employees, sales growth, and leverage. The estimated coefficients are comparable to similar studies. HONZO, PLEASE INDICATE UNDER THE TABLES WHAT Partial I and Partial II mean

Our finding that corruption uncertainty has no effect on investment by MNEs operating in host countries supports the stronger version of our *H1*. We hence provide support for the argument that foreign firms effectively eliminate the involvement in local corruption practices through internal anti-bribing policies and agreements with the host governments before entering the market (Boddewyn and Brewer, 1994; Doh, Rodriguez, Uhlenbruck, Collins, and Shekshnia, 2003). MNEs may also self-select themselves into environments characterized by low corruption uncertainty in which their anti-corruption strategies are deemed to be successful. Given the data in Table 1, we find support for this conjecture. The univariate statistics in Panel A of Table 1 show that MNEs operate in environments where the corruption mean and uncertainty are 0.184 and 0.200, respectively, while domestic firms operate in environments where these values are, respectively, about 0.237 and 0.229.

As may also be seen from Panel A of Table 2, in all specifications we include as an explanatory variable the mean level of corruption in the cluster. Interestingly, contrary to the accepted wisdom that investment and other measures of firm performance are negatively associated with the level of corruption, we find that for MNEs this effect is absent -- the estimated effect of the mean level of corruption is statistically insignificant in all specifications. We explore this issue further in Panel B, where we mimic earlier studies by excluding corruption uncertainty from the set of explanatory variables. In all the specifications the coefficient on the mean level of corruption remains statistically insignificant. These findings suggest that the level of corruption is not a significant determinant for corporate investments of MNEs.

(Insert Table 2 here)

We further explore MNE investment behavior by assessing whether MNEs from explicitly more corrupt domiciles are also inclined to act unethically in their host countries because their behavior may be affected by their cultural and legal imprint (Fisman and Miguel, 2007; Cuervo-Cazurra, 2006, 2008). In particular, we split the sample of MNEs on the basis of whether their headquarters are located in an OECD country or not. We report the resulting estimates in Table 3, with Panels A and B corresponding to MNEs form OECD countries and Panels C and D to MNEs from non-OECD countries. The individual panels are structured analogously to those in Table 2 but are more compressed to save space.[11] The findings in Table 3 mirror completely those found with the entire MNE sample in Table 2. In particular, we find no statistically significant effect of either corruption uncertainty or level of corruption on either group of MNEs.

(Insert Table 3 here)

Turning to the sample of domestic firms, as may be seen from Panel A of Table 4, the estimated coefficient on corruption uncertainty is negative and statistically significant in all the FE models (columns 1–4), irrespective of what we include as other explanatory variables. The model specification is the same as for MNEs and the estimated coefficient on corruption uncertainty is stable across all four models. It indicates that an increase in uncertainty about the level of corruption is associated with a decrease in corporate investment, with an estimated coefficient on corruption uncertainty of -0.045 in the full model (column 4). The economic interpretation of the full model estimates is that a 1% increase in corruption uncertainty reduces investments by about 0.53%. This set of findings therefore supports hypothesis *H2* that corruption uncertainty has an adverse effect on investment of domestic firms.

As before, in all specifications reported in Table 4 we control for the mean level of corruption in the cluster. Surprisingly, even in the sample of domestic firms we find the estimated effect of the mean level of corruption to be statistically insignificant. When we exclude corruption uncertainty from the set of explanatory variables in Panel B, the mean level of corruption becomes negative and statistically significant only when we also exclude some

[11] We leave out the coefficients on the control variables for brevity reasons. All coefficients on the control variables have the expected signs and significance and are available upon request. We continue this practice in some of the following tables.

of the firm-specific regressors (cash flow, number of employees, sales growth, and leverage) from the regression (columns (1) and (2)). Our analysis hence suggests that the negative effect of corruption on investment is driven by corruption uncertainty rather than corruption level. To the best of our knowledge, this important empirical finding has not yet been incorporated in theory, within IB or elsewhere.

(Insert Table 4 here)

As mentioned earlier, we also advance the uncertainty literature by distinguishing the effect of corruption uncertainty from the effects of other sources of uncertainty. The literature has primarily relied on measures of volatility as proxies for economic uncertainty — stock market volatility (e.g., Leahy and Whited, 1996; Bloom, Bond and Van Reenen, 2007), exchange rate volatility (Campa and Goldberg, 1995), dispersion in firm-level earnings, industry-level earnings and total factor productivity, and predictions of forecasters (Minton and Schrand, 1999). The most popular measure of economic uncertainty among these proxies is stock market volatility and it has been demonstrated to have a strong counter-cyclical relationship with economic activity (Bloom, 2009). We therefore use the aggregate stock market volatility as a proxy for economic uncertainty. We also control for inflation uncertainty as Huizinga (1993) shows that inflation uncertainty may affect investments because it is associated with unexpected inflation. Another potential source of uncertainty highlighted in the literature is political uncertainty. Julio and Yook (2012) for example demonstrate that cycles in corporate investment correspond to the timing of national elections around the world. To ensure that our results are not driven by political uncertainty, we control for local elections cycles in the model.

In Table 5 we report the results of investment regressions that control for economic, inflation, and political uncertainty. In panel A we report estimates of the full model for the domestic sample, the MNE sample, and the MNE sample split into MNEs from OECD and non-OECD countries. As may be seen from columns (1)-(4), for each sample the estimated coefficients on corruption uncertainty remain very similar to the earlier estimates. Corruption uncertainty is a significant predictor of corporate investment for domestic firms but not for MNEs. Political, economic and inflation uncertainty, in line with the literature, also have negative and significant effects on investment of domestic firms. In contrast, investment decision of MNEs, when taken as one group, is sensitive only to inflation uncertainty (Column 2). Corruption uncertainty, economic uncertainty, political uncertainty, and cluster-level of corruption do not seem to have any effect on investment of MNEs. The same set of fundamental

results is obtained when we split the MNE sample into the OECD and non-OECD groups (columns (3) and (4) of Table 5, respectively), except that the significant effect of inflation uncertainty on investment disappears. Investment of MNEs from OECD or non-OECD countries is found to be unrelated to all the uncertainty measures that we use. On the basis of these findings we hypothesize that MNEs are able to hedge macroeconomic and political risks much better than domestic firms. Our conjecture is consistent with the argument that MNEs are able to shift resources across units and countries as economic conditions change (e.g., Kogut and Kulatilaka, 1994; Belenzon, Bennett and Patacconi, 2017).

