Fortune or Evil? The Effects of Inward Foreign Direct Investment on Corruption*

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Abstract

This paper analyzes the relationship between inward foreign direct investment (FDI) and grand corruption. We argue that the effects of FDI on government corruption are conditional on the host country's underlying economic and political climate. The underlying structure of the economy determines the possibility of extracting rents that could be distributed among foreign investors and the incumbent. Political development, on the other hand, determines the level of accountability of the incumbent, and creates a check on the incumbent's ability to appropriate those rents, and the probability of getting caught and sanctioned for engaging in corrupt behavior. Hence, we argue, FDI will be associated with higher corruption levels in political and economic environments with restricted competition. In more competitive political systems with diversified economies, on the other hand, FDI inflows are likely to reduce the ability of the incumbent to engage in corrupt behavior. Assessing the empirical content of our argument presents several technical challenges. First, while inward FDI has the potential to affect corruption levels in the host countries, previous empirical research reports a negative effect of corruption on investment inflows. Most empirical attempts tend to overlook the endogeneity problem. We, on the other hand, adopt a strategy aimed at dealing with endogeneity: we construct an instrument for inward FDI based on a measure of remoteness. Ancillary tests suggest that the instrument -which is loosely related to a gravity model of investment- is strong and valid. We test our hypotheses on the conditional effects of FDI on corruption in a instrumental variable two-stage least-squares setting, finding preliminary support for our argument: The effect of FDI on corruption is positive in authoritarian and poor countries, and turns negative as countries develop and become more democratic. However, we also find that the marginal effect of FDI on corruption in democratic and rich countries is smaller.

Keywords: foreign direct investment, corruption, instrumental variables
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1 Introduction

Cross-border flows of direct investment have increased dramatically in recent years: "foreign direct investment (FDI) inflows have grown faster than world income since the 1960s, multinational corporations (MNCs) now account for about 70 percent of world trade, and the sales of their foreign affiliates have exceeded total global exports" (Li and Resnick 2003, pp. 175; Held et al. 1999). While the literature has focused on the political determinants of FDI and MNC activity (Wei 2000; Jensen 2003; Li and Resnick 2003; Pinto and Pinto 2008), research on the implications of increasing FDI inflows in host countries lags behind.[1] Among studies of the political causes of FDI, several authors report a negative correlation between corruption levels and inward FDI flows.[2] Yet, anecdotal evidence and journalistic accounts notwithstanding, few studies analyze the effect of FDI on corruption in host countries (Sandholtz and Gray 2003). And those studies that address this link fail to deal with the endogeneity problem associated with the two-way causal relationship between FDI and corruption.[3]

The conventional view is that corruption has a negative effect on economic activity in general (Shleifer and Vishny 1993; Mauro 1995; World Bank 1997), and has the potential to discourage inward foreign investment: When facing high demands for bribes and payments in a host country, investors who have the ability to move internationally would choose to exit or stay out (Bardhan 1997; Rose-Ackerman 1999; Lambsdorff 2003; Egger and Winner 2005). Indeed, Wei (2000a) finds a negative correlation between perceived corruption levels in host countries and inward foreign direct investment, providing preliminary support to this argument. This negative link could force host governments to improve domestic investment environments in order to attract FDI (Sandholtz and Gray 2003; Malesky

[1] On the consequences of FDI see Li and Reuveny (2003); Scheve and Slaughter (2004); Rudra (2005); Pinto and Pinto (2008).

[2] "Poor quality of institutions necessary for well-functioning markets (and/or corruption) increases the cost of doing business and, thus, should also diminish FDI activity" Bloningen (2005, pp. 14). See also Wei (1997, 2000a, 2000b); Hines (1996); Alesina and Weder (1999); Smarzynska and Wei (2000)

[3] Larraín and Tavares (2004) is an exception. In section 3 present a new instrument of FDI that allows us to deal with endogeneity.

2008).[4] Still foreign investors are not always deterred by corruption; many, in fact, appear to be very apt at adjusting their activity to the local political environment and practices, while others even engage actively in corruption (Søreide 2006).[5]

In this paper we concentrate on the opposite direction of the causal flow: we analyze how foreign investment affects corruption levels in host countries, after accounting for the issue of reverse causation. We adopt the traditional definition of corruption as the use of public office for private benefit (Bardhan 1997; Treisman 2007). Yet our analysis emphasizes on the effect of FDI on instances of *grand corruption*, which is the type of corruption involving the highest ranked public officials and leaders. According to received wisdom foreign investment has the potential to reduce rents, increase market competition and efficiency, the diffusion of pro-business norms and ideas, protection of property rights, the adoption of better governance practices and consolidation of the rule of law. Hence, inward FDI should be associated with lower corruption levels in host countries (Smarzynska and Wei 2002; Gerring and Thacker 2005). Yet, we hypothesize that this effect is conditioned by the economic and political environment in the host. We argue that the effect of foreign investment inflows on corruption will thus vary under different economic and political conditions, which determine the opportunity for rent creation and the ability to appropriate and share those rents between investors and incumbents respectively.

In the first place, corruption is positively associated with opportunities to create and extract rents (Ades and Di Tella 1999). The economic environment - which we characterize as the degree of market diversification and competition - affects those opportunities for rent creation, and hence determines the benefits that government officials and investors expect when demanding and paying bribes respectively. Political institutions, on the other hand, determine the level at which rents and bribes are collected, and the ease with which those bribes remain undetected. In more competitive political environments challengers could use public distaste for dishonest behavior and abuse of power to undermine the support of the incumbent, increasing the costs of pocketing revenue and rents, and engaging in

[4]Sandholtz and Gray (2003) find that increasing international integration -including FDI- is negatively correlated with corruption at the national level. Corruption under these conditions is characterized as a "grabbing hand" that reduces the incentives to invest. See Egger and Winner (2005, pp. 933).

[5]Moreover, Egger and Winner (2005) discuss the conditions under which corruption could help promote foreign investment: "... in the presence of regulations and other administrative controls, corruption can act as a 'helping hand' to foster FDI, as proposed by Leff (1964)." Egger and Winner (2005, pp. 933). The logic behind this proposition has been formally proven by Field Jr., Sosa, and Wu (2003).

corruption.[6] Political competition, then, has the potential to act as a check on corruption.

The effect of foreign investment on corruption is thus likely to be affected by economic and political conditions in the host: FDI inflows will be associated with higher levels of corruption in less democratic countries and in countries with less diversified economies; while FDI inflows are likely to be associated with lower corruption as political and economic conditions become more competitive.[7]

Analyzing the effect of FDI on corruption statistically requires dealing with the issue of reverse causality and endogeneity Yet most empirical attempts to date aimed at estimating the effect of FDI on corruption fail to address this problem. Dealing with endogeneity is at the center of our empirical strategy, and arguably our paper's main contribution. We construct an instrument of FDI which we next use to test our hypotheses on the conditional effects of FDI on corruption. Our instrument is a proxy for *economic remoteness*, namely the inverse of the geographical distance between the host country and the twenty richest economies in the world weighted by their per capita income.[8] To capture the conditional effects of FDI on corruption we also include interaction terms of instrumented FDI inflows with real GDP per capita, first, and democracy next, our proxies for the degree of economic and political development.

In the ensuing sections we develop our argument in more depth and derive testable hypotheses; next we discuss our empirical strategy and justify the use of *remoteness* as an instrument of FDI, followed by the results from our statistical analysis. Section 5 concludes.

The results obtained from our statistical analyses provide strong support to our hypotheses: after accounting for endogeneity we find that FDI is associated with higher corruption levels in less developed economies and in non-democratic political environments.[9]

[6] "Countries with more political competition have stronger public pressure against corruption -through laws, democratic elections, and even the independent press- and so are more likely to use government organizations that contain rather than maximize corruption proceeds." Shleifer and Vishny (1993), pp. 610. See also Lederman et al. (2005).

[7] We could expect the marginal effect of FDI inflows on corruption to be lower in highly competitive economic and political environments since opportunities for engaging in corruption are already low and the political costs are likely to be high. In section 4.2 we will explore these hypotheses empirically.

[8] Andrew Rose (2004a, 2004b) uses a similar measure of *remoteness* in an augmented gravity model of trade, while Ades and Di Tella (1999) use "trade distance" from the Barro and Lee (1994) dataset. On alternative instruments of FDI see section 3.

[9] In the second-stage regression we control for other factors that the extant literature has found are likely to affect corruption, such as natural resource endowment, religion, ethnolinguistic fractionalization, and legal origin among others. We find an association between religion and corruption: the percentage of Protestant population is significantly negatively correlated with corruption levels, confirming earlier

These findings underscore the importance of accounting for the strategic interaction between host governments and foreign investors in our analyses of the causes and consequences of foreign investment. While it is plausible that, for instance, competition for FDI is associated with better government practices in advanced countries, it is also apparent that some investors are not deterred by corrupt practices. In fact, some investors are able to adapt to what would otherwise be considered a risky investment environment. This is the type of investment usually associated with the creation of rents that could lead to grand corruption.

2 Foreign Investment, Rents and Corruption

Corruption, our dependent variable, is usually defined as the *misuse of public office for private gain* (Bardhan 1997). As discussed in the introduction we focus on instances of grand corruption, defined as those involving high government officials. Conceptually this quid-pro-quo exchange of public favor for private gain can be disaggregated into conditions affecting the expected costs and benefits of corrupt behavior to all participants in the exchange. In order to understand how foreign investment and the presence of multinational corporations affect the cost-benefit analysis faced by incumbent governments when deciding whether or not to engage in grand corruption, we first need to identify the conditions under which corruption will be more prevalent. For this we can draw from the profuse literature on the political and economic determinants of corruption.[10] We also need to establish how those conditions are affected by the strategic calculation of foreign investors on whether to enter the market, leave or stay out. On the first account, the literature on the determinants of corruption has persuasively argued that political and economic conditions create the incentives that "shape opportunities for corrupt behavior" (Montinola and Jackman 2002, pp. 149). Economic and political conditions in the host country are likely to affect the expected costs and benefits of engaging in corruption. Economic development, for instance, has been found to be negatively associated with different measures of corruption (La Porta

findings in the literature. See La Porta et al. (1997); Treisman (2000, 2007). In addition, we find that exports of fuels, minerals and metals -our proxy for natural resource endowment- is positively associated with corruption, and the effect is significant in most models; trade openness and legal origin, on the other hand, do not seem to have direct effects.

[10] See Treisman (2007) for an excellent survey of this literature.

et al. 1999; Ades and Di Tella 1999; Treisman 2000, 2007). Ades and Di Tella (1999) argue that the incentives to engage in corruption increase with the availability of rents associated with the exploitation of natural resources or with restricted competition in product markets.[11] In countries with large endowments of valuable raw materials - fuels, minerals, and metals - corruption may offer greater potential gain to officials who allocate rights to exploit such resources (Ades and Di Tella 1999; Leite and Weidmann 1999). Rent creation may also result from a greater scope of government activity and a larger participation of the public sector in the economy (Beck 1994; Ades and Di Tella 1999; Lambsdorff 2007, pp. 4). And the payoffs to corrupt behavior are larger under market conditions conducive to the creation of rents that can be shared between public and private agents participating in this exchange.

Yet the effects of the underlying economic structure on corruption can be mitigated by the system of incentives and constraints created by political institutions, including greater political competition, checks and balances, the existence of an independent judiciary and prevalence of the rule of law.[12] Political institutions affect the degree of accountability of leaders, and hence the opportunity to pocket taxes, royalties, fees and proceeds collected from economic agents.[13] Abuse of public office for private benefit is more likely in political systems where leaders and public officials are less accountable to the public, or less likely to be caught and/or punished when participating in illegal activities. Hence, corruption will be more pervasive in economic and political environments where competition is low (Tullock 1967; Krueger 1974; Rose-Ackerman 1978, 1999; Bhagwati 1982; Shleifer and Vishny 1993; Ades and Di Tella 1999).

While the effect of political institutions and economic development on corruption have received plenty of attention in the literature, research on the effects of economic integration on corruption lags behind. International trade may, indeed, affect the incidence of corruption: imports are likely to create competition in the market place, reducing the op-

[11] Ades and Di Tella (1999, pp. 982) characterize these opportunities as the *the industrial organization of the bribers' market.*

[12] The incentives created by institutions result in what Shleifer and Vishny (1993) describe as the *industrial organization of government activity.* See footnote 6.

[13] These effects are likely to differ depending on whether the price paid for the public favor is below or above the cost of providing that public favor, defined by Shleifer and Vishny (1993) as *corruption with or without theft* respectively. Government officials may restrict output and charge the monopolist price in the case of corruption without theft, or charge a price below the cost of the favor and pocket the difference in the case of corruption with theft.

portunities to extract rents, and hence the expected benefits of corruption (Ades and Di Tella 1999). Regulating and restricting trade through the distribution of import licenses and quotas, on the other hand has the potential to lead to bribery, graft and corruption (Tanzi 1994; Treisman 2000; Sandholtz and Koetzke 2000; Sandholtz and Gray 2003; Gerring and Thacker 2005). Moreover, exports of fuels, metals and minerals have been found to be positively correlated with higher corruption, which might be explained by the opportunities for rent creation associated with the ownership and exploitation of natural resources (Ades and Di Tella 1999; Treisman 2000).

Previous research of the relationship between FDI and corruption, is based on the assumption that investors are homogeneous and react in a similar manner to domestic conditions. Since corruption acts as a tax on investors' activities, the argument goes, investors will shun countries with higher incidence of corruption, graft, and abuse of public office (Wei 1997; Alesina and Weder 1999; Smarzynska and Wei 2000). We argue that this sweeping generalization is incorrect. Investors - foreign and domestic alike - make investment decisions conditional on the economic and political environment. Foreign investors in particular will strategically adjust their form of entry and their activity to local conditions. And those strategies will vary depending on the investors' motivation, i.e.: whether investment is aimed at accessing local resources, creating a platform for exports, or catering to local consumers. Different investors have different degrees of tolerance for and ability to cope with corruption.

While sharing the rents created by their activity with local leaders is a cost, the expected returns of engaging in corruption to some investors could be worth this cost in some environments.[14] Under permissive political conditions where the probability of getting caught is low, and a market structure conducive to rent creation and extraction, the entry of foreign investors who are undeterred by those conditions could create the opportunity for the exchange of public and private favors associated with corruption.[15]

In backward economies where market diversification is low, business opportunities are

[14] Our analysis focuses on instances of grand corruption. Note, however, that the decision of whether or not to pay a bribe to a local officer to obtain a license or get out of a speeding ticket associated with petty corruption could be subject to the same cost-benefit analysis calculation.

[15] That foreign and domestic firms are as likely to engage in corruption finds support in recent analyses on survey data from transition economies: there is no significant difference in total amount of bribes paid between foreign and domestic firms; see Hellman et al. (2002) and Søreide (2006). Moreover, Hellman et al. (2002) find that in transition economies foreign firms are more likely engage in other forms of corruption.

scarce, and competition in markets for goods, services and factors of production is limited, the inflow of foreign investment usually helps make up for the scarcity of domestic capital, entrepreneurship and technology. Under these conditions the presence of foreign investors creates opportunities for resource and rent extraction that were not available to the locals: The capital, technology and know-how provided by foreign investors help relax the constraints faced by the leaders in exploiting the local resources that would otherwise remain idle or under-exploited. In these environments, usually characterized by limited competition due to market or regulatory conditions, foreign investment also has the potential to crowd out domestic investment, further limiting competition and leading to higher rents. These rents could ultimately be shared between investors, who help create those rents, and incumbents, who are in position to regulate investors' presence and activity, grant or deny the licenses and permits, and uphold the restrictive market conditions. We, thus, predict that higher FDI inflows will result in higher corruption in less diversified and backward economies.

