

## DISCUSSION PAPER SERIES

No. 6488

### CAN OPENNESS DETER CORRUPTION? THE ROLE OF FOREIGN DIRECT INVESTMENT

Felipe Larrain B. and José Tavares

*INTERNATIONAL TRADE*



**Centre for Economic Policy Research**

[www.cepr.org](http://www.cepr.org)

Available online at:

[www.cepr.org/pubs/dps/DP6488.asp](http://www.cepr.org/pubs/dps/DP6488.asp)

# **CAN OPENNESS DETER CORRUPTION? THE ROLE OF FOREIGN DIRECT INVESTMENT**

**Felipe Larrain B., Pontificia Universidad Católica de Chile  
José Tavares, Universidade Nova de Lisboa and CEPR**

Discussion Paper No. 6488  
September 2007

Centre for Economic Policy Research  
90–98 Goswell Rd, London EC1V 7RR, UK  
Tel: (44 20) 7878 2900, Fax: (44 20) 7878 2999  
Email: [cepr@cepr.org](mailto:cepr@cepr.org), Website: [www.cepr.org](http://www.cepr.org)

This Discussion Paper is issued under the auspices of the Centre's research programme in **INTERNATIONAL TRADE**. Any opinions expressed here are those of the author(s) and not those of the Centre for Economic Policy Research. Research disseminated by CEPR may include views on policy, but the Centre itself takes no institutional policy positions.

The Centre for Economic Policy Research was established in 1983 as a private educational charity, to promote independent analysis and public discussion of open economies and the relations among them. It is pluralist and non-partisan, bringing economic research to bear on the analysis of medium- and long-run policy questions. Institutional (core) finance for the Centre has been provided through major grants from the Economic and Social Research Council, under which an ESRC Resource Centre operates within CEPR; the Esmée Fairbairn Charitable Trust; and the Bank of England. These organizations do not give prior review to the Centre's publications, nor do they necessarily endorse the views expressed therein.

These Discussion Papers often represent preliminary or incomplete work, circulated to encourage discussion and comment. Citation and use of such a paper should take account of its provisional character.

Copyright: Felipe Larrain B. and José Tavares

## **ABSTRACT**

### **Can Openness Deter Corruption? The Role of Foreign Direct Investment\***

The economics literature provides ample evidence that higher corruption discourages FDI inflows. In this paper we address, for the first time in the literature in a systematic way, the exact reverse link, i.e., the empirical effect of FDI inflows on corruption. We present a simple model that illustrates the two-way relationship between foreign direct investment and corruption, identifying exactly the direction of causality that we address: how do “exogenous” variations in FDI affect the degree of corruption in the host country. Our dataset covers a wide group of countries for the period 1981 – 2000, and we confront the issue of causality by constructing an original set of instrumental variables relying on geographical and cultural distance between FDI source and host countries to measure exogenous time-varying changes in FDI inflows. We find that FDI inflows (as a share of GDP) significantly decrease corruption in the host country. The quantitative impact of FDI inflows on corruption is stronger than the impact of trade openness and tariff rates on corruption and is validated by the use of instrumental variables. The results are robust to the inclusion of several determinants of openness, in addition to trade intensity and the average tariff level, including dependence on natural resources, ethnic fractionalization, size of the economy and government expenditure. Quantitatively, the impact of FDI inflows on corruption is of the same order of magnitude as the impact of per capita income on corruption.

JEL Classification: E5, F10, F13, F30 and H10

Keywords: corruption, foreign direct investment, instrumental variables, international trade and tariffs

Felipe Larrain B.  
Pontificia Universidad Católica  
de Chile  
Avda. Vicuña Mackenna 4860  
Macul Casilla 76  
Correo 17 Santiago  
Chile  
Email: flarrainb@puc.cl

José Tavares  
Faculdade de Economia  
Universidade Nova de Lisboa  
Campus de Campolide  
1099-032 Lisboa  
PORTUGAL  
Email: jtavares@fe.unl.pt

For further Discussion Papers by this author see:  
[www.cepr.org/pubs/new-dps/dplist.asp?authorid=167096](http://www.cepr.org/pubs/new-dps/dplist.asp?authorid=167096)