Since it could be argued that corruption uncertainty partially captures the negative effect of the average level of corruption in a country, in Panel B of Table 5 we also include as a regressor the country-wide level of corruption using the Corruption Perception Index (CPI) of Transparency International. We do so with the reservations about CPI mentioned earlier. In our estimations we use the inverted and scaled CPI, so that a higher value of the index connotes a higher level of corruption. The values range from 0 to 10, with 10 indicating the highest level of corruption. We find that the coefficient on corruption uncertainty remains negative and statistically significant in our sample of domestic firms. The coefficient on the inverse CPI is also negative and statistically significant for these firms, supporting for domestic firms the prior notion that aggregate corruption has a negative impact on investments. The coefficients on corruption uncertainty and inverse CPI are both statistically insignificant in the MNE sample. Our analysis hence suggests that while domestic firms are sensitive to corruption as measured by the CPI, MNEs are not.

(Insert Table 5 here)

5. Robustness Checks

In this section, we extend our analysis in several important directions and examine the robustness of our main findings.

5.1. Firm Size

We further investigate the robustness of our results by splitting our sample by firm size and running our investment regressions separately for the bottom one-third and top one-third of firms to assess if our results are driven by small or large firms. As we show in Table 6, the coefficient on corruption uncertainty is negative and statistically significant for both small and

large domestic firms, but it is statistically insignificant for MNEs irrespective of their size and origin. In both large and small domestic firms, investment is also negatively affected by economic and inflation uncertainty. MNEs' investment behavior is generally insensitive to economic and inflation uncertainty, except for MNEs from non-OECD countries that are marginally (at 10 percent statistical test level) negatively affected by inflation uncertainty.

(Insert Table 6 here

5.2. MNEs from High and Low Corruption Countries

We also explore whether investment behavior of MNEs from more corrupt countries is affected by corruption uncertainty compared to MNEs from low corruption countries. This analysis is motivated by the idea that MNEs from more corrupt countries are inclined to act less ethically in their host countries because their behavior may be affected by their cultural background (Fisman and Miguel, 2007). In order to test this hypothesis, we split the sample of MNEs on the basis of the level of corruption in the country of MNE's origin. We use the CPI to identify countries with the lowest corruption and we interact the level of corruption variable and the corruption uncertainty variable with a dummy variable coded 1.0 for firms from the ten least corrupt countries, which yields a dataset of 2,282 observations. The results, not reported here in a tabular form, show that corruption uncertainty has no impact on corporate investments of MNEs from either the high or low corruption countries.[12]

6. Conclusions

In this study we bring together and further develop two important literatures, one dealing with the *effects of the level of corruption on investment* and one with the *effects of uncertainty on investment*. In particular, we use a large panel data set of 33,824 privately owned firms in thirteen European countries between 2001 to 2013 to provide the first large-scale study of the *effects of uncertainty about corruption* (the need to make unofficial payments to bureaucrats) *on investment*. Combining manager interviews with a separate dataset on firm balance sheets and income statements, we find that higher corruption uncertainty is associated with lower corporate investments among domestic firms, but that investment in MNEs is not affected by corruption uncertainty. An average domestic firm

[12] The results are available upon request.

operating decreases investments by 0.5% when corruption uncertainty increases by 1%, while there is no such effect among the MNEs.

Our findings lead us to conjecture that MNEs' insensitivity to corruption uncertainty may be driven by the fact that these firms are often subject to strict anti-bribery regulation in their home countries and also may have the ability to negotiate effectively with host governments and/or self-select themselves into environments with low corruption and low uncertainty about corruption.

We also obtain an important result with respect to the level of corruption. In agreement with earlier studies, we find that the level of corruption has a negative effect on investment of domestic firms when corruption uncertainty is not included as an explanatory variable. However, in all specifications in which we include corruption uncertainty, the effect of the level of corruption becomes statistically insignificant. This finding calls for a reexamination of the effect that the level of corruption and uncertainty about corruption have on investment and on economic performance of firms and economies.

Overall, our principal result demonstrates the importance of corruption uncertainty for domestic corporate investment and, consequently, for aggregate economic growth. It also points to the importance of accounting for corruption uncertainty when assessing anti-bribery policies and of taking into account firm size and ownership. Importantly, while an overall decrease of the corruption level is clearly an important policy goal, our results suggest that considerable attention ought to be given to reducing uncertainty about the level of corruption among domestic firms. Ignoring this uncertainty could substantially reduce the effectiveness of policies aimed at reducing the deleterious effect of corruption. In fact, our results strongly suggest that it is corruption uncertainty rather than corruption level that brings about the negative effect of corruption on investment by domestic firms and not by MNEs, which already entered the market.

A practical example of how our principal finding may be relevant for policy follows from the fact that uncertainty about corruption is often brought about by multiple public officials demanding bribes at various offices as firms try to obtain all the necessary permits and licenses, comply with regulations, and pay taxes. If the government introduced a single point ("one-stop-shop") for obtaining all permits, licenses and affidavits, corruption uncertainty might be reduced and corruption payment, if present, would approximate a single tax. In addition, if the permits, licenses and affidavits were issued electronically within a well-defined time period, policy makers might even be able to reduce the corruption tax as no official would personally interact

with the requests for permits, licenses and affidavits. In this respect, Estonia is an example of a role model in e-government.