Yet paying bribes could prove extremely costly to investors when markets are more competitive. The entrance of foreign investors in diversified economies is likely to increase those competitive pressures, further reducing the opportunities for rent creation and appropriation. To the extent that the economy remains open to foreign investment, local market participants who want to remain competitive have an incentive to demand measures aimed at restricting the ability of elected officials to engage in graft and demand bribes.

In competitive environments it is also plausible that private actors will engage in lobbying for policies and regulations that would allow them to carve out a market niche for themselves.[16] These opportunities to influence the regulatory environment through lobbying are more likely to be available to domestic actors.[17] Foreign investors could also opt to actively engage in lobbying for either political favors, or for political reform and better governance. Their choice depends on the tradeoff between familiar collective action costs and the costs of redeployment. The strength of the marginal effect of FDI on corruption

[16]Moreover, it has been shown that a competitive environments can sustain a multi-player prisoners' dilemma setting where all economic agents prefer to bribe in order to remain competitive.

[17]There is a profuse literature on foreign investors' choice of the form of entry that persuasively suggests that this is the case; see, inter alia, Henisz 2000; Delios and Henisz 2003; Henisz and Delios 2004. Foreign firms usually choose to partner with domestic firms that have a comparative advantage in dealing with the host government (Henisz 2000, pp. 362).

in more competitive markets is, thus, an empirical issue.

While the economic environment affects the potential benefits of engaging in corruption, political development enhances the opportunity of detecting and punishing those that engage in corruption and is likely to affect its costs. Political institutions determine who is in charge of regulating economic activity and who has the ability to collect taxes. The incentives created by political institutions frame the conditions under which government officials are more likely to pocket revenue and rents, and the ease with which graft and bribes will remain undetected. Electoral competition for executive and legislative office, one of the defining elements of democracy or "poliarchy" according to Robert Dahl (1971), is likely to increase the incentives to detect and expose corrupt practices, and has the potential to discipline elected officials directly - through the threat of voting them out of office - and the bureaucracies indirectly through electoral pressure on those in charge of controlling the agencies (Dahl 1971, 1998; Powell 2000). Democracy is also associated with freedom of association and free press engender public interest groups and reporters with a mission and the right to expose abuse (Brunetti and Weder 2003; Treisman 2007). In less competitive political systems the costs of engaging in corruption and pocketing rents for personal benefit would be lower. Incumbents and investors can engage in the quid-pro-quo exchanges that characterize corruption with less fear that they would be prosecuted and sanctioned for their behavior. At the other end of the spectrum, FDI inflows will be associated with lower corruption in more open and competitive political systems, where political leaders competing for scarce foreign capital internalize the benefits they are likely to bring to the local economy. This is the traditional mechanism identified in the literature on the consequences of FDI (see Malesky 2005).

2.1 Testable Hypotheses

Based on the above analysis on the economic and political conditions affecting the opportunities and costs of corruption in host governments, we could derive the following hypotheses:

> ***Hypothesis 1:*** *Higher (lower) FDI inflows will increase (lower) corruption in economies with concentrated markets.*

To the extent that development proxies for diversified markets, then we could expect higher FDI inflows to increase corruption in less developed countries.

> ***Hypothesis 2:*** *higher (lower) FDI inflows will increase (lower) corruption in countries in less competitive political environments.*

Considering that autocracies are likely to be less competitive politically, we predict that FDI inflows will be associated with higher corruption in autocratic regimes.[18]

Conversely, we would expect FDI inflows to be associated with lower corruption in developed and democratic countries, yet the marginal effect in politically and economically competitive environments is likely to be smaller since democracy and economic development have the potential to lower corruption directly.

Democracy and development are also likely to have a direct effect on corruption. The risk of exposure of the public/private exchange implicit in corruption may also be higher in a more democratic, open political system (Treisman 2000). We would expect corruption to be lower in democratic countries, with competitive elections, and in countries with a freer press and more vigorous civic associations.

Economic development increases the spread of education, literacy, and depersonalized relationships, all of which should raise the probability that democratic practices will take root, and the possibility of detecting abuse and refraining from corruption (Treisman 2000, pp. 404). Moreover, greater civic engagement may lead to closer monitoring, and a higher probability of detecting and punishing corruption. Hence, we would expect corruption will be lower in more democratic countries, and in more developed countries with diversified markets.

2.2 Controls

The profuse empirical literature on the determinants of corruption identifies a series of alternative conditions which will inform our analysis and choice of controls.[19] Among

[18] Singapore is arguably an exception to this pattern: since independence Singapore has been an autocratic regime characterized by highly competitive access to political positions, especially when compared with Latin American democracies. Singapore has a system of recruitment to public office that extolls probity and heavily punishes petty corruption.

[19] Treisman (2000, 2007); Sandholtz and Gray (2003). See Lambsdorff (2006) for an excellent review of this literature.

those conditions found to affect corruption we find:

Legal origin: The most obvious cost of corruption is the risk of getting caught and punished (Treisman 2000, p. 402). The probability of getting caught and sanctioned depends in part on the country's legal system. La Porta et al. (1997, 1998, 1999) have argued that common law systems - found mostly in Britain and its former colonies - is different on the degree of protection of private properties and restrains on public officials from civil law system -found mostly in continental Europe and its former colonies. The common law system, since its development in the 17th century, was intended to protect individual properties and limit the power of the state, while civil law systems introduced in 19th century (Napoleon and Bismarck)"can be taken as a proxy for an intent to build institutions to further the power of the State"(La Porta et al. 1999, pp.231-2; Treisman 2000, p.402; see David and Brierley, 1985). Thus, a common law tradition will be associated with better governance, limited government, and lower levels of corruption (La Porta et al. 1999).

Religion: Religious practices have the potential "to shape national views regarding property rights, competition, and the role of state"(Beck et al. 2003, p.151; Stulz and Williamson 2003; La Porta et al. 1999). "In religious traditions such as Protestantism, which arose in some versions as dissenting sects opposed to the state-sponsored religion, institutions of the church may play a role in monitoring and denouncing abuses by state officials (Treisman 2000, p. 403)." While, the Catholic and Muslim religions tend to limit the security of property rights and private contracting (Levine 2005, p.71; Landes 1998; Putnam 1993).

Ethnolinguistic Fractionalization: Corruption is an illegal contract which cannot be enforced by courts. Treisman (2000) argues that ethnic communities and networks may serve as one of the mechanisms to "enhance the credibility of the private partner's commitment". "In ethnically divided societies, ethnic communities may provide cheap information about and even internal sanctions against those who betray their coethnics" (Treisman 2000, pp. 406; see also Fearon and Laitin 1996). Therefore, corruption "contracts" are strengthened within ethnic communities (Treisman 2000). Thus, we would expect more corruption in societies with ethnolinguistic fractionalization.

Other explanatory variables include natural resource endowment and openness. We would expect a positive association between natural resource endowment and corruption (Ades and Di Tella 1999; Leite and Weidmann 1999), and a negative correlation between trade openness and corruption (Ades and Di Tella 1999; Treisman 2000, 2007).

3 Empirical Strategy

3.1 Endogeneity and Instrumental Variable Estimator

As discussed in earlier sections corruption in host countries has the potential to reduce inward FDI inflows (Wei 1997; Alesina and Weder 1999; Smarzynska and Wei 2000). Yet, the causal arrow may point in the opposite direction. Most empirical attempts to date aimed at estimating the effect of FDI on corruption, however, tend overlook this endogeneity problem. One possible solution to this problem is to fit an instrumental variable model in a two-stage least-square setting. The basic strategy in instrumental variable estimation is to find an estimator that is both contemporaneously uncorrelated with the error term from the original model and that is correlated (preferably highly so) with the regressor for which it is to serve as an instrument. Furthermore, the instrument cannot have a direct effect on the dependent variable.

Yet finding an instrument for FDI is challenging and tricky. Recent studies on the consequences of FDI have proposed different variables as an instrument for inward investment flows. Using the predicted exchange rate as an instrument in a 2SLS setting, Malesky (2005) finds evidence that cumulative stocks of FDI have a strong influence on economic reform progress and institutionalization. In their analysis of the effect of FDI inflows on regional inequality in Mexico, Jensen and Rosas (2007) use geography (distance to the U.S. border) to instrument for inward FDI into that country. The identifying strategy in these studies exploits variance in geographic and economic conditions in the home country. We combine both sources of variance to construct an instrument for inward FDI. Our instrument is based on a measure of (the inverse of) remoteness, namely a weighted average of the geographical distance between the host country and the richest economies in the world during the period 2000-2004. Moreover, the choice of our instrument is grounded in the recent literature on the determinants of FDI and loosely based on a gravity model

of investment: while most of the world's FDI originates in the wealthiest economies in the world, the amount received by host countries is indirectly related to the distance from these source countries (Caves 1992; Markusen 1995; Carr, Markusen and Maskus 2001, 2003; Loungani, Mody and Razin 2002; Mody 2004; among others).

Our instrument improves on those used in the literature in two ways: first, remoteness is associated with distance to the wealthiest economies in the world, which are likely to be potential sources of investment; second, while distance is time-invariant, remoteness shifts with changes in the centers of economic activity in the world, and could thus be used in a TSCS panel setting if needed. Larraín and Tavares (2004) have developed a similar instrument for trade and investment: they use geographical and cultural proximity to the largest countries in the world, and the source countries' levels of exports and investment outflows to instrument for FDI inflows in host countries. While distance to the largest economies is in theory exogenous to corruption in the host countries, economic integration (exports and FDI outflows) and the cultural factors included in the first stage regression such as common religion and language, could have a direct and independent effect on corruption in the second stage regression.[20]

To construct our instrument we use the summation of bilateral geographic distance between host countries and these top twenty economies weighted by their real GDP per capita.[21] The underlying logic of this instrument is that, on the one hand, investors are more likely to invest in those destinations that are close to their home country; and on the other hand, wealthier countries (those with higher GDP per capita) are more likely to be better endowed with capital, and hence more likely to invest abroad. Note that the top twenty wealthiest economies account for 74.11% of the world's cross-border investment flows during the period studied in the paper.[22] Moreover, we have no reason to expect real GDP per capita in the twenty wealthiest economies to influence corruption in host countries

[20] Instrumenting FDI with remoteness is equivalent to identifying MNCs as the vectors for diffusion of political practices (Simmons and Elkins 2004; Simmons et al. 2006). These effects, we argue, depend on the motivations for engaging in FDI and are likely to be affected by conditions in the host. This is an additional difference with Larraín and Tavares's (2004) study which does not allow for the effect of FDI to vary with levels of economic and political development, which is central to our argument.

[21] Those economies measured by 2000-2004 averaged real GDP per capita are: Australia, Austria, Belgium, Canada, Denmark, France, Germany, Hong Kong, Iceland, Ireland, Luxembourg, Netherlands, Norway, Qatar, Singapore, Sweden, Switzerland, United Arab Emirates, United Kingdom, United States. We exclude Bermuda, Macao and Brunei from the list of the top 20 economies.

[22] Authors calculations using UNCTAD data.

directly.[23] Therefore, we believe that our instrument is exogenous to the underlying level of corruption in the host, and positively correlated with FDI inflows.[24] Thus, in the first stage regression, we fit the following model:

$$FDI_i = \alpha + \psi \times \sum_{j=1}^{20} \frac{1}{dist_{ij}} * \ GDP\ per\ capita_j + X_i\xi + \epsilon_i \tag{1}$$

where $i = 1, 2, \ldots, N$ and $j = 1, 2, \ldots, 20$

In equation (1) ψ is the coefficient to be estimated for the instrument; α is the intercept; and X_i is a vector of k excluded exogenous variables in the second stage regression. For those countries that are not among the top 20 economies, i.e., $i \neq j$, their net real FDI per capita should be negatively correlated with their distance with and positively with real GDP per capita of the largest/wealthiest economies.[25] We regress net real FDI per capita on our instrument -the summation of the product of distance and real GDP per capita- and then use the regression coefficients to predict the independent variable for the second stage. Ancillary tests suggest that our instrument is strong and valid.[26]

In the second stage regression we fit a series of models to assess the empirical content of our hypotheses on the conditional effects of FDI on corruption. We regress corruption on instrumented FDI per capita ($\widehat{FDI}_i$), democracy, the natural log of real GDP per capita, and two interaction terms: instrumented FDI and log of GDP per capita, and instrumented

[23] Alternatively, we weigh distance by the log of the population of the largest twenty economies. One potential critique to our instrument is that even though corruption in host countries is unlikely to be affected by distance to developed countries, the variance of the information available to researchers at Transparency International, the Heritage Foundation, the PRS group or the World Bank to construct the indices of perceived corruption might be affected by distance. This problem is mitigated in Transparency International's Corruption Perceptions Index (CPI), which uses surveys of residents and local sources as well. Moreover, a recent study by Fisman and Miguel (2006) provides some validation of the subjective measures of corruption used in our analysis. One potential advantage of using population is that it could be taken as a proxy for real GDP per capita while it is unlikely to have a direct effect on corruption in host countries. We could also think in this way that a country with more population means less capital per capita (less abundant in capital endowments).

[24] Note that while distance is time invariant, our instrument (remoteness) varies over time, and could be used to instrument for FDI in panel settings as well. Elsewhere, we use remoteness to instrument for FDI in analyses of the effects of foreign investment on the sources of growth, and on labor regulations and wages.

[25] For the largest/wealthiest economies, ie, when $i = j$, we set the term $1/distance_{ij} * GDP\ per\ capita_j = 0$. Since we are measuring outward investment, this is equivalent to coding the distance of a country to itself as infinite so that $1/distance_{ij} \equiv 0$. This implies that for a country like the United States case, included among the top wealthiest economies, $1/distance_{ij} = 0$ would capture the fact that by definition the U.S. receives no FDI from itself.

[26] The *F-statistic* of the first stage regression in Model 3 is 10, in Model 4 is 9.67. The *F-statistics* of the first stage regressions in Model 6 are 9.16 and 17.21 respectively (Table 3). See Bound, Jaeger, and Baker 1995; Staiger and Stock 1997.