For further Discussion Papers by this author see:  
[www.cepr.org/pubs/new-dps/dplist.asp?authorid=146445](http://www.cepr.org/pubs/new-dps/dplist.asp?authorid=146445)

\* We have benefited from valuable comments by Oriana Bandera, Marco Celentani, Gerardo Esquivel, Thorvaldur Gylfason, Rafael diTella, George Siotis and two anonymous referees. We also wish to acknowledge useful comments to earlier versions of this paper by seminar participants at Universidad Carlos III, Universidade Nova, Instituto Superior de Economia e Gestão (ISEG), the NEUDC Conference at Harvard University and the V LACEA Conference in Rio de Janeiro. Rafael LaPorta and Francis Ng have generously provided access to their data. Andrea Cid, Lorena Barberia, Fernando Luco, Francisco Parro and Claudio Sauer have provided excellent research assistance. Felipe Larraín thanks financial support from Chile's Fondo de Ciencia y Tecnología (FONDECYT) project 1030950. José Tavares thanks the financial support of NOVA FORUM and the Fundação Para a Ciência e Tecnologia through POCTI II and Feder. All errors remain our responsibility.

Submitted 04 September 2007

## 1. Introduction

Corruption is present in all economies, independently of historical, institutional and economic conditions, which points to the relevance of studying its causes and consequences. The study of corruption has a long tradition in economics, and several consensuses have arisen. As to its causes, the evidence suggests that low exposure to international trade (proxied by low import intensity), high tariff levels and variability, as well as a high dependence on natural resources are associated with higher corruption levels.<sup>2</sup> As to the consequences of corruption, several empirical studies support a detrimental effect of corruption on growth rates and private investment, especially on foreign direct investment (FDI) inflows.<sup>3</sup> In this paper we address the role of foreign direct investment as a *cause*, not a consequence, of corruption.<sup>4</sup> As will become clear in our illustrative model below, we believe corruption in the host country and FDI inflows are *jointly* determined: higher corruption discourages FDI but exogenous increases in FDI may also affect host country corruption levels.<sup>5</sup> After motivating this two-way relationship between corruption and FDI, we estimate the impact of FDI on corruption, instrument for FDI inflows to address causality, and control for other determinants of corruption, including trade openness and tariff levels.

---

<sup>2</sup> See, for instance, Ades and DiTella (1999) and Gatti (1999) for trade and tariffs, and Leite and Weidmann (1999) and Gylfason (2004) for natural resource dependency.

<sup>3</sup> See Leff (1964) and Shleifer and Vishny (1993) for the relationship between corruption, growth and welfare. Bhagwati (1982) presents a detailed taxonomy of directly unproductive activities (DUP). Bliss and DiTella (1997) present an alternative taxonomy that relies on two types of corruption: cost reducing or surplus-division. Empirical studies provide strong evidence that the efficiency costs of corruption outweigh potential benefits. Mauro (1995) shows that corruption has a negative impact on investment and growth: a one-standard-deviation increase in corruption decreases investment by 5 percent of GDP and growth by 0.5 percent per year. Keefer and Knack (1995) confirm the negative impact of corruption on growth and investment. Wei (1997) finds that, since corruption is often associated with uncertainty, it is more arbitrary than taxation and thus especially detrimental to economic activity. Kaufmann and Wei (1999) use a different approach, based on the amount of bribes and of time spent with corrupt officials, and show that corruption is indeed detrimental. See Mauro (1995) for evidence that both economic growth and private investment are negatively affected by the extent of corruption, and Wei (2000a) for estimates of the impact of corruption on FDI. Gylfason and Zoega (2006) relate corruption, growth and natural resources.

<sup>4</sup> Our results are in agreement with the empirical results in Larrain and Tavares (2004) for a dataset covering a shorter time-span and a smaller number of countries.

<sup>5</sup> The international dimension of corruption has come to the fore in the wake of the ratification by the OECD of the Convention on Combating Bribery of Foreign Public Officials in International Business Transactions and the institution by the United States of the Foreign Corrupt Practices Act, prohibiting American businesses from bribing foreign officials. These documents respond to the belief that foreign investment in developing countries is often associated with corruption.