References

Abel, Andrew B, 1983, Optimal investment under uncertainty, *The American Economic Review* 73, 228-233.

Angrist, Joshua David, Guido W Imbens, and Alan B Krueger, 1999, Jackknife instrumental variables estimation, *Journal of Applied Econometrics* 14, 57-67.

Asker, John, Joan Farre-Mensa, and Alexander Ljungqvist, 2015, Corporate investment and stock market listing: A puzzle?, *The Review of Financial Studies* 28, 342-390.

Baker, Scott R, Nicholas Bloom, and Steven J Davis, 2016, Measuring economic policy uncertainty, *The Quarterly Journal of Economics* 131, 1593-1636.

Belenzon, Sharon, Victor Manuel Bennett, and Andrea Patacconi, 2017, Workers on tap? How labor flexibility fosters experimentation and business creation, *Duke I&E Research Paper* 16.

Bell, R Greg, Curt B Moore, and Igor Filatotchev, 2012, Strategic and institutional effects on foreign ipo performance: Examining the impact of country of origin, corporate governance, and host country effects, *Journal of Business Venturing* 27, 197-216.

Bloom, Nicholas, 2009, The impact of uncertainty shocks, *Econometrica* 77, 623-685.

Bloom, Nick, Stephen Bond, and John Van Reenen, 2007, Uncertainty and investment dynamics, *The Review of Economic Studies* 74, 391-415.

Boddewyn, J., and Brewer, T. (1994). International-Business Political Behavior: New Theoretical Directions. *The Academy of Management Review, 19*(1), 119-143

Bond, Stephen, Alexander Klemm, Rain Newton-Smith, Murtaza Syed, and Gertjan W. Vlieghe, 2004, The roles of expected profitability, tobin's q and cash flow in econometric models of company investment Bank of England Working Paper.

Calhoun, Mikelle A, 2002, Unpacking liability of foreignness: Identifying culturally driven external and internal sources of liability for the foreign subsidiary, *Journal of International Management* 8, 301-321.

Campa, Jose, and Linda S Goldberg, 1995, Investment in manufacturing, exchange rates and external exposure, *Journal of International Economics* 38, 297-320.

Campos, J Edgardo, Donald Lien, and Sanjay Pradhan, 1999, The impact of corruption on investment: Predictability matters, *World Development* 27, 1059-1067.

Chi, Tailan, Jing Li, Lenos G Trigeorgis, and Andrianos E Tsekrekos, 2019, Real options theory in international business, *Journal of International Business Studies* 50, 525-553.

Cuervo-Cazurra, Alvaro, 2008, The effectiveness of laws against bribery abroad, *Journal of International Business Studies* 39, 634-651.

Cuervo-Cazurra, Alvaro, Mary M Maloney, and Shalini Manrakhan, 2007, Causes of the difficulties in internationalization, *Journal of International Business Studies* 38, 709-725.

d'Agostino, Giorgio, J. Paul Dunne, and Luca Pieroni, 2016, Government spending, corruption and economic growth, *World Development* 84, 190-205.

Dixit, Avinash K, and Robert S Pindyck, 1994. *Investment under uncertainty* (Princeton university press).

Doh, J., Rodriguez, P., Uhlenbruck, K., Jamie Collins, Eden, L., & Shekshnia, S. (2003). Coping with Corruption in Foreign Markets [and Executive Commentary]. *The Academy of Management Executive (1993-2005), 17*(3), 114-129.

Erel, Isil, Yeejin Jang, and Michael S Weisbach, 2015, Do acquisitions relieve target firms' financial constraints?, *The Journal of Finance* 70, 289-328.

Fazzari, Steven, R Glenn Hubbard, and Bruce Petersen, 1988, Investment, financing decisions, and tax policy, *The American Economic Review* 78, 200-205.

Fisman, Raymond, and Edward Miguel, 2007, Corruption, norms, and legal enforcement: Evidence from diplomatic parking tickets, *Journal of Political economy* 115, 1020-1048.

Fisman, Raymond, and Jakob Svensson, 2007, Are corruption and taxation really harmful to growth? Firm level evidence, *Journal of Development Economics* 83, 63-75.

Fungáčová, Zuzana, Anna Kochanova, and Laurent Weill, 2015, Does money buy credit? Firm-level evidence on bribery and bank debt, *World Development* 68, 308-322.

Ghosal, Vivek, and Yang Ye, 2015, Uncertainty and the employment dynamics of small and large businesses, *Small Business Economics* 44, 529-558.

Gulen, Huseyin, and Mihai Ion, 2016, Policy uncertainty and corporate investment, *Review of Financial Studies* 29, 523-564.

Habib, Mohsin and Zurawicki, Leon, 2002, Corruption and Foreign Direct Investment, *Journal of International Business Studies* (33), 291-307.

Hanousek, Jan, Anastasiya Shamshur, and Jiri Tresl, 2017, Firm efficiency, foreign ownership and ceo gender in corrupt environments, *Journal of Corporate Finance*.

Hartman, Richard, 1972, The effects of price and cost uncertainty on investment, *Journal of Economic Theory* 5, 258-266.

Huizinga, John, 1993, Inflation uncertainty, relative price uncertainty, and investment in us manufacturing, *Journal of Money, Credit and Banking* 25, 521-549.

Jensen, Nathan M, Quan Li, and Aminur Rahman, 2010, Understanding corruption and firm responses in cross-national firm-level surveys, *Journal of International Business Studies* 41, 1481-1504.

Jorgenson, Dale W, 1971, Econometric studies of investment behavior: A survey, *Journal of Economic Literature* 9, 1111-1147.