FDI and democracy.

$$\begin{aligned} Corruption_i &= \beta_0 + \beta_1 \widehat{FDI}_i + \beta_2 Democ_i + \beta_3 Ln(GDPcap_i) + \\ &\quad + \beta_4 \widehat{FDI}_i \times Ln(GDPcap_i) + X_i\xi + \mu_i \end{aligned} \tag{2}$$

and

$$\begin{aligned} Corruption_i &= \gamma_0 + \gamma_1 \widehat{FDI}_i + \gamma_2 Democ_i + \gamma_3 Ln(GDPcap_i) + \\ &\quad + \gamma_4 \widehat{FDI}_i \times Democ_i + X_i\xi + \mu_i \end{aligned} \tag{3}$$

β_k (γ_k) is a vector of regression coefficients, X_i is a vector of k explanatory variables, and μ_i is an error term. Instrumented FDI per capita is uncorrelated with the error term μ_i in the second stage regression.[27]

According to our hypotheses, the effect of inward FDI on corruption is obtained by taking the partial derivative of $Corruption_i$ with respect to FDI_i yielding for equations (2) and (3) respectively:

$$\frac{\partial Corruption_i}{\partial \widehat{FDI}_i} = \beta_1 + \beta_4 \times Ln(GDPcap_i) \tag{4}$$

$$\frac{\partial Corruption_i}{\partial \widehat{FDI}_i} = \gamma_1 + \gamma_4 \times Democ_i \tag{5}$$

where $\beta_1 > 0$ and $\beta_4 < 0$, such that $\beta_1 + \beta_4 \times Ln(GDP/cap_i) \lesseqgtr 0$ as $Ln(GDPcap_i) \lesseqgtr Ln(GDP/cap)^*$, and $Ln(GDP/cap)^*$ is a value in the sample corresponding to $-\beta_1/\beta_4$.[28]

3.2 Data

Our dependent variable is Transparency International's annual index of "perceived corruption" (CPI), which is widely used in earlier studies (Treisman 2000; Sandholtz and Gray 2003). The index ranges between 0 (most corrupt) to 10 (least corrupt). In order to simplify the interpretation of results, we have reversed the scores so that higher values

[27] The correlation coefficients of instrumented FDI and μ_i in our preferred models (equations 6.1, 6.2, 8.1 and 8.2 in Table 2) is basically zero at the fourth decimal place.

[28] For equation (5) the predictions are: $\gamma_1 > 0$ and $\gamma_4 < 0$; $\gamma_1 + \gamma_4 \times Democ_i \lesseqgtr 0$ as $Democ_i \lesseqgtr Democ^*$; $Democ^* = -\gamma_1/\gamma_4$.

represent more corruption. The Corruption Perception Index (CPI) has not been calculated for every year for every country; coverage depends on the availability of survey data in the host countries.[29] To maximize the data coverage, we follow Sandholtz and Gray (2003): we aggregate the data for a five-year period, 2000-2004, and we take the average CPI score for each country that had been included in any of the TI surveys during that five-year span.[30] To check for robustness of our findings we also use scores from World Bank and the International Country Risk Guide as alternative measures of the dependent variable.

Data on FDI per capita in equation (1) is the annual net inflows in constant 2000 international dollars (PPP adjusted) divided by population.[31] We average FDI per capita for each country for a five-year span 2000-2004. To better interpret our results, we re-scale it to 100 constant international dollars. Note that net FDI could take negative values when divestment -i.e.: investment pulling out of the host country- is larger than inward investment. The data on FDI and population is from the World Bank's *World Development Indicators*.

Bilateral distance is the inter-capital distance of pairwise sovereign countries. For Hong Kong, it is the distance between the city and the capitals of other sovereign countries. We calculated bilateral distance data using the ArcGIS 9.2 program. We use standard Polity IV scores of political regimes to capture the degree of democracy in host countries. The composite measure of democratic institutions from Polity IV is the difference between DEMOC and AUTOC, ranging form -10 (strongly autocratic) to +10 (strongly democratic).[32] We rescaled them into a range of 0 to 20. The same measure is used in a variety of previous studies (Jensen 2003; Li and Resnick 2003). The Polity IV democracy score is also the average for the five-year interval 2000-2004. It is plausible that the incentives created by

[29] See Treisman 2007, pp. 213-221, for a discussion of this and alternative measures of corruption.

[30] The CPI codes instances of grand corruption, graft and petty corruption, yet our argument is about grand corruption and makes no prediction on the effect of foreign investment on petty corruption. According to Transparency International, CPI is a good proxy of grand corruption, which is the at the center of the organization's activities. They note, however, that the incidence of grand corruption and petty corruption are likely to go hand in hand. Thus, CPI could be considered a coarse proxy of the underlying level of corruption in the host, which is the underlying concept of interest in our study. The addition of instances of petty corruption on the left-hand side of the estimating equation could give rise to measurement error concerns, which also justify the adoption of a 2SLS methodology adopted in our statistical tests.

[31] The PPP conversion factor is calculated in the following way: conversion factor=GDP(PPP, Constant 2000 International $)/GDP(Current US $). All data are from World Bank's *World Development Indicators*. Net FDI Inflows (PPP) = Conversion Factor × FDI (Current US$).

[32] The source is Marshall and Jaggers (2004). Missing values are linearly interpolated.

changes in political institutions take time to consolidate, leading to a cumulative effect of long standing democratic practices and values. Hence, in alternative specifications we use a dummy variable coded as 1 for countries that have been democratic throughout the 1930-1995 period. The source for this variable is Treisman (2007).

There are some critiques about the composite measure of democracy. Treier and Jackman (2008), for instance have argued that because of inappropriate aggregation and measurement error, there is an error-in-variables problem potentially leading to biased and inconsistent estimates when democracy is used as an explanatory variable (Treier and Jackman, 2008, pp. 202-3). The problem is compounded when trying to estimate the effect of intermediate levels of democracy, such as anocracies and transitionos to and from democracy, or non-linearities in the effect of the regime variable. To address this concern in our robustness tests we use alternative indicators from the Polity IV data aimed at capturing the degree of political competition in the polity: PARCOMP and POLCOMP.[33] We also fit additional models using Freedom House's index of political rights (Freedom House 2008), and Tatu Vanhanen's indices of participation and democracy (Vanhanen 2000, 2003).

In the second stage regressions we control for religion, legal origin, and ethnolinguistic fractionalization, for which we use data from La Porta et al. (1999). Religious affiliation is measured by the proportion of the population in each country that belongs to the three most widely spread religions in the world in 1980 - Protestant, Catholic, and Muslim. For countries of recent formation, the data is available for 1990-1995. The numbers are in percentages, ranging from 0 to 100. To ease the interpretation of results we have rescaled the data to a 0 to 1 range. Legal origin is captured by three dummy variables: British (common law), French, other legal systems. Other legal origin serves as the baseline (excluded) category. The variable measuring ethnicity is created as the average value of five different indices of ethnolinguistic fractionalization.[34] To proxy for countries' raw

[33]Vreeland (2008) argues that two components used to construct democracy scores - PARCOMP and PARREG (participation regulation) are partially defined by the presence of civil war, which drives the correlation between anocracies and civil war. This problem is a less concern for this paper.

[34]The five component indices are: (1) index of ethonolinguistic fractionalization in 1960, which measures the probability that two randomly selected people from a given country will not belong to the same ethnolinguistic group (the index is based on the number and size of population groups as distinguished by their ethnic and linguistic status); (2) probability of two randomly selected individuals speaking different languages; (3) probability of two randomly selected individuals do not speak the same languages; (4) percent of the population not speaking the official language; (5) percent of the population not speaking the most widely used language. See La Porta et al. (1999), p. 238.

materials endowments, we follow Ades and Di Tella (1999) and Treisman (2000), using the proportion of exports comprising fuels, metals, and minerals. This data was obtained from the World Bank's *World Development Indicators*, averaged for the 2000-2004 five-year span. Openness is measured as the sum of imports and exports of goods and services as a share of GDP. Economic development is measured as GDP per capita in constant 2000 international dollars (PPP). GDP per capita is mean-centered to simplify the analysis and interpretation of the results, particularly those on the interactive terms. Both of openness and GDP per capita are logged to deal with their skewed distribution. Data on openness and real GDP per capita were drawn from the *Penn World Tables*.

4 Empirical Results

In the ensuing sections we present the results from our statistical analyses. Section 4.1 discuses the construction of the instrument of FDI, and presents the results from the first stage regressions. Next, we move to the second stage results, where we evaluate the unconditional effects of FDI on corruption as proposed by the extant literature and test our hypotheses on the conditional effects of FDIn. We present additional results that suggest that our findings are robust to alternative specifications.

4.1 First Stage: Instrumental Variable

To show the validity of our instrument, we first look at the bivariate correlation between real FDI per capita and our measure of remoteness. The pairwise Pearson correlation is 0.618 which is statistically significant.[35] Then we simply regress FDI on the instrument and predict exogenous FDI. The coefficient on our instrument is statistically significant at the 1% level, with an *F-statistic* of the regression of 56.87. In Figure (3), we plot the constructed FDI per capita against the true FDI per capita. We can see in Figure (3) that our instrument predicts FDI inflows quite well.

[Figures 3 & 4 about here]

However, figure 3 suggests that Belgium, Ireland, and Singapore could be statistical

[35]The pairwise Pearson correlation is based on the sample in which all missing values in explanatory variables are deleted ($N = 94$). The correlation for the complete sample is 0.267 which is also statistically significant at 1%.

outliers. These are three small countries that receive more FDI per capita in the 2000-2004 period than predicted by their distance to the world's wealthiest economies. When we drop these three countries, the Pearson correlation increases to 0.658. Next, we regress real FDI per capita on remoteness, but this time excluding the three potential outliers yields similar results. Figure (4) plots true FDI per capita and constructed FDI per capita; the correlation between the two measures is, again, stronger: all observations lie around the 45-degree line. Figures (6) and (7) graph the leverage and added-variable plots from the first stage regression. A cursory look at these graphs suggests that Belgium, Singapore and Ireland are indeed outliers. In our tests we explore the existence of outliers more rigorously, and consider the consequence of including and excluding these observations from the analyses; our results remain robust to these alternative modeling strategies. Excluding Singapore from our tests requires additional explanation given that it is usually characterized as an authoritarian regime with very low levels of corruption. Note, however, that Singapore is usually coded as having a highly competitive system for recruitment of political leaders, even in comparison with democratic systems in other regions of the world, as discussed in footnote 18. Additionally, Singapore has a diversified economy which is highly integrated to the global economy. Both conditions would point to a negative marginal effect of FDI and corruption.

[Figures 6 and 7 about here]

4.2 Second Stage: The Effects of FDI on Corruption

We start by reproducing the analyses in the literature on the unconditional effect of inward FDI on corruption using an OLS estimator. Note that these are not our preferred specifications since they neither model the conditional effects nor correct for endogeneity. In Model 1 on Table 1, we regress corruption on FDI and log of real GDP per capita and democracy, controlling for openness, natural resource endowment (exports of fuels, minerals and metals), ethno-linguistic fractionalization, and religion. We find that the coefficient on FDI inflows is negative (-0.041) and significant at the 1% level. Substantively, a $100 increase in FDI per capita will be associated with a reduction of 0.041 units in the corruption score, holding all else constant. We also find that GDP per capita is negatively associated with

corruption; democracy, on the other hand, doesn't seem to affect corruption. Exports of fuels, metals and minerals (our proxy for natural resource endowment) are positively correlated with corruption as expected. Countries with a higher proportion of the population who are Protestant are associated with lower corruption scores. In Model 2, we control for origin of the legal system. The results are substantively similar to those obtained in model 1: the coefficient on FDI inflows remains negative and significant. The natural log of GDP per capita, and the ratio of Protestants in the population remain negative and statistically significant, while exports of fuels is still positive and significant. Legal system does not seem to have a significant effect on corruption scores.

[Table 1 about here]

Previous research on the effects of corruption on FDI raise concerns about endogeneity, and hence a potential source of bias for the estimates obtained from the OLS models. Instrumenting for FDI should help us correct for that source of bias. In Model 3, we use our instrument of FDI in an IV-2SLS setting and estimate its effect on corruption.[36] These results show that while the coefficient on instrumented FDI remains negative, it is no longer significantly different from zero. After controlling for legal origin in model 4 we find that the effect of instrumented FDI is both negative and statistically significant, in line with the findings by Larraín and Tavares (2004).

These models ignore our hypothesis that the effects of FDI on corruption should be conditional on the political and economic conditions in the host country. In earlier sections we argued that GDP per capita is a good proxy for the degree of diversification of the host economy: developed economies tend to be more diversified, have more competitive markets and present better investment opportunities. Under these conditions, foreign investment would foster competition and increase innovation which forces other market participants to demand lower exactions and bribes to stay competitive. In backward economies, where markets are less competitive and business opportunities limited, the inflow of foreign investment will be associated with rent creation, and hence higher corruption. Hence, we expected that the marginal effect of FDI on corruption should covary with real GDP per

[36] In the IV-2SLS regressions all excluded exogenous variables (excluded instruments) are included in the first stage regressions. Model 3a in Table 3 presents the results of first stage regression. The coefficient of our instrument is statistically significant and the *F-statistic* of the first stage regression is 10, suggesting that our instrument is strong (Bound, Jaeger, and Baker 1995; Staiger and Stock 1997).

capita.

To account for these conditional effects, in model 5 we include an interaction term of real FDI per capita with the natural log of GDP per capita. This interaction presents an additional technical challenge. Since FDI per capita is endogenous to corruption, the interaction between FDI and GDP is also endogenous to corruption. The estimates obtained by multiplying directly an instrumented endogenous variable with another endogenous variable is inconsistent and the interaction term must be purged as a single variable (Kelejian 1971; Achen 1986). For example, suppose we define a reduced form for an endogenous variable $x_1 = (X, Z)$, where Z are instruments and X are the excluded exogenous variables from the second stage. The reduced form for $x_1 x_2$ is $x_1 x_2 = (X, Z)x_2$. A consistent estimate of the reduced form predicting $x_1 x_2$ can be obtained by estimating this equation. Then the purged values of the interacted terms can be inserted into the second stage regression, while correcting for the standard errors as usual (Achen 1986, pp. 141-144). The results obtained from our statistical analyses, discussed in the ensuing paragraphs, seem to confirm our hypotheses.

Looking first at the controls, we find that the addition of the interaction does not affect much their sign or significance levels: Protestantism still has a negative and significant impact on corruption. The slope of natural resource endowment is also positive and significant. The coefficient on the natural log of real GDP per capita is -1.321 and is statistically significant at the 1% level. The most important change is that the sign of instrumented FDI per capita switches to positive (0.082) and is statistically significant at the 5% level. The coefficient on the FDI-GDP interaction term is negative (-0.076) and is significant at the 1% level. The positive sign on the coefficient on FDI and the negative signs on both the coefficient on log GDP per capita and the coefficient on the interaction term strongly support our hypothesis: At low levels of GDP per capita FDI tends to be associated with higher corruption. However, when the log of GDP per capita (centered) is above 1.079 (equivalent to approximately $16,866, the value corresponding roughly to Greece in our sample), FDI inflows are associated with lower corruption levels in the host country. We calculate the net effect of FDI per capita on corruption by setting the log of real GDP per capita at -0.451 and at 1.531, which represent the means of the log of real GDP per capita

of those countries below and above the threshold respectively. The coefficients on FDI per capita are 0.116 and -0.034 respectively, which means that if a country whose income level like Nicaragua gets 100 units (constant 2000 Int'l dollars) more FDI per capita when holding other variables constant, its corruption level would increase by 0.116 units. For a country like Finland, and increase of 100 units in FDI per capita would be associated with a fall of 0.034 points in the corruption score. In less developed/poorer country, increasing inward FDI is associated with higher, while in an advanced economy increasing inward FDI will improve national corruption. Note, however, that among the latter the marginal effect of FDI is weaker. The finding that the correlation between FDI and corruption is stronger in less developed economies, which is consistent with hypothesis that the presence of foreign investors in backwards and less diversified economies has the potential to create opportunities for rent extraction that would otherwise be missed. These results also suggest that corruption in poor countries is more likely to be affected by external factors such as FDI inflows than in advanced countries.