Our paper thus adds to the literature in three ways. First, it presents a simple model for the joint determination of corruption and FDI inflows. Second, it provides estimates of the impact of FDI on corruption after controlling for several indicators of openness and other determinants of corruption. This is important since, despite numerous papers on the impact of trade openness on corruption, there is yet no systematic analysis of the impact of FDI inflows on corruption.<sup>6</sup> Moreover, the high correlation between the different measures of openness – foreign investment, trade and tariffs – allows us to assess their relative importance as determinants of corruption. As we will argue below, there is no reason to believe there is a closer relationship between trade and corruption than between FDI and corruption. Third, the paper develops new exogenous instruments for the degree of host country openness to FDI in order to address the issue of reverse causation. Previous studies on the impact of corruption on FDI have ignored this reverse causality issue.<sup>7</sup> Our instrumental variables for FDI rely both on the host country's geographical and cultural proximity to the largest world economies and on the latter's total investment outflows. Our paper addresses a heretofore open issue using a new extended panel data set and developing new instrumental variables to assess causality.

The paper is organized as follows. Section 2 discusses the two-way interactions between foreign direct investment and corruption and presents a simple model illustrating that two-way relationship; in addition, we clearly identify the purpose of our estimations in this study as compared to previous studies. Section 3 presents the data, the specification and the empirical methodology. Section 4 analyzes the results and Section 5 concludes.

---

<sup>6</sup> See, for instance, Wei (1997, 2000a). For a study of the more general relation between institutional development and FDI see Aizenman and Spiegel (2004).

<sup>7</sup> This suggests that previous results on the relationship between trade and corruption may be subject to omitted variable bias.

## 2. Foreign Direct Investment and Corruption

All investment projects involve a close relationship between the “origin” and the “destination” of the investment, with elements of a “hostage relationship”. The future returns on an investment are thereby highly sensitive to dynamic inconsistency issues and other contingencies related to the behavior of host country governments. Foreign direct investment, in particular, creates ample opportunities for host country public officials to demand side payments before and, especially, after the investment is made. But, as officials recognize that they wield discretionary power that directly impacts on project returns, it is not sensible to consider that foreign investors are unaware of this situation; thus, the relationship between FDI and corruption is a two-way street.

How can FDI inflows affect corruption? FDI inflows can result in higher corruption levels for several different reasons. First, the incentive to corrupt is greater when firms from developed countries do business in developing countries, since a small bribe, from the rich investor’s point of view, can go a long way in changing the behavior of low-income public officials.<sup>8</sup> Second, foreign investors can easily obtain local market power in exchange for bribes, so that it can make economic sense to bribe officials today and recover the cost later on by charging higher prices to local customers.<sup>9</sup> Third, foreign direct investment flows are often associated with infrastructure projects and the privatization of government-held firms where the sizeable rents involved make it possible to pass costs through to consumers more easily.<sup>10</sup> For all

---

<sup>8</sup> This is indirectly corroborated by Hines (1995), who shows that American multinationals’ routine engagement in bribery has changed since 1977, when a U.S. law criminalized the corruption of foreign officials. Using various controls to estimate the effect of the anti-bribery laws on American businesses abroad, this author uncovers a substantial decrease in American investment abroad following the ratification of the law, which suggests a positive correlation between FDI flows and corruption.

<sup>9</sup> In addition, as reported in Tanzi and Davoodi (1997), until recently a few investor countries have allowed commissions paid to foreign officials to be legal and tax deductible. The OECD has moved to criminalize “commissions” to foreign officials, in recognition of the connection between foreign direct investment and corruption.

<sup>10</sup> Tanzi and Davoodi (1997) present strong results of a positive association between corruption levels and the provision of infrastructure. These authors show that, whereas the amount of public investment increases with

these reasons, FDI projects may lead to higher levels of corruption by being associated with some of the conditions that are associated with the emergence of corruption: market power in the hands of public officials in a highly discretionary decision-making process in which the officials are largely unaccountable.<sup>11</sup>

On the other hand, foreign direct investment can induce a decrease in corruption. First, since international capital is highly mobile and corruption is a real cost,<sup>12</sup> investors may choose to move to less corrupt countries if corrupt behavior is not kept in check. This may lead host countries to fight corruption. As Kimberley (1997) suggests, foreign standards of probity have an impact on local officials and their behavior, given the importance of foreign investment to local economies.<sup>13</sup> Second, corruption may become less prevalent if its discovery leads to long-term negative consequences to the firms and individuals involved, as put forward by Rose-Ackerman (1975). The nature of FDI projects makes them precisely the type of long-term endeavors that may be especially vulnerable to disclosure of irregular activities. This is particularly relevant if we compare the likely impact of trade versus FDI flows as determinants of corruption.