Julio, Brandon, and Youngsuk Yook, 2012, Political uncertainty and corporate investment cycles, *The Journal of Finance* 67, 45-83.

Kim, Hyunseob, and Howard Kung, 2017, The asset redeployability channel: How uncertainty affects corporate investment, *The Review of Financial Studies* 30, 245-280.

Kogut, Bruce, and Nalin Kulatilaka, 1994, Operating flexibility, global manufacturing, and the option value of a multinational network, *Management Science* 40, 123-139.

Leahy, J. V., and T. M. Whited, 1996, The effect of uncertainty on investment: Some stylized facts, *Journal of Money, Credit and Banking* 28, 64-83.

Malesky, Edmund J, and Krislert Samphantharak, 2008, Predictable corruption and firm investment: Evidence from a natural experiment and survey of cambodian entrepreneurs, *Quarterly Journal of Political Science* 3, 227-267.

Mauro, Paolo, 1995, Corruption and growth*, *The Quarterly Journal of Economics* 110, 681-712.

Minton, Bernadette A, and Catherine Schrand, 1999, The impact of cash flow volatility on discretionary investment and the costs of debt and equity financing, *Journal of Financial Economics* 54, 423-460.

Mironov, Maxim, 2015, Should one hire a corrupt CEO in a corrupt country?, *Journal of Financial Economics* 117, 29-42.

Pindyck, Robert S., 1993, Investments of uncertain cost, *Journal of Financial Economics* 34, 53-76.

Poelhekke, Steven, 2015, Do global banks facilitate foreign direct investment?, *European Economic Review* 76, 25-46.

Rabbiosi, Larissa, and Grazia D. Santangelo, 2019, Host country corruption and the organization of HQ–subsidiary relationships. *Journal of International Business Studies 50*, 111-124.

Roberts, Kevin, and Martin L Weitzman, 1981, Funding criteria for research, development, and exploration projects, *Econometrica: Journal of the Econometric Society* 1261-1288.

Rose-Ackerman, Susan, 1999, Corruption and government: Causes, consequences, and reform, Cambridge Books.

Sartor, Michael A, and Paul W Beamish, 2018, Host market government corruption and the equity-based foreign entry strategies of multinational enterprises, *Journal of International Business Studies 49*,346-370.

Shleifer, Andrei, and Robert W Vishny, 1993, Corruption, *The Quarterly Journal of Economics* 108, 599-617.

Svensson, Jakob, 2005, Eight questions about corruption, *The Journal of Economic Perspectives* 19, 19-42.

UNDP (2008), A Users' Guide to Measuring Corruption.

Wei, Shang-Jin, 1997, Why is corruption so much more taxing than tax? Arbitrariness kills, (National Bureau of Economic Research).

Wei, Shang-Jin, 2000, How taxing is corruption on international investors?, *Review of Economics and Statistics* 82, 1-11.

Weitzel, Utz and Sjors Berns, 2006, Cross-Border Takeovers, Corruption, and Related Aspects of Governance, *Journal of International Business Studies* (37), 786-806.

World Bank, 1997, World development report 1997: The state in a changing world, (Oxford University Press).

Zeume, Stefan, 2017, Bribes and firm value, *The Review of Financial Studies* 30, 1457-1489.

Appendix I

This table contains descriptions and sources of variables used in our analyses.

Variable	Definition
Gross Investment	= (fixed assets $(FIAS)_t$ – lagged fixed assets $(FIAS)_{t-1}$ + depreciation $(DEPRE)_t$) / total assets $(TOAS)_t$. Source: Amadeus
Cash Flow	= profits/loss plus depreciation (CF)/total assets (TOAS). Source: Amadeus
Corruption Mean	= mean of the normalized answers [=(x-1)/6] to the question *"It is common for firms in my line of business to have to pay some irregular "additional payments or gifts" to get things done with regard to customs, taxes, licenses, regulations, services etc."* at the cluster level. Clusters are jointly formed by country and industry (2-digit ISIC rev 3.1) in the corresponding BEEPs wave (2000–2002, 2003–2005, 2006–2009, and 2010–2013), by firm size (micro, small, and medium-large firms) and urban location (capital, city with more than 1 million inhabitants, city with less than 1 million inhabitants). Source: BEEPS
Corruption Uncertainty	= standard deviation of the normalized answers [=(x-1)/6] to the question *"It is common for firms in my line of business to have to pay some irregular "additional payments or gifts" to get things done with regard to customs, taxes, licenses, regulations, services etc."* at the cluster level. Clusters are jointly formed by country and industry (2-digit ISIC rev 3.1) in the corresponding BEEPs wave (2000–2002, 2003–2005, 2006–2009, and 2010–2013), by firm size (micro, small, and medium-large firms) and urban location (capital, city with more than 1 million inhabitants, city with less than 1 million inhabitants). Source: BEEPS
Economic uncertainty	= monthly stock market volatility. Sources: Czech (PX) - https://www.pse.cz/; Slovak (SAX) - http://www.bsse.sk/; Latvia (OMXR) and Estonia (OMXT) – Nasdaq; Slovenia (SBITOP), Bosnia and Herzegovina (BIFXX), Croatia (CROBEX), Bulgaria (SOFIX), Hungary (BUX), Poland (WIG), Romania (BET), Serbia (BELEXLIN), and Ukraine (UX) – Bloomberg.
Inflation uncertainty	= inflation uncertainty. Inflation is the annual change in Consumer Price Index. Inflation uncertainty is the squared residual from the AR(2) forecasting model of inflation (see Ghosal and Ye, 2015). Source: World Development Indicators, World Bank
Political Uncertainty	= a dummy variable equal to 1 if there is a local(municipal/state) election and equal to 0 otherwise Source: hand-collected
Inverse CPI (Corruption Perception Index)	It is a composite index drawing on corruption-related data from expert and business surveys carried out by a variety of independent institutions. In our estimations we use the inverted and scaled index, so that the higher index indicates