In Model 6, we explore whether the effect of FDI on corruption is conditional on the level of development of political institutions in the host country. The signs and coefficients of FDI, democracy, and their interaction term are in the expected direction. The interaction term between FDI and democracy is statistically significant, yet FDI is only significant at 10% level. The coefficient on democracy, on the other hand, is not statistically significant. In substantive terms the results suggest that the relationship between FDI and corruption is stronger in less democratic countries.

4.2.1 Endogenous GDP

The estimates from model 5 could also be biased, since GDP per capita could potentially be endogenous to corruption (Treisman 2007). To solve this problem, in Table 2 we present the results from fitting 2SLS models where we instrument for both FDI and GDP. We use countries' absolute latitudes to instrument for GDP per capita.[37] Remoteness and absolute latitude are likely to be correlated. However, from the results of the first stage regressions (see, Model 7a and Model 7b in Table 3), our instrument seems to better

[37] For a discussion of this instrument, see Hall and Jones (1999); Rodrik et al. (2004); Acemoglu, Johnson and Robinson (2001, 2002)

capture the variance in FDI rather than GDP per capita: when predicting exogenous FDI the coefficient of remoteness is highly significant at 1% but the one of absolute latitude is not. In contrast, the coefficient of absolute latitude is statistically significant at 1% in predicting real GDP per capita but the coefficient of remoteness is not significant.[38]

[Table 2 and Table 3 about here]

Model 7 fits a model where both FDI and GDP are instrumented. We find that FDI per capita has a positive slope of 0.046 and the interaction term has a negative coefficient of -0.036 which is statistically significant at 1% level. The coefficient on instrumented GDP per capita is negative and significantly different from zero beyond conventional levels. The three variables -and democracy- are highly correlated, raising concerns of multicollinearity (see the correlation matrix in Figure 5). In the presence of multicollinearity, we still have consistent estimates of the coefficients but imprecise estimates of the standard errors. We test for their joint significance, and find that they are at the 1% level. We find strong and robust evidence that the effect of FDI covaries with economic development in the host, in line with our hypothesis.

[Figure 5 about here]

4.2.2 Consolidated Democratic Practices

To further check the conditional effects of FDI on corruption across different levels of political development, we use a dummy variable for countries that had been democratic in all years for the period (1930- 1995). This variable is our proxy for the existence of consolidated democratic institutions, values and practices. This is arguably a better measure of political development than the continuous measure from Polity IV, since democratic practices and principles may take time to take root.

In Model 8, we use real FDI per capita and interact with the dummy variable 'consolidated democracy (1930-1995)'. The coefficients on FDI, democracy, and the interaction term all have the expected signs but do not reach conventional significance levels. Just like economic development, FDI tends to increase corruption in less democratic countries but

[38] The results do not change even when we add legal origin into the first stage regression. The coefficient of absolute latitude only becomes significant at 5 % (p-$value$= 0.050) in predicting exogenous FDI when we drop the three outliers. But the coefficient of distance remain insignificant in predicting exogenous GDP without outliers.

decrease corruption in countries with long established democratic traditions.

The previous results provide evidence that FDI does indeed affect corruption, and that the effect is conditional on the level of political and economic development in the host country. The effect of FDI on corruption is positive when countries are less developed and less democratic, but FDI seems to reduce corruption when countries are more developed and democratic; again, the marginal impact of FDI in democratic and developed countries seems to be smaller.

4.2.3 Outliers

As discussed in section 4.1, we have identified several influential observations. Table 7 shows that Belgium, Ireland, and Singapore receive substantially more FDI per capita than the rest of the countries in the sample. We worry that these countries could be statistical outliers driving our results. Figure 8 plots corruption on FDI per capita with and without these observations. We can see that Belgium, Ireland, and Singapore stand out as potential outliers.

We have also calculated the Cook's Distance for each observation in the sample (see table 7) and identified those observations that have larger influence on the coefficients estimated in each model (Cook 1979).[39] Figure (6) presents studentized residuals, hat values, and Cook's distance in graphical form, while Figure (7) graphs the added-variable plots for all variables used in our analyses, confirming our suspicions. Next we fit model 9 which reproduces model 7 after dropping Belgium, Ireland and Singapore, the potential outliers identified in our tests.[40] The coefficients on instrumented FDI, instrumented GDP per capita (in natural log) and their interaction term all have the predicted sign and are statistically significant.

[39] The Cook distance coefficient (D_i) measures the influence of observation i on the predicted value of other observations in the sample given the parameters in the model. Formally $D_i = \{\Sigma(\hat{Y}_j - \hat{Y}_{j-i})\}/(k \times MSE)$, where $\hat{Y}_j$ are the fitted values for the j observation using the full sample, $\hat{Y}_{j-i}$ are the fitted values for j when excluding observation i, k is the number of parameters and MSE is the mean squared error of the model.

[40] Dropping Belgium and Singapore reduces the size of our standard errors in the models where FDI is interacted with democracy and long standing democratic traditions, but not in the models where FDI is interacted with GDP per capita. Dropping Ireland, on the other hand, seems to be less influential on the sign and significance levels in the second stage regression. Moreover, additional tests excluding Belgium, France, Great Britain, Ireland, Japan and Singapore, the six outliers identified by a more restrictive criterion of $D_i > 4/(N - k - 1)$, provides even stronger support for our hypotheses. Results are available from the authors.

In Models 10 and 11, we interact real FDI per capita with the host country's Polity IV democracy score and with the proxy for consolidated democracy respectively. FDI, democracy, and their interaction term all have expected signs and are statistically significant in model 10, while the interaction term is significant at 1% level in Model 11. These results confirm our predictions: FDI inflows are associated with higher corruption in less democratic countries, but the association turns negative among democratic countries suggesting that our findings are robust to the exclusion of statistical outliers.

[Table 7, Figures 6 and 7 about here]

In Model 12 we add controls for legal origin: the slope on instrumented FDI per capita is positive (0.265) with a *p-value*=0.088. The coefficient on instrumented GDP per capita is -2.054, and is statistically significant at the 1% level, while the interaction of FDI and GDP/capita has a negative slope of -0.170 and is significant at the 1% level. In substantive terms when the log of GDP per capital is below some threshold (1.559, roughly corresponding to the level of Japan in the sample), FDI inflows have a positive effect on corruption. For countries above that threshold, FDI inflows are associated with lower corruption. Note, again, that the absolute value of the marginal effects of FDI on corruption is smaller among developed countries.

Model 13 reproduces the tests interacting FDI with democracy; these results also seem to support our hypothesis on the conditional effects of FDI on corruption: instrumented FDI and its interaction term with the Polity measure of democracy enter with the expected signs and are significant beyond conventional levels, once more confirming our earlier results.

Figure 9 graphs the marginal effects of FDI inflows on corruption at different levels of economic development (top graph) and democracy (bottom graph). The marginal effects and confidence intervals are obtained from simulations using the coefficients from models 12 (top graph) and 13 (bottom graph) in Table 2, holding other variables constant. The top graph in figure 9 shows that at the lowest levels of development in the sample, FDI is associated with higher corruption, and the effect tapers off at higher levels of development. The bottom graph, shows that FDI is associated with higher levels of corruption in the least democratic countries, and lower levels of corruption in democratic countries.

Table 6 lists the countries ranked by GDP per capita and democracy scores into different groups according to whether the estimated effect of instrumented FDI on corruption is positive (left column) or positive (right column) using the estimates from models 12 and 13 respectively.

In Figures 10 and 11 we draw the slope of FDI on corruption for two different groups of countries across legal origins.[41] The upward trending (solid) line in each box reflects the effect of FDI inflows on corruption for the subset of less developed (Figure 10) or less democratic countries (Figure 11). The downward sloping (dashed) line reflects the effect of FDI inflows on corruption for the subset of developed (Figure 10) or democratic countries (Figure 11). We set the log of GDP per capita/democracy at the mean of the sub-sample of countries below the threshold at which the effect of FDI on corruption is zero, and set the log of GDP per capita/democracy at its mean for the subset of countries above the threshold. Figures 10 show that the slope for the average developed country is smaller, in absolute terms, than the slope for the average developing countries; a similar trend is found on the effects of FDI on corruption for the average democratic and non-democratic countries.

[Table 8, Figures 10 and 11 about here]

4.2.4 Political competition

In order to deal with the problems of possible inappropriate aggregation and measurement error in Polity IV's measure of democracy (Treier and Jackman 2008; Vreeland 2008), we use two variables from Polity that measure the degree of competitiveness of the political system (PARCOMP and POLCOMP) which are arguably less susceptible to that critique.[42] When using PARCOMP (and POLCOMP) the results are even stronger (see Models 20 and 21): the coefficients on both instrumented FDI and the interaction term and competition are statistically significant and in the expected direction, while the coefficient

[41] The slopes are based on the coefficients from models 12 and 13.

[42] PARCOMP measures the extent that non-elites are able to access institutional structures for political expression. The greater the extent of the franchise and the more that alternative preferences for policies and leadership can be pursued in the political arena, the higher the PARCOMP score. PARCOMP ranges from 0 (unregulated) to 5 (fully competitive), with 5 indicating open competition for political leadership. POLCOMP is a concept variable created by combining PARCOMP with PARREG, which codes the degree of regulation of political participation ranging from unregulated and fluid to regulated where no groups are excluded from participation. The concept variable POLCOMP ranges from 1 (suppressed) to 10 (instutionalized electoral competition). See Marshall and Jaggers (2004).

on PARCOMP is also statistically significant beyond conventional levels in Model 20.

[Table 5 about here]

In Model 22 and 23, we use Freedom House's political rights index and Vanhanen (2003) measures of political participation as alternative measure of political development.[43] Note that in the Freedom House index of political rights higher values reflect lower degrees of freedom, so we should expect a positive coefficient on FDI and a negative coefficient on the interaction term between political freedom and FDI. Again, both FDI and its interaction terms have predicted signs and are statistically significant. Our findings are robust to alternative specifications and modeling strategies, and seem to strongly support our hypotheses that the effects of FDI on corruption are conditional on the political and economic environments.

4.2.5 Additional Robustness Tests: Alternative Measures of Corruption

To check for the robustness of our findings we use two alternative measures of our dependent variable. In model 14 and 15, we use corruption scores from the International Country Risk Guide created by the PRS group based on expert accounts and home country surveys.[44] In Model 16 and 17, we use the measure of corruption from the World Bank.[45] And in Model 18 and 19, we use the full sample in which World Bank corruption data are available.[46] Again, we instrument for FDI and interact it first with instrumented GDP and next with democracy. Results reported in Table (4) are consistent with our earlier findings. Higher real GDP per capita -and democracy- are associated with lower corruption scores. The coefficients on instrumented FDI per capita are positive. The coefficients on the interaction terms (FDI and GDP in models 14, 16, and 18 and FDI and democracy in models 15, 17, and 19) are all negative and statistically significant beyond conventional levels.

[Table 4 about here]

In sum, we find that, FDI inflows are associated with more corruption in less developed and less democratic countries but with less corruption in advanced economies and

[43] For political participation we use data for 2000 which is the latest year available from Vanhanen.

[44] Corruption scores from International Risk Guide are ranked from 0-6. We rescaled the score to a range of 0-10 and took reverse of the scores so that higher scores represent higher corruption. We average the corruption scores for the 2000-2004 period.

[45] We take the reverse of World Bank corruption in order to better interpret the results.

[46] After pairwise deletion of missing values and dropping the three outliers, we have 100 observations for the World Bank corruption data.

democratic polities. Furthermore, our results suggest that the effect of FDI on corruption are substantively larger in less-developed and less democratic countries than in advanced and democratic countries. One plausible explanation for this finding is that since property rights are secure, legal institutions are already well established, and markets are more competitive in these countries, corruption levels are already relatively low; hence the additional marginal effects of FDI on corruption resulting from increasing competition and efficiency are likely to be less consequential. One major caveat to this analyses is that output per capita in the host is a coarse proxy for economic diversification, concentration and the existence of opportunities for rent creation. Moreover, economic development is a pre-condition for political development; hence GDP per capita could be capturing better governance and institutions (Przeworski et al. 2000). In future research we intend to analyze the conditional effect of different types of FDI in different market structures, different levels of diversification, and different institutional settings.

5 Conclusion

This paper contributes to the existing literature on FDI and corruption in two significant ways. First, we are unsatisfied with instruments for FDI developed by other scholars either because they do not completely deal with endogeneity problem or the correlation between instrumented variable and true variable is relatively low (weak instrument problem). We develop a new instrument for FDI inflows, *remoteness*, which is operationalized as the weighted distance to the twenty wealthiest economies in the world. Our instrument is exogenous to host countries' domestic political and economic configurations. Furthermore, our instrumented FDI is highly correlated with the true FDI inflows. Second, we contribute to the literature on the consequences of FDI. After dealing econometrically with the endogeneity problem associated with the effect of corruption on FDI, we explore the empirical content of the reverse causal relationship. In particular we analyze wether the effect of FDI and corruption is conditional on the political and economic environment in the host country.

The consistent and robust empirical evidence strongly supports our argument. In less economically developed and less democratic countries, increasing FDI inflows is positively

associated with grand corruption, while in more diversified economies and competitive political systems increasing FDI inflows are associated with lower corruption, but in the latter cases the marginal effect of FDI on corruption is relatively small. One plausible explanation for this finding is that once corruption levels are low due to the existence of institutional checks, the establishment and consolidation of the rule of law and property rights protection associated with democratic or political development, there is limited room for a substantial reduction of corruption resulting from increased competition and efficiency brought about by foreign investment and the activity of MNCs.

Our argument is not new; it builds on earlier work on the political economy of corruption by renowned scholars such as Gordon Tullock (1967), Anne Krueger (1974), Susan Rose-Acerkman (1978, 1999), Jagdish Bhagwati (1982), Andrei Shleifer and Robert Vishny (1993), Alberto Ades and Rafael Di Tella (1999), and Daniel Treisman (2000) among others. This literature has emphasized on the role political and economic competition, or lack thereof, on the costs and benefits analysis faced by public officials and economic agents when deciding whether to engage in predatory behavior and corruption, demand and pay bribes. Our main theoretical contribution is the emphasis placed on the effect of foreign investment on the costs of and opportunities for engaging in grand corruption. Our argument has also found partial support in journalistic accounts and anecdotal evidence mostly drawn from developing countries in particular: multinational corporations do not necessarily demand higher standards of public governance, nor are they less likely than their domestic counterparts to engage in corruption. Ours is, we believe, the first study to analyze these effects systematically drawing on data from developing and developed countries.

The conventional wisdom states that increasing inward investment will reduce corruption in host countries because of the increasing competition and the diffusion of norms and values associated with FDI and the activity of MNCs. Our results suggest that this claim does not necessarily hold empirically. We find that the effects of FDI on corruption are conditional on domestic political and economic environments: In countries with less diversified markets and weak political institutions inward FDI could result in higher corruption levels.