We now present a simple model of the dual relationship between corruption and foreign direct investment. This reduced form model will illustrate the precise aim of the empirical work in the current paper. In line with Smarzynska and Wei (2001), who consider the interactions between policy-makers and foreign investors, in our model foreign investors decide the amount

---

corruption, indicators of quality deteriorate. Also, Shleifer and Vishny (1993) suggest that large-size projects offer more opportunities for corruption, especially if their value is difficult to monitor. This is consistent with the fact that education, unlike public investment, is under-financed in more corrupt countries, as reported in Mauro (1998); the true cost of a dam is harder to assess than the cost of textbooks.

<sup>11</sup> See Klitgaard (1988) on market power, discretion and lack of accountability as determinants of corruption.

<sup>12</sup> Wei (2000a), for instance, has found evidence that American and European investors are indeed averse to corruption in host countries.

<sup>13</sup> Johnson and Dahlström (2004) consider that foreign firms can affect the corruption level of the host country through their specific weight in the economy and by spreading a different business culture. See also Habib and Zurawicki (2002), who analyze the negative effects of corruption on FDI by considering the role of the difference between corruption in the source and host countries. The authors propose that investors avoid corruption for ethical and efficiency reasons, suggesting a role for culture. Finally, Hakkala et al. (2003) find that the effect of corruption on FDI is smaller for larger firms, concluding that the bargaining power of a firm might affect the cost or, we might

of investment they direct at a country's economy, given the level of corruption, while, on the other hand, country policy-makers decide the level of corruption they "offer", given the amount of FDI inflows. We will make the simplest assumptions about the behavior of the players that will serve to illustrate our results.<sup>14</sup>

Other things equal, the utility of the policy-maker in a given country depends positively on the amount of monetary resources deviated through corruption, that is, the product of the corruption rate  $q$  by the amount of incoming foreign investment, FDI. Here corruption acts like a percentage of foreign investment that is diverted for the benefit of policy-makers through absconded revenues.<sup>15</sup> In addition, we will assume that more corruption imposes a "political" cost on the politician, increasing the likelihood of being exposed and incurring a loss in reputation, including a lower probability of reelection. In sum, the policy-maker maximizes

$$V_{pm} ( FDI \cdot q , q ) = FDI \cdot q - C_{pm} ( q ) \quad (1)$$

where  $pm$  stands for policy-maker, FDI is foreign direct investment, beyond the control of the politician, and  $q$  is the level of corruption, measured by the percentage of the total value of foreign investment that is deviated for the private benefit of the policy-maker.  $C_{pm}(q)$  is a cost function that translates reputation and other costs of corruption into monetary units, with

---

add, the level of corruption. In sum, the weight and the preferences of the multinational firm as far as corruption may have an impact on host country institutions.

<sup>14</sup> Theoretical models studying the impact of corruption on FDI have advanced important and often subtle effects of this relationship. Field et al. (2003) develop a formal economic model to examine how corruption affects FDI; in their paper corruption emerges from a negotiation game between firms and local officials, where the risk is taken into account. Firms bribe officials in order to lower settlement costs or tax payments. Field et al. (2003) conclude that higher levels of corruption may decrease or increase FDI. Using firm-level data from Swedish multinationals, Hakkala et al. (2003) find that corruption tends to decrease horizontal FDI and increase vertical FDI. As to the causal link from FDI to corruption, examples are much rarer. Hojman (2004) finds that investors are not all equally discouraged by corruption in the host country, so that some investors may actually benefit from it when there is incomplete information on the true value of the investments. Also, the simple model in Kaufmann and Wei (1999) with endogenous levels of bribes and delay suggests that firms subject to corruption may try to change their level rather than simply yield to it, since, in many instances, bribing is ultimately counter-productive by encouraging further corruption. Both Hojman (2004) and Kaufmann and Wei (1999) suggest a possible causal link between exogenous increases in FDI and decreases in corruption.