	a higher level of corruption. It ranges from 0 to 10 with 10 indicating the highest corruption. Source: Transparency International.
Ln (Employees)	= the natural logarithm of the number of employees (EMPL). Source: Amadeus
Ln(Total Assets)	= the natural logarithm of total assets (TOAS) in million USD. Source: Amadeus
Sales Growth	= (Sales $(TURN)_t$ – Lagged Sales $(TURN)_{t-1}$)/Lagged Sales $(TURN)_{t-1}$. Source: Amadeus
Leverage	= (Long-term debt (LTDB) + Current liabilities (CULI))/Total Assets (TOAS). Source: Amadeus
Private Credit/GDP	= Private Credit/GDP, where private credit is the deposit by money banks and other financial institutions. Source: Global Financial Development Database, World Bank.
Market Cap/GDP	Total value of all listed shares on the national stock exchange as a percentage of GDP. Source: Global Financial Development Database, World Bank.
GDP Growth	The annual percentage nominal growth rate of GDP denominated in the local currency. Source: Global Financial Development Database, World Bank.

Appendix II

BEEPS is a firm-level survey of a representative sample of an economy's private sector. Prior to 2008, the survey universe consisted of industry and most service sectors (ISIC Rev 3.1 codes 10-14, 15-37, 45, 50-52, 55, 60-64, 70-74, 92.1-92.4 and 93). Firms that operated in sectors subject to government price regulations and prudential supervision, such as banking, electric power, rail transport, and water and waste water were excluded. Only formal (registered) companies at least 3 years old, and with 2 or more employees were eligible for interview. There were no restrictions on ownership. Since 2008, the survey scope consists of the majority of manufacturing sectors (excluding extraction), retail and a residual stratum that includes most services sectors (wholesale, hotels, restaurants, transport, storage, communications, IT) and construction (ISIC Rev 3.1 codes 15-37, 45, 50-52, 55, 60-64, and 72). Only formal (registered) companies with 5 or more employees are eligible for interview; there are no restrictions on their age. In some larger economies such as Russia and Ukraine, the survey design allows stratification by some of the sectors with the largest contribution to employment and value added. Firms with 100% government/state ownership are no longer eligible to participate in BEEPS.

The sampling methodology for BEEPS is stratified random sampling. The sample structure for BEEPS was designed to be as representative (self-weighted) as possible to the population of firms within the industry and service sectors, subject to the various minimum quotas for the total sample. This approach ensured that there was sufficient weight in the tails of the distribution of firms by the various relevant controlled parameters (sector, size, location and ownership). Geographic regions within a country are selected based on which cities/regions collectively contain the majority of economic activity. More detailed information concerning each round of BEEPS, if known, can be found in the Reports on sampling and implementation, available in the Data section at http://ebrd-beeps.com/.

While BEEPS is a very rich dataset with a lot of information on corruption that is superior to country-level corruption measures (Svensson, 2005), firms' financial and accounting information, which is also part of the survey, is not fully reliable. Surveyed firms are often reluctant to reveal their financial records. For example, about 40% of firms covered by BEEPS do not report their financial information. Moreover, the BEEPS dataset does not have a panel structure, and therefore endogeneity issues could not be properly addressed. Given these difficulties, we identify bribery characteristics of the environment exogenously for a specific

"cluster" in which each firm operates. Clusters are jointly formed by survey wave (time), country, double-digit industry, firm size, and location size.

Table 1
Summary Statistics

Panel A: Descriptive statistics

Variables	*N*	*Mean*	*Median*	*St Dev*	*p5*	*P25*	*p75*	*p95*
Domestic								
Corruption Mean	95,847	0.237	0.238	0.137	0.040	0.133	0.320	0.480
Corruption Uncertainty	95,847	0.229	0.226	0.100	0.084	0.167	0.306	0.383
Cash Flow	95,166	0.082	0.076	0.238	-0.212	0.018	0.163	0.419
Gross Investment	95,847	0.072	0.036	0.168	-0.124	0.000	0.128	0.388
Leverage	95,847	0.557	0.469	0.728	0.037	0.211	0.759	1.219
Ln(Employees)	95,847	3.251	2.996	1.737	0.693	1.792	4.595	6.138
Ln(Total Assets)	95,847	13.272	13.355	2.421	9.177	11.564	15.055	17.027
Sales Growth	95,847	0.612	0.083	4.034	-0.565	-0.148	0.384	2.059
MNEs								
Corruption Mean	9,898	0.184	0.150	0.124	0.021	0.100	0.282	0.433
Corruption Uncertainty	9,898	0.200	0.191	0.097	0.071	0.115	0.258	0.383
Cash Flow	9,853	0.109	0.095	0.187	-0.126	0.035	0.179	0.399
Gross Investment	9,898	0.082	0.039	0.158	-0.081	0.001	0.130	0.400
Leverage	9,898	0.540	0.497	0.481	0.059	0.264	0.735	1.033
Ln(Employees)	9,898	3.305	2.773	1.882	0.693	1.792	4.984	6.620
Ln(Total Assets)	9,898	14.245	13.923	2.392	10.739	12.370	16.150	18.176
Sales Growth	9,898	0.436	0.087	2.816	-0.462	-0.114	0.375	1.500
Whole Sample								
Corruption Mean	105,745	0.232	0.233	0.137	0.033	0.125	0.311	0.475
Corruption Uncertainty	105,745	0.226	0.226	0.100	0.082	0.167	0.302	0.383
Economic Uncertainty	105,725	1.418	1.159	1.130	0.004	0.693	2.374	4.101
Inflation Uncertainty	105,425	0.082	0.001	0.253	0.000	0.000	0.018	1.037
Market Cap/GDP	105,745	25.500	23.270	17.328	4.360	14.140	32.240	51.570
GDP Growth	105,745	2.893	4.164	5.774	-14.800	1.265	6.877	9.400
Private Credit/GDP	105,745	48.235	44.410	22.356	16.580	30.130	68.140	89.710