Our findings underscore the importance of understanding the political and economic determinants of foreign investment. Moreover, future research should explore the consequences of the endogenously determined investment flows. Political and economic conditions in the host are likely to affect not only the location decision of foreign investors, but also their choice of the form of entry. Investors' location and form of entry decisions, in turn, affect the political and economic in the hosts. While some investors are attracted to countries with favorable business climate and good governance institutions, others are motivated by the opportunities for rent creation and extraction in countries whose leaders are institutionally unconstrained and politically unchallenged. Investors of the latter type have the potential to worsen political and economic conditions in the host, particularly in backward and less democratic countries.

References

Acemoglu, Daron, Simon Johnson and James A. Robinson. 2001. "The Colonial Origins of Comparative Development: An Empirical Investigation." *American Economic Review* Vol. 91, No. 5: 1369-1401.

Acemoglu, Daron, Simon Johnson and James A. Robinson. 2002. "Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution." *Quarterly Journal of Economics* Vol. 117, No. 4: 1231-1294.

Achen, Christopher H., 1986, *The Statistical Analysis of Quasi-Experiments*, Berkeley: University of California Press.

Alesina, Alberto, and Beatrice Weder. 1999. "Do Corrupt Governments Receive Less Foreign Aid?" *National Bureau of Economic Research*, Working Paper No. 7108.

Andvig, Jens C., and Karl O. Moene. 1990. "How Corruption May Corrupt." *Journal of Economic Behavior and Organization*, Vol. 13: 63-76.

Bardhan, Pranab. 1997. "Corruption and Development: A Review of the Issues." *Journal of Economic Literature*, Vol. 35, No.3:1320-1346.

Barro, Robert J. and Jong-Wha Lee. 1994. "Data Set for a Panel of 138 Countries." Mimeo, Harvard University.

Beck, Thorsten, Asli Demirgüç-Kunt, and Ross Levine. 2003. "Law, Endowments, and Finance." *Journal of Financial Economics*, Vol. 70, No. 2: 137-81.

Bhagwati, Jagdish N.. 1982. "Directly Unproductive, Profit-Seeking (DUP) Activities." *The Journal of Political Economy*, Vol. 90, No. 5. (Oct., 1982):988-1002.

Blonigen, Bruce A.. 2005. "A Review of the Empirical Literature on FDI Determinants" *National Bureau of Economic Research*, Working Paper No. 11299.

Bound, John, David A. Jaeger, and Regina M. Baker. 1995. "Problems with Instrumental Variables Estimation When the Correlation between the Instruments and the Endogenous Explanatory Variable Is Weak." *Journal of the American Statistical Association* 90 (June): 443-50.

Brunetti Aymo, and Beatrice Weder. 2003. "A free press is bad news for corruption." *Journal of Public Economics* Vol. 87, No. 7-8:1801-24.

Carr, David, James R. Markusen, and Keith E. Maskus. 2001. "Estimating the knowledge

capital model of the multinational enterprise." *American Economic Review*, Vol. 91: 693-708.

Carr, David, James R. Markusen, and Keith E. Maskus. 2003. "Estimating the knowledge capital model of the multinational enterprise: reply." *American Economic Review*, Vol. 93: 995-1001.

Caves, Richard E.. 1996. Multinational enterprise and economic analysis. New York, NY: Cambridge University Press.

Celentani, Marco, Juan-José Ganuza and Jose Luis Peydro. 2004. "Combating Corruption in International Business Transactions." *Economica*, Vol. 71, No. 283: 417-448.

Cook, R. Dennis. 1977. "Influential Observations in Linear Regression." *Journal of the American Statistical Association* Vol. 74: 169-174.

Dahl, Robert. 1971. *Polyarchy: Participation and Opposition.* New Haven, Conn.: Yale University Press.

Dahl, Robert. 1998. *On Democracy.* New Haven, Conn.: Yale University Press.

David, René, and John E. C. Brierley. 1985. *Major Legal Systems in the World*, 3rd edition, Stevens and Sons, London.

Delios, Andrew and Witold J. Henisz. 2003. "Political Hazards, Experience and Sequential Entry Strategies: The International Expansion of Japanese Firms, 1980-1998." *Strategic Management* Vol. 24, No.11: 1153-1164.

Egger, Perter and Hannes Winner. 2005 "Evidence on Corruption as an Incentive for Foreign Direct Investment." *European Journal of Political Economy* Vol. 21, No. 4 (December): 932-952.

Fearon, James D., and David D. Laitin. 1996. "Explaining Interethnic Cooperation." *American Political Science Review*, 90(4):715-35.

Field Jr., Alfred, Luis A. Sosa, and Xiaodong Wu. 2003. "Impacts of Endogenous Bribes on Foreign Direct Investment." Unpublished Manuscript, University of North Carolina at Chapel Hill.

Fisman, Raymond, and Edward Miguel. 2006. "Cultures of Corruption: Evidence From Diplomatic Parking Tickets." *National Bureau of Economic Research* Working Paper No. 12312.

Freedom House. 2008. "Freedom in the World. Annual Survey of Freedom Scores,1973-2008" (online resource). URL: http://www.freedomhouse.org/uploads/FIWAllScores.xls. Accessed 7/16/2008.

Gerring, John and Strom C. Thacker. 2005. "Do Neoliberal Policies Deter Political Corruption?" *International Organization* Vol. 59 (Winter 2005):233-254.

Habib, Mohsin and Leon Zurawicki. 2001. "Country-level Investments and the Effect of Corruption: Some Empirical Evidence", *International Business Review*, Vol. 10, No. 6:687-700.

Habib, Mohsin and Leon Zurawicki. 2002. "Corruption and Foreign Direct Investment", *Journal of International Business Studies*, 33(2):291-307.

Hall, Robert E., Charles I. Jones, 1999. "Why Do Some Countries Produce So Much More Output Per Worker Than Others?" *Quarterly Journal of Economics*, 114(1):83-116.

Held, David, Anthony McGrew, David Goldblatt, and Jonathan Perraton 1999. "Global Transformations: Politics, Economics and Culture", Stanford, California: Stanford University Press.

Hellman, Joel S., Geraint Jones and Daniel Kaufman. 2002. "Far From Home: Do Foreign Investors Import Higher Standards of Governance in Transition Economies?" *World Bank Policy Research Working Paper Series.*

Henisz, Witold J.. 2000. "The institutional environment for multinational investment." *Journal of Law Economics & Organization*, Vol. 16, No. 2: 334-364.

Henisz, Witold J. and Andrew Delios. 2004. "Information or Influence? The Benefits of Experience for Managing Political Uncertainty." *Strategic Organization*, Vol. 2, No. 4: 389-421.

Heston, Alan, Robert Summers, and Bettina Aten. 2006. Penn World Table Version 6.2, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania, September 2006. Access: http://pwt.econ.upenn.edu

Hines, James R., Jr.. 1996. "Forbidden Payment: Foreign Bribery and American Business After 1977" *National Bureau of Economic Research*, Working Paper No. 5266.

Jensen, Nathan M. 2003. "Democratic Governance and Multinational Corporations: Political Regimes and Inflows of Foreign Direct Investment." *International Organization*,

Vol. 57, No. 3. (Summer): 587-616.

Jensen, Nathan M., and Fiona McGillivray. 2005. "Federal Institutions and Multinational Investors: Federalism, Government Credibility, and Foreign Direct Investment." *International Interactions*, 31: 303-325.

Jensen, Nathan M., and Guillermo Rosas. 2007. "Foreign Direct Investment and Income Inequality in Mexico, 1990-2000." *International Organization*, Vol. 61, No. 3, 467-487.

Kelejian, Harry H., 1971. "Two-Stage Least Squares and Econometric System Linear in parameters but Nonlinear in the Endogenous Variables." *Journal of the American Statistical Association*, Vol. 66, No. 334, 373-374.

Krueger, Anne O.. 1974. "The Political Economy of the Rent-Seeking Society." *American Economic Review*, Vol. 64, No. 3. (Jun., 1974): pp. 291-303.

Lambsdorff, Johann G.. 2003. "How corruption affects productivity." *Kyklos*, Vol. 56:457-474.

Lambsdorff, Johann G.. 2006. "Causes and Consequences of Corruption: What do We Know from A Cross-Section of Countries?" In Rose-Ackerman eds., *International handbook on the economics of corruption*, Cheltenham UK and Northampton, MA: Edward Elgar.

Lambsdorff, Johann G.. 2007. The institutional economics of corruption and reform: theory, evidence, and policy. New York, NY: Cambridge University Press.

Landes, David. 1998. The Wealth and Poverty of Nations. New York. N.Y.: W.W. Norton.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny. 1997. "Legal Determinants of External Finance." *Journal of Finance*, (July) Vol. 52: 1131-50.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny. 1998. "Law and Finance." *Journal of Political Economy* (December), Vol. 106: 1113-155.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny. 1999. "The Quality of Government." *Journal of Law, Economics, and Organizations*, Vol. 15 (1): 222-79.

Larraín, Felipe and José Tavares. 2004. "Does Foreign Direct Investment Decrease Cor-

ruption?" *Cuadernos de Economía*, Vol. 41 (Agosto):217-30.

Lederman, Daniel, Norman V. Loayza, and Rodrigo R. Soares. 2005. "Accountability and Corruption: Political Institutions Matter." *Economics & Politics*, Vol. 17, No. 1:1-35.

Leff, Nathaniel H.. 1964. "Economic Development through Bureaucratic Corruption." *American Behavioral Scientist*, Vol. 8, No. 3:8-14.

Leite, Carlos and Jens Weidmann. 1999. "Does Mother Nature Corrupt? Natural Resources, Corruption and Economic Growth." IMF Working Paper WP/99/85, Washington DC: International Monetary Fund.

Levine, Ross. 2005. "Law, Endowments and Property Rights." *Journal of Economic Perspectives*, Vol. 19 (3): 61-88.

Li, Quan and Adam Resnick. 2003. "Reversal of Fortunes: Democratic Institutions and Foreign Direct Investment Flows to Developing Countries." *International Organization*, 57(4): 175-211.

Loungani, Prakash, Ashoka Mody, and Assaf Razin. 2002. "The Global Disconnect: The Role of Transactional Distance and Scale Economies in Gravity Equations." *Scottish Journal of Political Economy*, Vol. 49, No. 5: 526-543.

Malesky, Edmund J.. 2005. "Re-Thinking the Obsolescing Bargain: Do Foreign Investors Really Surrender their Influence over Economic Reform in Transition States?" Paper Prepared for Presentation at the Annual Conference of the International Studies Association.

Malesky, Edmund J.. 2008. "Straight Ahead on Red: How Foreign Direct Investment Empowers Subnational Leaders." *Journal of Politics* 70 (1): 97-119.

Markusen, James R.. 1995. "The Boundaries of Multinational Enterprises and the Theory of International Trade." *Journal of Economic Perspectives*, Vol. 9, No. 2: 169-89.

Marshall, Monty G., and Keith Jaggers. 2004. Polity IV Project: Political Regime Characteristics and Transitions, 1800-2004. *Center for International Development and Conflict Management*, University of Maryland. URL: http://www.cidcm.umd.edu/polity/. Accessed 12/10/2006.

Mauro, Paulo. 1995. "Corruption and Growth." *Quarterly Journal of Economics* 110(3): 681-712.

Mody, Ashoka. 2004. "Is FDI integrating the World Economy?" *The World Economy*, Vol. 27, No. 8: 1195-1222.

Montinola, Gabriella R. and Robert W. Jackman. 2002. "Sources of Corruption: A Cross-Country Study." *British Journal of Political Science*, Vol. 32, No. 1 (Jan., 2002):147-170.

Pinto, Pablo M., and Santiago M. Pinto. 2008. "The Politics of Investment: Partisanship and Sectoral Allocation of Foreign Direct Investment." *Economics & Politics*, Vol. 20, No. 2:216-254.

Powell, G. Bingham. 2000. *Elections as Instruments of Democracy: Majoritarian and Proportional Visions*. New Haven, Conn.: Yale University Press.

PRS Group. International Country Risk Guide (electronic resource). Accessed 12/10/2006.

Przeworski, Adam, Michael E. Alvarez, Jose Antonio Cheibub and Fernando Limongi. 2000. Democracy and development: political institutions and well-being in the world, 1950-1990. Cambridge, UK: Cambridge University Press.

Putnam, Robert D.. 1993. Making Democracy Work: Civic Transitions in Modern Italy. Princeton, N.J.: Princeton University Press.

Rodrik, Dani, Arvind Subramanian, and Francesco Trebbi. 2004. "Institutions Rule: The Primacy of Institutions Over Geography and Integration in Economic Development." *Journal of Economic Growth,* Vol. 9 No. 2 (June): 1341-165.

Rose, Andrew K.. 2004a. "Do We Really Know That the WTO Increases Trade?" *American Economic Review* Vol. 94 No. 1 (March): 98-114.

Rose, Andrew K.. 2004b. "Do WTO members have more liberal trade policy?" *Journal of International Economics* Vol. 63 No. 2 (July): 209-235.

Rose-Ackerman, Susan. 1975. "The Economics of Corruption." *Journal of Public Economics*, Vol. 4, No. 2: 187-203.

Rose-Ackerman, Susan. 1999. *Corruption and Government: Causes, Consequences, and Reform*, New York: Cambridge University Press.

Rose-Ackerman, Susan. 2002. " 'Grand' Corruption and the Ethics of Global Business." *Journal of Banking & Finance*, Vol. 26: 1889-1918.

Rudra, Nita, 2005. "Globalization and the Strengthening of Democracy in the Developing

World." *American Journal of Political Science*. Vol. 49. No. 4 (Oct.): 704-30.

Sandholtz, Wayne and William Koetzle. 2000. "Accounting for Corruption: Economic Structure, Democracy, and Trade." *International Studies Quarterly*. Vol. 44, No. 1: 31-50.

Sandholtz, Wayne and Mark M. Gray. 2003. "International Integration and National Corruption." *International Organization*. Vol. 57, No. 3: 761-800.

Scheve, Kenneth and Matthew J. Slaughter. 2004. "Economic Insecurity and the Globalization of Production." *American Journal of Political Science*. Vol. 48, No. 4. (Oct.): 662-74.

Shleifer, Andrei, and Robert W. Vishny. 1993. "Corruption." *Quarterly Journal of Economics*. Vol. 108 No. 3: 599-617.

Simmons, Beth and Zachary Elkins. 2004. "The Globalization of Liberalization: Policy Diffusion in the International Political Economy." *American Political Science Review* Vol. 98, No. 1 (February 2004): 171-189.

Simmons, Beth, Zachary Elkins and Andrew Guzman. 2006. "Competing for Capital: the Diffusion of Bilateral Investment Treaties, 1960-2000." *International Organization* Vol. 60, No. 4 (October 2006): 811-846.

Søreide, Tina. 2006. "Corruption in International Business Transactions: The Perspective of Norwegian Firms." In Rose-Ackerman eds., *International handbook on the economics of corruption*, Cheltenham UK and Northampton, MA: Edward Elgar.

Smarzynska, Beata K. . 2000. "Corruption and Composition of Foreign Direct Investment: Firm-Level Evidence." *National Bureau of Economic Research* Working Paper 7969.

Smarzynska, Beata K., and Shang-Jin Wei. 2002. "Corruption and Cross-Border Investment: Firm- Level Evidence." William Davidson Institute Working Paper No. 494, University of Michigan School of Business.

Staiger, Douglas, and James H. Stock. 1997. "Instrumental Variables Regression with Weak Instruments." *Econometrica* 65 (May): 557-86.