Panel B: Observations by industry

	Domestic		*MNEs*	
Industry	*N*	*Percent*	*N*	*Percent*
A - Agriculture, forestry and fishing	7,021	7.3	189	1.9
B - Mining and quarrying	1,693	1.8	32	0.3
C - Manufacturing	40,440	42.2	4,694	47.4
D - Electricity, gas, steam and air conditioning supply	11	0.0		
E - Water supply; sewerage; waste management and remediation activities	1,804	1.9	11	0.1
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	10,184	10.6	1,339	13.5
H - Transporting and storage	21,913	22.9	2,569	26.0
I - Accommodation and food service activities	8,248	8.6	938	9.5
J - Information and communication	1,257	1.3	51	0.5
M - Professional, scientific and technical activities	2,813	2.9	58	0.6
R - Arts, entertainment and recreation	463	0.5	17	0.2
Total	*95,847*		*9,898*	

Panel C: Observations by country and year

	N			*N*	
Country	*Domestic*	*MNEs*	*Year*	*Domestic*	*MNEs*
Bosnia and Herzegovina	2,725	31	2001	1,384	21
Bulgaria	3,250	1,028	2002	1,988	28
Croatia	5,705	491	2003	2,599	83
Czech Republic	7,568	1821	2004	6,293	151
Estonia	2,323	671	2005	9,122	668
Hungary	145	6	2006	12,656	1,636
Latvia	100	9	2007	10,956	491
Poland	8,479	1,856	2008	11,539	563
Romania	12,312	2,073	2009	11,667	1,306
Serbia	5,450	712	2010	10,742	1,641
Slovak Republic	1,327	175	2011	5,789	1,691
Slovenia	5,103	405	2012	6,001	1,414
Ukraine	41,360	620	2013	5,111	205
Total	*95,847*	*9,898*	*Total*	95,847	*9,898*

The table contains the summary statistics of the sample. The financial data comes from the Amadeus database provided by the Bureau van Dijk. Firms operating in financial industries are excluded (NACE codes 64 – 66). Corruption characteristics of the environment are constructed from BEEPS. Definitions of all variables are provided in the Appendix I. Panel A reports the summary statistics of the variables. Panel B reports the number of observations by industry, and Panel C by country and year.

Table 2
Impact of Corruption on Corporate Investments for MNEs

Panel A: Impact of Corruption Mean and Uncertainty on Investments

	Dependent Variable = *Gross Investment*			
Independent Variables	(1)	(2)	(3)	(4)
Corruption Mean	0.028	0.027	0.024	0.018
	(0.049)	(0.052)	(0.052)	(0.052)
Corruption Uncertainty	-0.020	-0.027	-0.031	-0.027
	(0.057)	(0.059)	(0.059)	(0.059)
Ln(Total Assets)		0.069***	0.076***	0.084***
		(0.012)	(0.012)	(0.013)
Ln(Total Assets)^2		0.000	0.000	0.001
		(0.002)	(0.002)	(0.002)
Cash Flow			0.011	-0.004
			(0.023)	(0.023)
Ln(Employees)				-0.015
				(0.010)
Sales Growth				0.002
				(0.001)
Leverage				-0.034**
				(0.017)
Private Credit/GDP		-0.000	-0.000	-0.000
		(0.001)	(0.001)	(0.001)
Market Cap/GDP		-0.000	-0.000	-0.000
		(0.000)	(0.000)	(0.000)
GDP Growth		-0.001	-0.001	-0.001
		(0.001)	(0.001)	(0.001)
Constant	0.142**	0.215***	0.221***	0.296***
	(0.057)	(0.071)	(0.071)	(0.081)
Firm and Time FE	Yes	Yes	Yes	Yes
R-squared	0.75	0.76	0.76	0.76
N	9,898	9,898	9,853	9,853

Panel B: Impact of Corruption Mean on Investments

	Dependent Variable = *Gross Investment*			
Independent Variables	(1)	(2)	(3)	(4)
Corruption Mean	0.017	0.012	0.007	0.003
	(0.034)	(0.036)	(0.036)	(0.036)
Firm Controls	No	Partial I	Partial II	Full
Macro Controls	No	Yes	Yes	Yes
Firm and Time FE	Yes	Yes	Yes	Yes
R-squared	0.75	0.76	0.76	0.76
N	9,898	9,898	9,853	9,853

The table presents the results of fixed effect regressions examining the relationship between corruption and corporate investments for MNEs. Standard errors reported in brackets are robust to arbitrary heteroskedasticity. All regressions control for firm and time fixed effects. The financial data comes from the Amadeus database provided by the Bureau van Dijk. We exclude firms operating in the

financial industries (NACE codes 64 – 66). Corruption characteristics of the environment are constructed from BEEPS. Definitions of all variables are provided in the Appendix I. Panel A reports the regression results when *Corruption Mean* and *Corruption Uncertainty* are included in the model and Panel B only *Corruption Mean*. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively.