Stulz, Rene and Rohan Williamson. 2003. "Culture, Openness, and Finance." Journal of Financial Economics. 70 (3): 313-49.

Tanzi, Vito. 1994. "Corruption, Governmental Activities and Marekts." *IMF Working*

Paper 94/99. Washington, DC: International Monetary Fund.

Treisman, Daniel. 2000. "The Causes of Corruption: A Cross-National Study." *Journal of Public Economics*. 76: 399-457.

Treisman, Daniel. 2007. "What Have We Learned about the Causes of Corruption from Ten Years of Cross-National Empirical Research." *Annual Review of Political Science*. 10: 211-244.

Tullock, Gordon. 1967. "The Welfare Costs of Tariffs, Monopolies and Theft," *Western Economic Journal*, Vol. 5 (1967):224-32.

UNCTAD. Foreign Direct Investment database (online resource): http://stats.unctad.org/fdi/.

Vanhanen, Tatu. 2000. "A new dataset for measuring democracy, 1810-1998." *Journal of Peace Research*, 37, 251-265.

Vanhanen, Tatu. 2003. Democratization and Power Resources. Finnish Social Science Data Achieve (online resource): http://www.fsd.uta.fi/english/data/catalogue/FSD1216/. Accessed 7/16/ 2008.

Wei, Shang-jin. 1997. "Why is Corruption So Much More Taxing Than Tax? Arbitrariness Kills." *National Bureau of Economic Research* Working Paper 6255.

Wei, Shang-jin. 2000a. "How Taxing is Corruption on International Investors?" *Review of Economics and Statistics*. 82(1): 1-11.

Wei, Shang-Jin. 2000b. "Local Corruption and Global Capital Flows" *Brookings Papers on Economic Activity*, 2000(2): 303-54.

World Bank. 1997. *World Development Report: The State in a changing world.* New York, NY: Oxford University Press.

World Bank. 2006. *World Development Indicators*. Washington, D.C.: World Bank.

Table 1: Regression Results - DV: Corruption (CPI)

Models	1	2	3	4	5	6
FDI/capita	-0.041***	-0.039***	-0.039	-0.048**	0.082**	0.366*
	(0.013)	(0.013)	(0.026)	(0.024)	(0.040)	(0.206)
Ln(GDP/cap)	-1.320***	-1.326***	-1.325***	-1.289***	-1.321***	-1.468***
	(0.157)	(0.158)	(0.184)	(0.178)	(0.187)	(0.273)
Democracy	0.007	0.010	0.008	0.010	0.047	-0.020
(Polity IV)	(0.029)	(0.029)	(0.029)	(0.030)	(0.031)	(0.044)
Interactions						
(FDI/cap)*					-0.076***	
Ln(GDP/cap)					(0.019)	
(FDI/cap)*						-0.018**
Democracy						(0.009)
Controls						
Fuel	1.114**	1.154**	1.118**	1.129**	1.184**	1.064
exports	(0.490)	(0.495)	(0.494)	(0.499)	(0.504)	(0.710)
Ln(Open)	0.093	0.072	0.083	0.136	-0.275	-1.475
	(0.257)	(0.259)	(0.305)	(0.296)	(0.324)	(0.893)
Ethno-ling.	0.176	0.398	0.170	0.417	0.035	0.067
fractionaliz.	(0.477)	(0.517)	(0.485)	(0.520)	(0.496)	(0.700)
Religion						
Catholic	0.473	0.536	0.467	0.583	0.275	0.336
	(0.408)	(0.490)	(0.423)	(0.502)	(0.434)	(0.612)
Muslim	-0.498	-0.406	-0.501	-0.384	-0.207	-0.662
	(0.502)	(0.557)	(0.504)	(0.561)	(0.520)	(0.730)
Protestant	-3.334***	-3.482***	-3.334***	-3.474***	-3.156***	-2.860***
	(0.660)	(0.682)	(0.660)	(0.684)	(0.674)	(0.978)
Legal Origin						
British		-0.460		-0.431		
		(0.397)		(0.403)		
French		-0.362		-0.350		
		(0.439)		(0.441)		
Constant	5.486***	5.755***	5.525***	5.494***	6.350***	12.382***
	(1.216)	(1.243)	(1.372)	(1.373)	(1.414)	(3.951)
N	94	94	94	94	94	94
R^2	0.799	0.802	0.799	0.801	0.793	0.624
	OLS	OLS	2SLS	2SLS	2SLS	2SLS

Standard errors in parentheses
* significant at 10%, ** significant at 5%; *** significant at 1%

Table 2: Regression Results - DV: Corruption (CPI)

Models	7	8	9	10	11	12	13
FDI/capita	0.046	0.005	0.294*	0.623***	0.076	0.265*	0.605**
	(0.041)	(0.041)	(0.159)	(0.233)	(0.117)	(0.154)	(0.241)
Ln(GDP/cap)	-1.267***	-1.267***	-1.984***	-0.904***	-1.241***	-2.054***	-0.875***
	(0.530)	(0.183)	(0.688)	(0.233)	(0.248)	(0.727)	(-0.226)
Democracy	0.036		0.032	-0.016		0.043	-0.026
(Polity IV)	(0.040)		(0.042)	(0.029)		(0.044)	(0.031)
Democratic		-0.830*			-0.047		
(1930-1995)		(0.468)			(0.517)		
Interactions							
(FDI/cap)*	-0.036***		-0.178***			-0.170***	
Ln(GDP/cap)	(0.010)		(0.037)			(0.034)	
(FDI/cap)*		-0.020		-0.039***	-0.212***		-0.039***
Democracy		(0.023)		(0.011)	(0.075)		(0.011)
Controls							
Fuel	1.144**	0.912*	1.086*	0.979**	0.828*	1.108*	0.889*
exports	(0.537)	(0.494)	(0.584)	(0.475)	(0.480)	(0.599)	(0.493)
Ln(Open)	0.056	-0.243	0.008	-0.064	-0.042	0.027	-0.213
	(0.331)	(0.365)	(0.351)	(0.304)	(0.321)	(0.355)	(0.334)
Ethno-ling.	-0.674	0.236	-0.629	0.144	0.220	-0.598	0.173
fractionaliz.	(0.927)	(0.491)	(0.864)	(0.458)	(0.475)	(0.886)	(0.518)
Religion							
Catholic	0.307	0.422	0.201	0.194	0.322	0.277	0.265
	(0.475)	(0.424)	(0.478)	(0.394)	(0.397)	(0.587)	(0.496)
Muslim	-0.785	-0.505	-0.825	-0.741	-0.350	-0.752	-0.652
	(0.605)	(0.498)	(0.650)	(0.489)	(0.483)	(0.706)	(0.563)
Protestant	-2.907***	-2.562***	-2.599***	-2.717***	-1.861**	-2.582***	-2.619***
	(0.771)	(0.742)	(0.964)	(0.786)	(0.824)	(0.972)	(0.802)
Legal Origin							
British						-0.441	-0.195
						(0.506)	(0.404)
French						-0.358	-0.214
						(0.539)	(0.435)
Constant	5.411***	6.998***	5.412***	6.930***	6.043***	5.491***	7.892***
	(1.495)	(1.540)	(1.488)	(1.341)	(1.252)	(1.540)	(1.526)
N	94	94	91	91	91	91	91
R^2	0.776	0.796	0.749	0.814	0.804	0.753	0.806
Adj. R^2	0.749	0.772	0.717	0.790	0.780	0.715	0.777
	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS

Standard errors in parentheses

* significant at 10%, ** significant at 5%; *** significant at 1%

Table 3: Regression Results - First Stage

Models	3a	4a	7a	7b
Remoteness	0.029***	0.033***	0.028***	0.000
	(0.005)	(0.001)	(0.007)	(0.001)
Ln(GDP/cap)	2.373**	2.021*		
	(1.111)	(1.078)		
Absolute Latitude			7.188	2.699***
			(8.426)	(0.754)
Democracy	-0.087	-0.134	0.002	0.039**
(Polity IV)	(0.209)	(0.202)	(0.209)	(0.019)
Controls				
Fuel Exports	-0.046	-0.157	0.693	0.286
	(3.549)	(3.424)	(3.684)	(0.329)
Ln(Open)	5.376***	5.211***	6.514***	0.459***
	(1.752)	(1.687)	(1.838)	(0.164)
Ethno-ling.	5.421	1.417	3.523	-0.872***
fractionaliz.	(3.426)	(3.555)	(3.594)	(0.321)
Religion				
Catholic	3.449	2.512	3.851	0.141
	(2.913)	(3.367)	(3.066)	(0.274)
Muslim	-1.741	-3.660	-3.520	-0.743**
	(3.681)	(3.956)	(3.688)	(0.330)
Protestant	-4.532	-2.832	-4.796	-0.053
	(4.828)	(4.732)	(5.132)	(0.459)
Legal Origin				
British		8.450***		
		(2.849)		
French		5.947*		
		(3.111)		
Constant	-24.657***	-28.070***	-31.861***	-2.886***
	(8.362)	(8.132)	(9.181)	(0.821)
DV	FDI	FDI	FDI	GDP/cap
N	94	94	94	94
R^2	0.517	0.565	0.641	0.648
Adj. R^2	0.465	0.506	0.604	0.611
F-Statistics	10.00	9.67	9.16	17.21

Notes: Standard errors in parentheses
* significant at 10%, ** significant at 5%; *** significant at 1%

Table 4: Robustness Checks: Corruption

Models	14	15	16	17	18	19
FDI/capita	0.264	0.757***	0.069	0.263**	0.052	0.201**
	(0.191)	(0.256)	(0.066)	(0.116)	(0.050)	(0.083)
Ln(GDP/cap)	-1.307	-0.153	-0.842***	-0.320***	-0.668***	-0.316***
	(0.930)	(0.275)	(0.313)	(0.108)	(0.188)	(0.087)
Democracy	-0.026	-0.094*	0.007	-0.025	-0.002	-0.020
(Polity IV)	(0.049)	(0.036)	(0.019)	(0.015)	(0.014)	(0.012)
Interactions						
(FDI/cap)*	-0.143***		-0.065***		-0.066***	
Ln(GDP/cap)	(0.040)		(0.020)		(0.013)	
(FDI/cap)*		-0.045***		-0.019***		-0.016***
Democracy		(0.012)		(0.005)		(0.004)
Controls						
Fuel	1.565**	1.232**	0.669**	0.571**	0.627***	0.568***
exports	(0.690)	(0.564)	(0.258)	(0.237)	(0.221)	(0.213)
Ln(Open)	-0.259	-0.456	0.083	-0.058	0.085	-0.015
	(0.420)	(0.357)	(0.153)	(0.160)	(0.113)	(0.120)
Ethno-ling.	-0.042	0.770	-0.279	0.08	-0.095	0.108
fractionaliz.	(1.120)	(0.591)	(0.381)	(0.248)	(0.258)	(0.210)
Religion						
Catholic	-0.078	-0.190	0.204	0.178	0.220	0.196
	(0.665)	(0.577)	(0.253)	(0.238)	(0.223)	(0.220)
Muslim	-0.944	-0.97	-0.356	-0.321	-0.254	-0.271
	(0.807)	(0.653)	(0.304)	(0.271)	(0.244)	(0.239)
Protestant	-3.154***	-3.063***	-0.822*	-0.813**	-0.637*	-0.719**
	(1.097)	(0.916)	(0.418)	(0.385)	(0.339)	(0.331)
Legal Origin						
British	-0.235	0.018	-0.039	0.068	0.088	0.106
	(0.555)	(0.453)	(0.218)	(0.194)	(0.170)	(0.166)
French	-0.556	-0.316	-0.105	0.032	-0.009	-0.002
	(0.625)	(0.500)	(0.232)	(0.209)	(0.192)	(0.186)
Constant	7.264***	9.458***	-0.368	0.829	-0.383	0.518
	(1.754)	(1.690)	(0.663)	(0.742)	(0.538)	(0.567)
N	91	91	91	91	100	100
R^2	0.565	0.663	0.781	0.794	0.805	0.806
Adj. R^2	0.498	0.612	0.747	0.762	0.778	0.780
Source for DV	ICRG	ICRG	WB	WB	WB	WB

Notes: Standard errors in parentheses
* significant at 10%, ** significant at 5%; *** significant at 1%

Table 5: Robustness Checks: Democracy

Models	20	21	22	23
FDI/capita	0.998***	0.708**	-0.299***	0.417**
	(0.344)	(0.289)	(0.094)	(0.195)
Ln(GDP/cap)	-0.710***	-0.852***	-1.106***	-1.001***
	(0.261)	(0.230)	(0.244)	(0.219)
Participation	-0.454**			
Competition	(0.192)			
Political		-0.085		
Participation		(0.065)		
Political Rights			-0.091	
			(0.119)	
Participation				-0.014
(2000)				(0.011)
Interactions				
(FDI/cap)*	-0.227***	-0.088***	0.223***	-0.010***
Democracy	(0.065)	(0.028)	(0.067)	(0.003)
Controls				
Fuel	0.077	0.656	0.773	0.566
exports	(0.611)	(0.510)	(0.546)	(0.496)
Ln(Open)	-0.799*	-0.396	0.021	-0.274
	(0.465)	(0.381)	(0.330)	(0.342)
Ethno-ling.	0.276	0.157	0.514	0.055
fractionaliz.	(0.588)	(0.527)	(0.572)	(0.515)
Religion				
Catholic	-0.085	0.131	0.163	0.135
	(0.579)	(0.512)	(0.544)	(0.496)
Muslim	-0.764	-0.697	-0.642	-0.67
	(0.628)	(0.575)	(0.602)	(0.541)
Protestant	-2.075**	-2.439***	-2.153**	-1.989**
	(0.922)	(0.824)	(0.878)	(0.831)
Legal Origin				
British	-0.026	-0.144	0.057	-0.483
	(0.460)	(0.413)	(0.442)	(0.407)
French	0.108	-0.063	0.33	-0.287
	(0.508)	(0.454)	(0.496)	(0.425)
Constant	11.434***	8.869***	5.739**	8.291***
	(2.251)	(1.732)	(1.388)	(1.560)
N	91	91	91	91
R^2	0.756	0.800	0.773	0.810
Adj. R^2	0.718	0.768	0.738	0.781
Democracy	PARCOMP	POLCOMP	Freedom House	Vanhanen

Notes: Standard errors in parentheses
* significant at 10%, ** significant at 5%; *** significant at 1%

Table 6: Corruption-FDI Relationship: Countries

Positive Relationship				Negative Relationship		Positive Relationship		Negative R	
Country	$Ln(GDP/cap_i)$			Country	$Ln(GDP/cap_i)$	Country	$Democracy_i$	Country	I
ETH	−1.98	DEU	1.58	CHN	3	GHA	15.6		
MDG	−1.90	FRA	1.59	SYR	3	MOZ	16		
MWI	−1.89	GBR	1.59	VNM	3	BEN	16		
NER	−1.85	SWE	1.61	ZWE	3.6	BGD	16		
TZA	−1.79	NLD	1.62	SDN	3.6	ECU	16		
ZMB	−1.76	AUS	1.65	EGY	4	MLI	16		
GMB	−1.72	AUT	1.66	MAR	4	ALB	16.2		
BFA	−1.65	CAN	1.67	PAK	4.6	VEN	16.2		
UGA	−1.57	DNK	1.68	GMB	5	IDN	16.4		
YEM	−1.56	CHE	1.72	GAB	6	COL	17		
SDN	−1.54	NOR	1.87	UGA	6	HND	17		
NGA	−1.52	USA	1.90	CMR	6	TUR	17		
MLI	−1.52			TUN	6.4	SLV	17		
KEN	−1.43			DZA	8	MDG	17		
MOZ	−1.40			YEM	8	PRY	17.4		
BEN	−1.39			JOR	8	KOR	18		
GHA	−1.30			NPL	8.8	DOM	18		
SEN	−1.29			BFA	9.4	PHL	18		
NPL	−1.28			ETH	11	SEN	18		
SYR	−0.95			TZA	12	MEX	18		
BGD	−0.95			MYS	13	ARG	18		
CIV	−0.91			CIV	14	NIC	18		
HND	−0.83			NGA	14	GTM	18		
VNM	−0.79			KEN	14	BRA	18		
PAK	−0.72			NER	14	ROM	18.2		
CMR	−0.70			ZMB	14.2	PER	18.2		
IND	−0.62			MWI	15	BOL	18.6		
ZWE	−0.60			LKA	15.4	BGR	18.8		
BOL	−0.56					PAN	19		
NIC	−0.42					CHL	19		
PHL	−0.34					THA	19		
GTM	−0.31					BWA	19		
JOR	−0.30					IND	19		
MAR	−0.29					ZAF	19		
IDN	−0.28					FRA	19		
LKA	−0.23					JAM	19		
ALB	−0.23					POL	19.6		
PER	−0.20					PRT	20		
ECU	−0.18					ISR	20		
PNG	−0.16					SWE	20		
JAM	−0.13					AUT	20		
CHN	−0.11					AUS	20		
EGY	−0.11					CYP	20		
SLV	−0.09					MUS	20		
PRY	−0.07					HUN	20		
TUR	0.08					ITA	20		
DZA	0.11					CRI	20		
ROM	0.11					URY	20		
COL	0.15					GRC	20		
THA	0.27					ESP	20		

Continued...