Table 3
Impact of Corruption on Corporate Investments for MNEs from OECD and non-OECD Countries

Panel A: Impact of Corruption Mean and Uncertainty on Investments for MNEs from OECD Countries

	Dependent Variable = *Gross Investment*			
Independent Variables	(1)	(2)	(3)	(4)
Corruption Mean	0.057	0.048	0.045	0.031
	(0.071)	(0.077)	(0.078)	(0.079)
Corruption Uncertainty	-0.032	-0.032	-0.036	-0.031
	(0.068)	(0.073)	(0.074)	(0.074)
Firm Controls	No	Partial I	Partial II	Full
Macro Controls	No	Yes	Yes	Yes
Firm and Time FE	Yes	Yes	Yes	Yes
R-squared	0.61	0.62	0.62	0.63
N	4,147	4,147	4,132	4,132

Panel B: Impact of Corruption Mean on Investments for MNEs from OECD Countries

	Dependent Variable = *Gross Investment*			
Independent Variables	(1)	(2)	(3)	(4)
Corruption Mean	0.032	0.023	0.017	0.006
	(0.042)	(0.043)	(0.043)	(0.043)
Firm Controls	No	Partial I	Partial II	Full
Macro Controls	No	Yes	Yes	Yes
Firm and Time FE	Yes	Yes	Yes	Yes
R-squared	0.61	0.62	0.62	0.63
N	4,147	4,147	4,132	4,132

Panel C: Impact of Corruption Mean and Uncertainty on Investments for MNEs from non-OECD Countries

	Dependent Variable = *Gross Investment*			
Independent Variables	(1)	(2)	(3)	(4)
Corruption Mean	-0.015	-0.026	-0.031	-0.031
	(0.088)	(0.089)	(0.090)	(0.091)
Corruption Uncertainty	-0.044	-0.067	-0.069	-0.065
	(0.144)	(0.144)	(0.145)	(0.145)
Firm Controls	No	Partial I	Partial II	Full
Macro Controls	No	Yes	Yes	Yes
Firm and Time FE	Yes	Yes	Yes	Yes
R-squared	0.83	0.84	0.84	0.84
N	5,751	5,751	5,721	5,721

Panel D: Impact of Corruption Mean on Investments for MNEs from non-OECD Countries

	Dependent Variable = *Gross Investment*			
Independent Variables	(1)	(2)	(3)	(4)
Corruption Mean	-0.029	-0.048	-0.053	-0.052
	(0.070)	(0.074)	(0.075)	(0.076)
Firm Controls	No	Partial I	Partial II	Full
Macro Controls	No	Yes	Yes	Yes
Firm and Time FE	Yes	Yes	Yes	Yes
R-squared	0.83	0.83	0.84	0.84
N	5,751	5,751	5,721	5,721

The table presents the results of fixed effect regressions examining the relationship between corruption and corporate investments for MNEs from OECD and non-OECD countries. Standard errors reported in brackets are robust to arbitrary heteroskedasticity. All regressions control for firm and time fixed effects. The financial data comes from the Amadeus database provided by the Bureau van Dijk. We exclude firms operating in the financial industries (NACE codes 64 – 66). Corruption characteristics of the environment are constructed from BEEPS. Definitions of all variables are provided in the Appendix I. For MNEs headquartered in OECD countries, Panel A reports the regression results when *Corruption Mean* and *Corruption Uncertainty* are included in the model and Panel B only *Corruption Mean*. For MNEs headquartered in non-OECD countries, Panel C reports the regression results when *Corruption Mean* and *Corruption Uncertainty* are included in the model and Panel D only *Corruption Mean*. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively.

Table 4
Impact of Corruption on Corporate Investments for Domestic Firms

Panel A: Impact of Corruption Mean and Uncertainty on Investments

	Dependent Variable = *Gross Investment*			
Independent Variables	(1)	(2)	(3)	(4)
Corruption Mean	-0.004	-0.000	0.001	0.002
	(0.010)	(0.010)	(0.010)	(0.010)
Corruption Uncertainty	-0.044***	-0.048***	-0.046***	-0.045***
	(0.012)	(0.012)	(0.012)	(0.012)
Ln(Total Assets)		0.063***	0.062***	0.067***
		(0.002)	(0.002)	(0.002)
Ln(Total Assets)^2		0.004***	0.004***	0.005***
		(0.000)	(0.000)	(0.000)
Cash Flow			0.043***	0.038***
			(0.004)	(0.005)
Ln(Employees)				-0.016***
				(0.002)
Sales Growth				0.002***
				(0.000)
Leverage				-0.006**
				(0.003)
Private Credit/GDP		-0.000***	-0.000***	-0.000***
		(0.000)	(0.000)	(0.000)
Market Cap/GDP		-0.000***	-0.000***	-0.000***
		(0.000)	(0.000)	(0.000)
GDP Growth		-0.001***	-0.001***	-0.001***
		(0.000)	(0.000)	(0.000)
Constant	0.176***	0.253***	0.240***	0.304***
	(0.007)	(0.008)	(0.008)	(0.012)
Firm and Time FE	Yes	Yes	Yes	Yes
R-squared	0.50	0.51	0.52	0.52
N	95,847	95,847	95,166	95,166

Panel B: Impact of Corruption Mean on Investments

	Dependent Variable = *Gross Investment*			
Independent Variables	(1)	(2)	(3)	(4)
Corruption Mean	-0.017**	-0.014*	-0.013	-0.011
	(0.009)	(0.009)	(0.009)	(0.009)
Firm Controls	No	Partial I	Partial II	Full
Macro Controls	No	Yes	Yes	Yes
Firm and Time FE	Yes	Yes	Yes	Yes
R-squared	0.50	0.51	0.52	0.52
N	95,847	95,847	95,166	95,166

The table presents the results of fixed effect regressions examining the relationship between corruption and corporate investments for firms with no foreign majority ownership. Standard errors reported in brackets are robust to arbitrary heteroskedasticity. The financial

data comes from the Amadeus database provided by the Bureau van Dijk. Corruption characteristics of the environment are constructed from BEEPS. Definitions of all variables are provided in the Appendix I. Panel A reports the regression results when *Corruption Mean* and *Corruption Uncertainty* are included in the model and Panel B only *Corruption Mean.* Panel B reports the number of observations by industry, and Panel C by country and year. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively.

Table 5
Impact of Corruption on Corporate Investments with Other Uncertainties

Panel A: Impact of Corruption on Corporate Investments with Political, Economic, and Inflation Uncertainty

	Dependent Variable = *Gross Investment*			
Independent Variables	(1)	(2)	(3)	(4)
Corruption Mean	-0.001	0.030	0.037	-0.021
	(0.010)	(0.053)	(0.078)	(0.092)
Corruption Uncertainty	-0.037***	-0.035	-0.035	-0.065
	(0.012)	(0.060)	(0.074)	(0.146)
Political Uncertainty	-0.004***	-0.005	-0.001	-0.004
	(0.001)	(0.005)	(0.005)	(0.012)
Economic Uncertainty	-0.016***	0.013	0.010	0.021
	(0.001)	(0.011)	(0.012)	(0.028)
Inflation Uncertainty	-1.151***	-0.417*	0.029	-0.576
	(0.058)	(0.223)	(0.336)	(0.473)
Sample	Domestic	MNEs	MNEs (OECD)	MNEs (non-OECD)
Firm Controls	Full	Full	Full	Full
Macro Controls	Yes	Yes	Yes	Yes
Firm and Time FE	Yes	Yes	Yes	Yes
R-squared	0.52	0.76	0.63	0.84
N	94,830	9,849	4,132	5,717

Panel B: Impact of Corruption on Corporate Investments with CPI, Political, Economic, and Inflation Uncertainty

	Dependent Variable = *Gross Investment*			
Independent Variables	(1)	(2)	(3)	(4)
Corruption Mean	0.001	0.024	0.035	-0.021
	(0.010)	(0.054)	(0.080)	(0.092)
Corruption Uncertainty	-0.036***	-0.031	-0.034	-0.073
	(0.012)	(0.060)	(0.076)	(0.146)
Political Uncertainty	-0.006***	-0.005	-0.001	-0.002
	(0.001)	(0.005)	(0.005)	(0.012)
Economic Uncertainty	-0.013***	0.012	0.009	0.019
	(0.002)	(0.011)	(0.012)	(0.028)
Inflation Uncertainty	-1.143***	-0.405*	0.032	-0.551
	(0.058)	(0.223)	(0.334)	(0.475)
Inverse CPI	-0.010***	0.010	0.002	0.023
	(0.002)	(0.008)	(0.009)	(0.026)
Sample	Domestic	MNEs	MNEs (OECD)	MNEs (non-OECD)
Firm Controls	Full	Full	Full	Full
Macro Controls	Yes	Yes	Yes	Yes
Firm and Time FE	Yes	Yes	Yes	Yes
R-squared	0.52	0.76	0.63	0.84
N	94,830	9,849	4,132	5,717

The table presents the results of fixed effect regressions examining the relationship between corruption and corporate investments while controlling for other uncertainties. Standard errors reported in brackets are robust to arbitrary heteroskedasticity. All regressions control for firm and time fixed effects. The financial data comes from the Amadeus database provided by the Bureau van Dijk. We exclude firms

operating in the financial industries (NACE codes 64 – 66). Corruption characteristics of the environment are constructed from BEEPS. Definitions of all variables are provided in the Appendix I. Panel A shows the results when *Political*, *Economic* and *Inflation Uncertainties* are added. Panel B augments the model from Panel A with a re-scaled *Inverse CPI* index is an from Transparency International. A higher index indicates a higher level of corruption. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively.

Table 6
Impact of on Corporate Investments by Firm Size

	Dependent Variable = *Gross Investment*							
	Bottom 1/3 Assets	Top 1/3 Assets	Bottom 1/3 Assets	Top 1/3 Assets	Bottom 1/3 Assets	Top 1/3 Assets	Bottom 1/3 Assets	Top 1/3 Assets
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Corruption Mean	0.006	0.032	0.016	0.061	0.087	0.144	-0.045	0.087
	(0.018)	(0.024)	(0.120)	(0.097)	(0.143)	(0.121)	(0.189)	(0.278)
Corruption Uncertainty	-0.048*	-0.071***	-0.130	-0.066	-0.222	-0.158	-0.020	0.114
	(0.028)	(0.025)	(0.188)	(0.100)	(0.138)	(0.112)	(0.269)	(0.378)
Political Uncertainty	0.001	-0.003	-0.001	-0.005	-0.003	0.000	-0.019	0.001
	(0.004)	(0.002)	(0.014)	(0.007)	(0.013)	(0.008)	(0.034)	(0.025)
Economic Uncertainty	-0.021***	-0.014***	0.011	-0.019	0.010	0.005	0.018	-0.005
	(0.004)	(0.003)	(0.033)	(0.016)	(0.027)	(0.020)	(0.064)	(0.042)
Inflation Uncertainty	-1.073***	-1.019***	-0.502	-0.543	0.355	-0.512	-0.951	-1.511*
	(0.158)	(0.101)	(0.557)	(0.361)	(0.761)	(0.457)	(1.033)	(0.851)
Sample	Domestic	Domestic	MNEs	MNEs	MNEs (OECD)	MNEs (OECD)	MNEs (non-OECD)	MNEs (non-OECD)
Firm Controls	Full	Full	Full	Full	Full	Full	Full	Full
Macro Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm and Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.60	0.54	0.83	0.77	0.77	0.68	0.88	0.90
N	31,161	31,643	3,325	3,355	1,440	1,451	1,955	1,975

The table presents the results of fixed effect regressions examining the relationship between corruption uncertainty and corporate investments. We split the sample by firm size into top and bottom tertials by country and year. Standard errors reported in brackets are robust to arbitrary heteroscedasticity. All regressions control for firm and time fixed effects. The financial data comes from the Amadeus database provided by the Bureau van Dijk. Corruption characteristics of the environment are constructed from BEEPS. Inverse CPI is an inverted Transparency International corruption index. A higher index indicates a higher level of corruption. Variable definitions are provided in the Appendix I. ***,**, and * indicate statistical significance at the 10%, 5%, and 1% levels respectively.