Positive Relationship		Negative Relationship		Positive Relationship		Negative Relationship	
Country	$Ln(GDP/cap_i)$	Country	$Ln(GDP/cap_i)$	Country	$Democracy_i$	Country	$Democracy_i$
DOM	0.27					CHE	20
VEN	0.29					CAN	20
BRA	0.31					NOR	20
TUN	0.36					FIN	20
BGR	0.42					TTO	20
BWA	0.43					PNG	20
MEX	0.43					JPN	20
PAN	0.44					NZL	20
CRI	0.48					DNK	20
ZAF	0.51					DEU	20
POL	0.55					NLD	20
URY	0.62					GBR	20
GAB	0.63					USA	20
ARG	0.71						
MYS	0.80						
CHL	0.83						
HUN	0.88						
GRC	1.07						
TTO	1.08						
MUS	1.13						
KOR	1.18						
PRT	1.21						
ESP	1.36						
ISR	1.41						
CYP	1.42						
NZL	1.42						
ITA	1.48						
FIN	1.51						
JPN	1.53						

Countries below/above $Ln(GDP/capita)^*$ and $Democracy^*$
based on parameters from Models 12 and 13 in Table 2.

Table 7: Cook's Distance

Country	FDI/cap	Residuals	Cook's distance
Japan	0.46	12.49	0.07
Ireland	41.62	13.59	0.09
Great Britain	10.43	-14.97	0.10
France	8.09	-18.51	0.16
Singapore	32.73	19.86	0.23
Belgium	86.50	45.58	1.92

Table 8: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Corruption: TI	94	5.61	2.32	0.20	8.90
Corruption: WB	94	-0.15	1.08	-2.42	1.28
Corruption: ICRG	94	5.35	1.95	0.00	9.58
Real FDI per capita	94	4.81	10.77	-0.23	86.50
Remoteness	94	201.01	184.15	51.47	980.56
Absolute Latitude	94	0.28	0.19	0.01	0.71
Ln Real GDP per capita	94	0.10	1.15	-1.98	1.90
Democracy	94	15.52	5.43	3	20
Democratic (1930-1995)	94	0.23	0.43	0	1
PARCOMP	94	3.79	1.15	0	5
POLCOMP	94	7.83	2.59	1	10
Political Rights	94	2.86	1.85	1	7
Participation (2000)	94	37.60	16.22	0	70
Natural Resources	94	0.21	0.25	0.00	0.98
Ln Openness	94	4.22	0.50	3.04	6.00
Ethno-ling. Fractionalization	94	0.33	0.30	0	0.89
Catholic	94	0.36	0.38	0	0.97
Muslim	94	0.20	0.33	0	1.00
Protestant	94	0.13	0.21	0	0.98
Legal Origin: British	94	0.33	0.47	0	1
Legal Origin: French	94	0.50	0.50	0	1

Figure 1: Observed and Constructed FDI, N=159

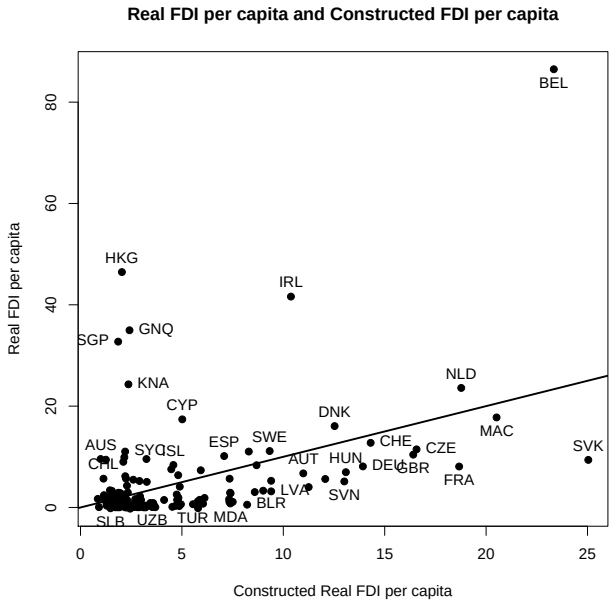


Figure 2: Observed and Constructed FDI without Outliers, N=156

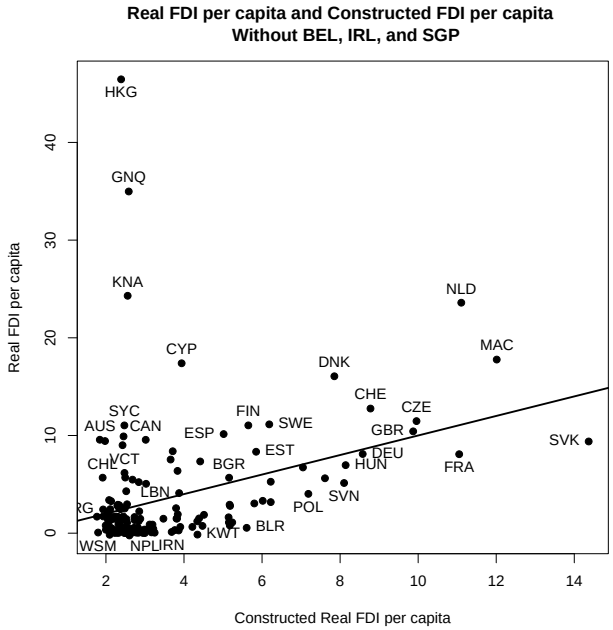


Figure 3: Observed and Constructed FDI, N=94

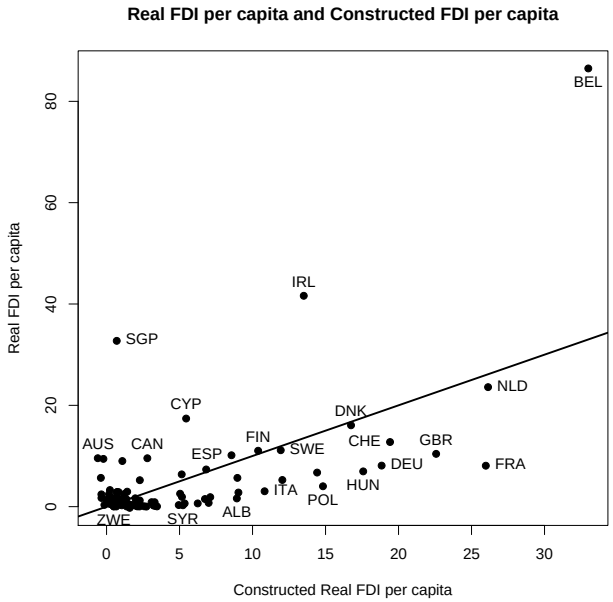


Figure 4: Observed and Constructed FDI without Outliers, N=91

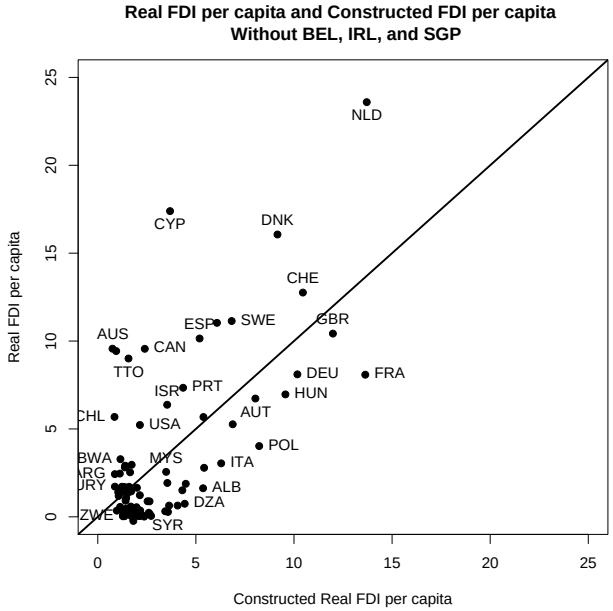
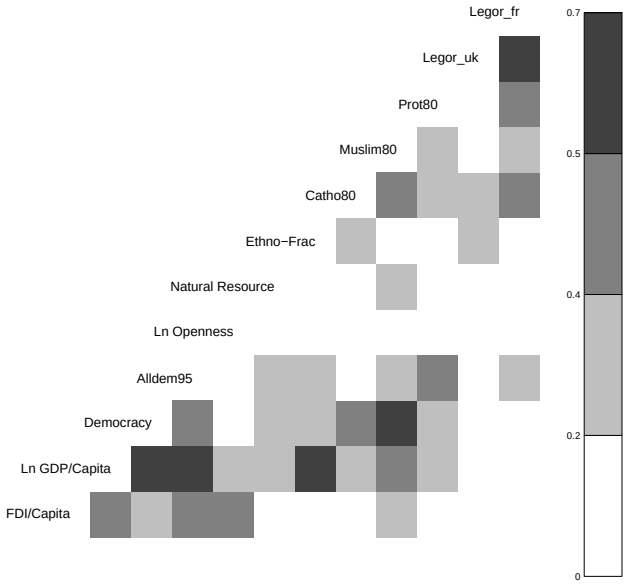
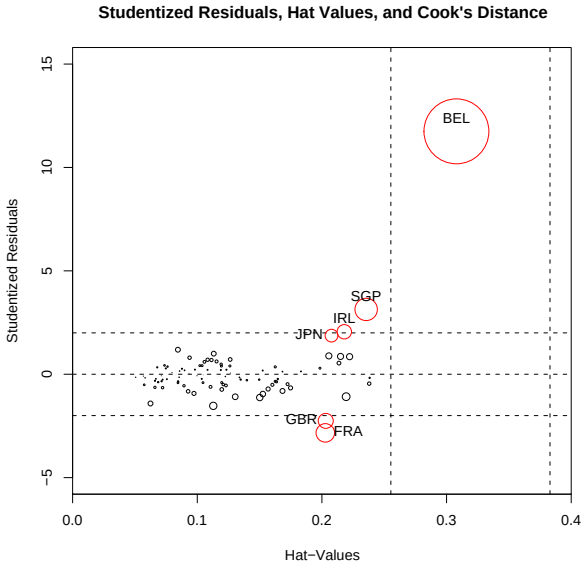


Figure 5: Correlation Matrix



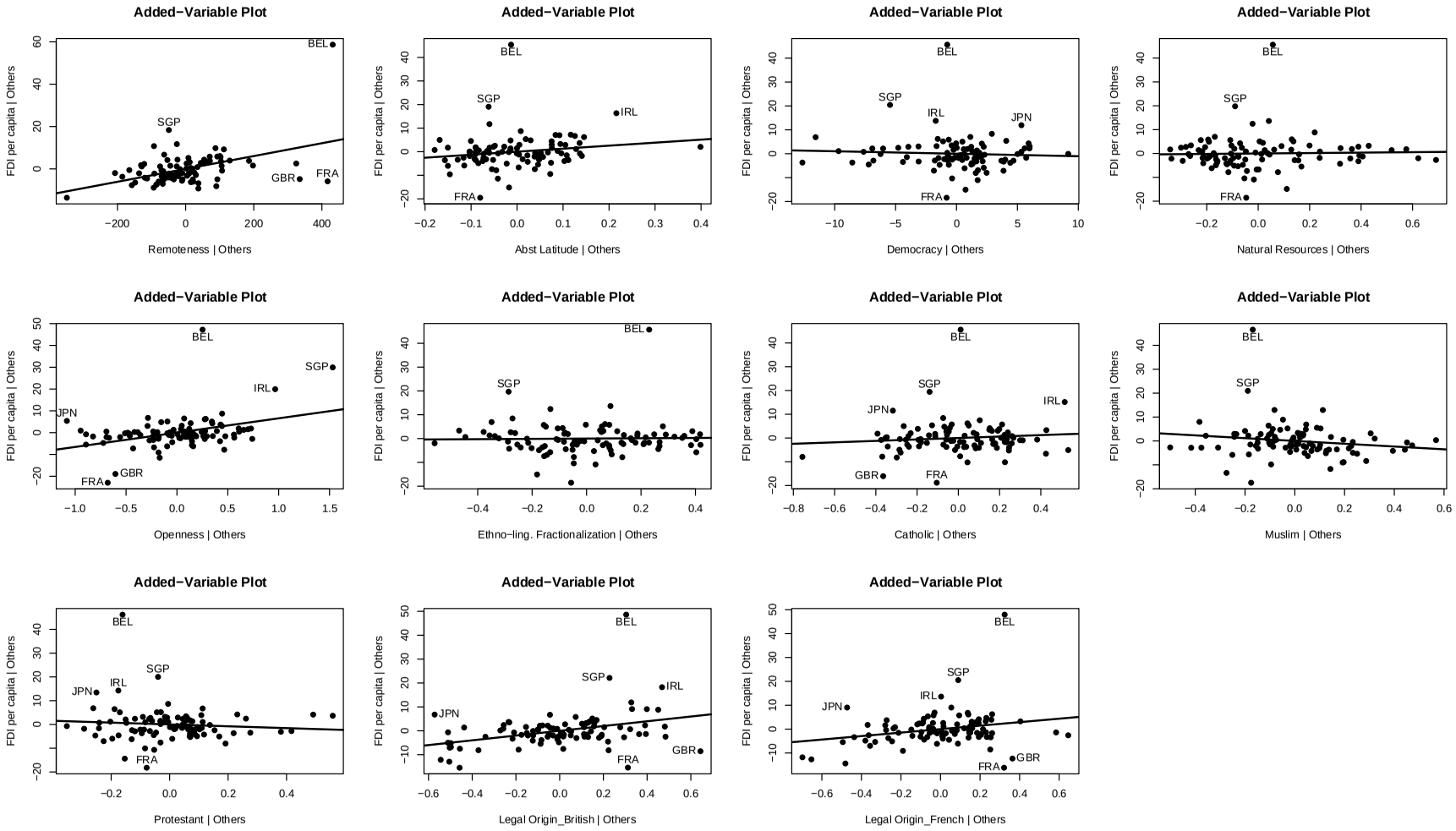
Absolute correlation among main explanatory variables.

Figure 6: First Stage: Studentized Residuals, Hat Values, and Cook Distances



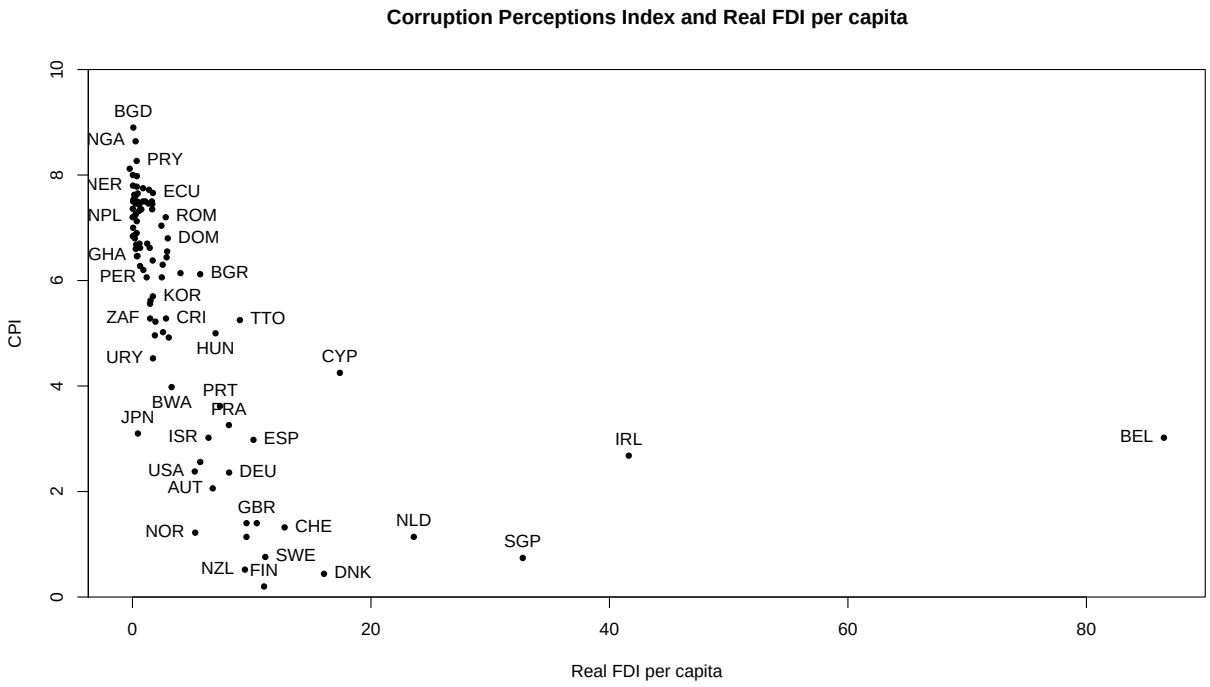
Plot of studentized residuals against hat values. The horizontal lines represent studentized residuals of -2, 0, and 2. The two vertical lines which equal to $2 \times (k+1)/n$ and $3 \times (k+1)/n$ are used to identify observations with high leverage in small samples. Observations above those lines are noteworthy. The size of the circles is proportional to Cook's distance. Observations with Cook distances larger than the cutoff $4/(n-k-1)$ are identified (see Table 7). Fox (2002, pp. 199).

Figure 7: First Stage: Added-Variable Plots



Added-variable plots (partial regression plots): Plots of residuals of regression Y on all other regressors against residuals of regression of x_i on all other regressors.

Figure 8: Corruption and FDI



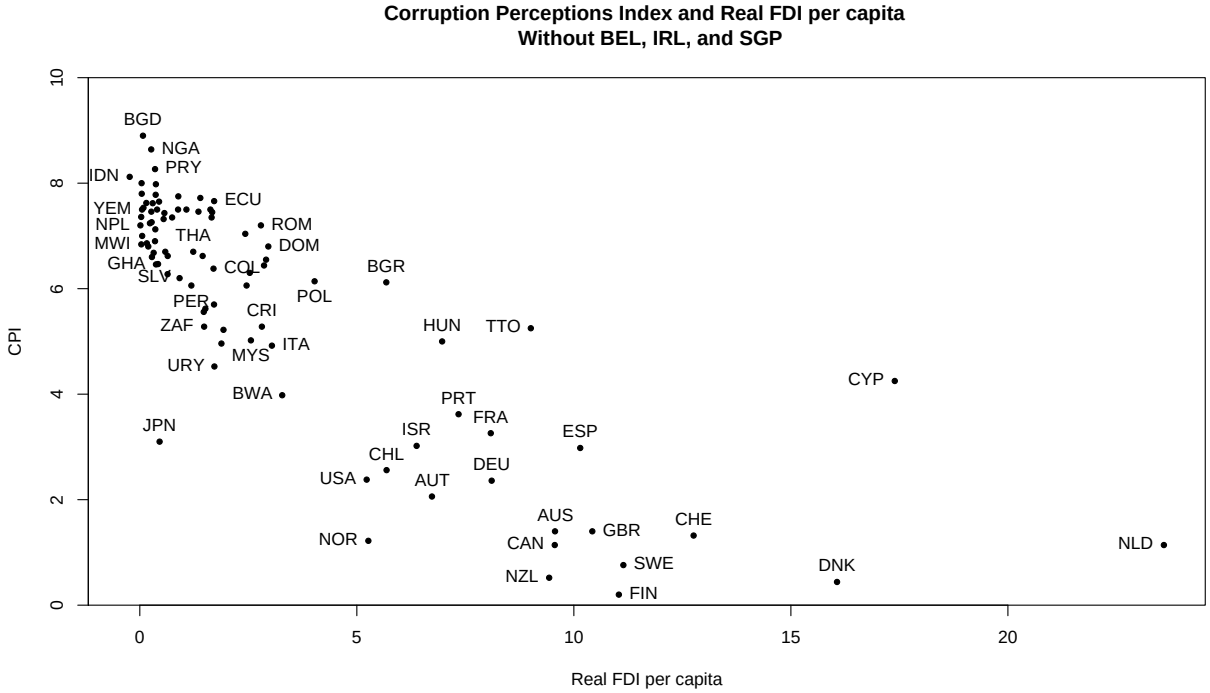
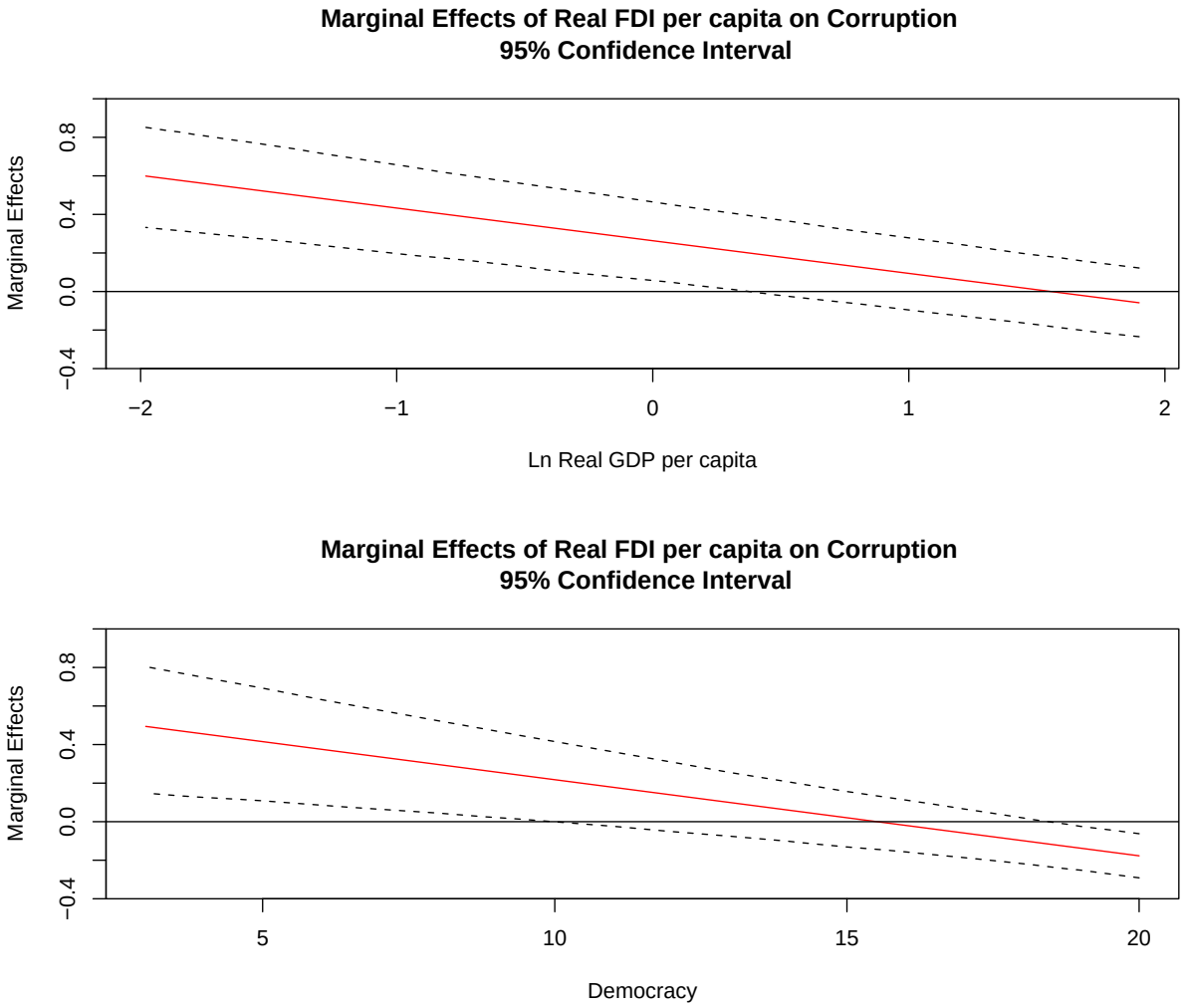
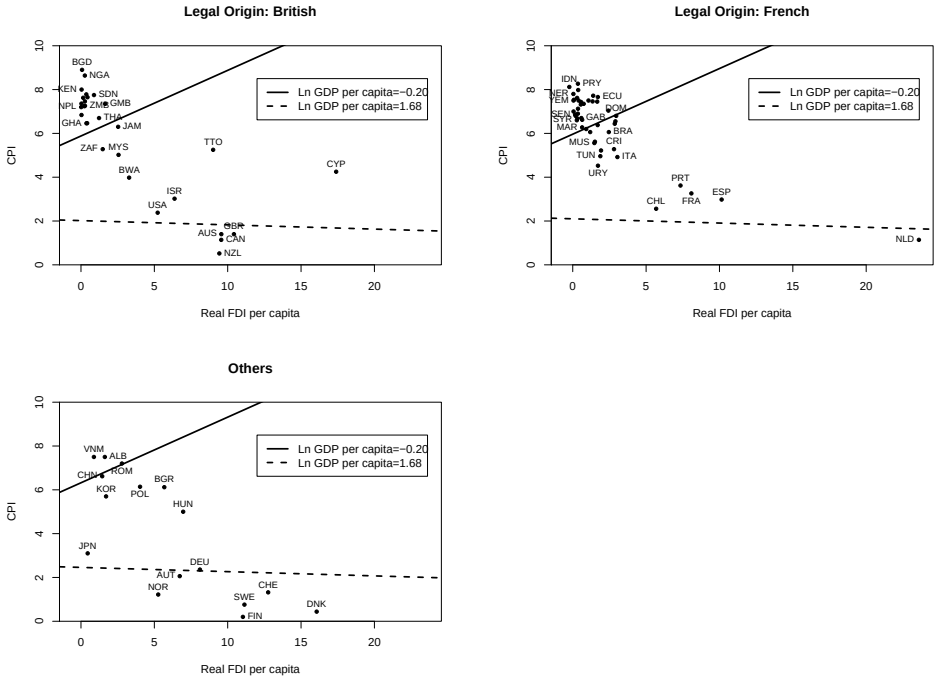


Figure 9: Marginal effects of FDI on Corruption



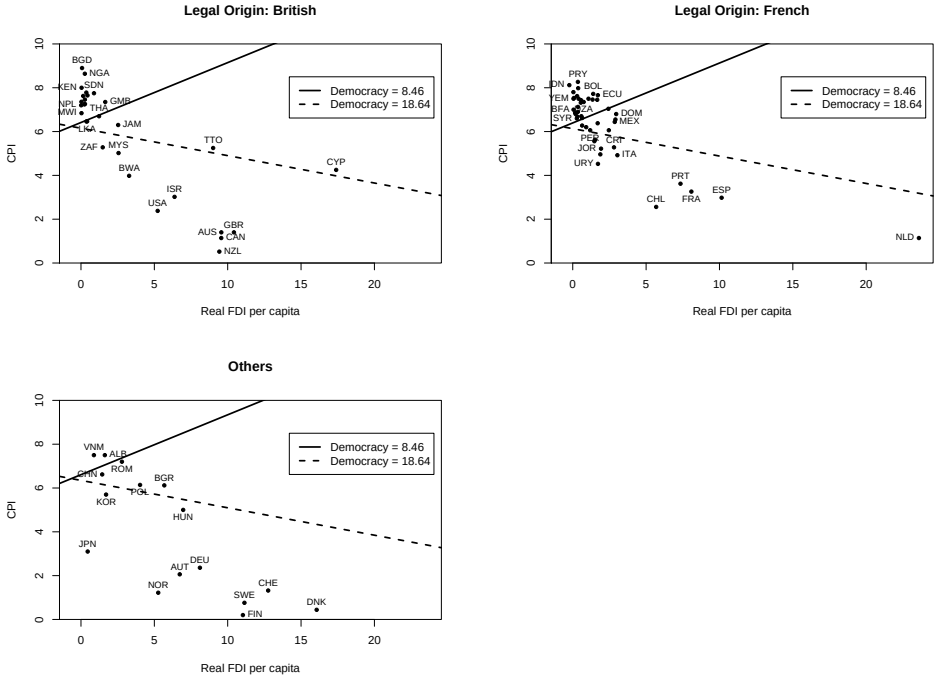
Marginal effects and confidence intervals obtained from simulations
using coefficients from models 12 and 13 in Table 2

Figure 10: Effects of FDI on Corruption by Level of Development



Based on coefficients from Model 12 in Table 2

Figure 11: Effects of FDI on Corruption by Democracy Score



Based on coefficients from Model 13 in Table 2