increasing marginal cost, so that  $C_{pm}'(q) > 0$  and  $C_{pm}''(q) < 0$ . The sign of  $C_{pm}''(q)$  tells us that the marginal cost of corruption decreases with the level of corruption: the assumption is that, though more corruption always imposes more costs on the policy-maker, it costs more to go from non-corrupt to corrupt than from corrupt to very corrupt. Maximization of  $V_{pm}$  for given levels of FDI delivers the first order condition  $V_{pm}' = FDI - C_{pm}'(q) = 0$  so that a higher level of incoming FDI leads to a decrease in the chosen level of corruption,  $q$ . The intuition is simple: since the policy-maker wants more corrupt income but suffers from being corrupt, an exogenous increase in FDI allows some decrease in the corruption level that does not sacrifice corrupt income  $FDI * q$ . This is precisely the relationship we test in this paper, which has been neglected in previous papers. The decline of corruption in response to an increase in foreign direct investment can be seen as “institutional development” that is triggered by incoming investment or, as we prefer, the optimizing response of policy-makers to an increase in their “tax base”.

The foreign investor, on the other hand, wants to maximize the output of foreign investment in the country net of funds deviated by corruption. So foreign investors maximize

$$V_{fi} = F_{fi}(FDI) - FDI * q \quad (2)$$

where  $f_i$  stands for foreign investor,  $F_{fi}(FDI)$  is a production function that gives the value of output for each level of incoming funds, with, as usual, positive but decreasing marginal productivity, so that  $F_{fi}'(FDI) > 0$  and  $F_{fi}''(FDI) < 0$ . The first order condition with respect to FDI is  $V_{fi}' = F_{fi}'(FDI) - q = 0$ , so that an increase in  $q$  leads to a decrease in FDI. This is the relationship commonly tested in the literature: an increase in corruption discourages foreign direct investment. The literature has so far confounded the two effects: the dissuasion of foreign investors by higher levels of corruption with, as we now argue, the impact of foreign investment on the level of national corruption. An exogenous increase in corruption discourages FDI flows, as shown before in the literature, but an exogenous increase in FDI can also decrease the equilibrium level of

---

<sup>15</sup> This is certainly close to the mechanism observed in corrupt areas, where sometimes the exact “percentage” being diverted to corruption is almost public knowledge. Karahan, Razzolini and Shughart (2006) argue that in Mississippi in the early 1980s the bribe rate was commonly known as 10 percent of the purchase price of the transaction.

corruption, as we will test below. As can be verified, both relationships result in a negative correlation between FDI and corruption, but driven by two distinct reasons.

Graphically, we can represent the two first order conditions in the space (FDI,  $q$ ) as  $V_{pm}'(FDI*q, q | FDI)$  and  $V_{fi}'(FDI, FDI*q | q)$  as two negatively sloped relationships. For a given level of corruption, we can read the amount of FDI that foreign investors undertake off the  $V_{fi}'$  line, derived from  $V_{fi}$  above. We can then read the amount of corruption the policy-maker will offer off the  $V_{pm}'$  line, derived from  $V_{pm}$  above. The joint determination of corruption and foreign investment results from the game between the policy-maker and the foreign investor. If the appropriate conditions apply, the game will deliver a stable equilibrium in the space (FDI,  $q$ ). Those conditions are that, when FDI is represented on the y axis, the slope of the foreign investor decision line is less negative than that of the policy-maker, and that the latter crosses the y axis above the former<sup>16</sup>. This situation is represented in Figure I below.

Let us consider a situation where the host economy's attractiveness to foreign investors increases exogenously, for example because cultural or geographic proximity between the origin and destination country rises. The  $V_{fi}'$  line will move up from  $V_{fi}'I$  to  $V_{fi}'II$ , as shown in Figure I, so that for the same level of  $q$ , the amount of FDI inflows increases. Now, at the initial level of corruption,  $q_0$ , foreign investors will choose to invest more in the destination country, policy-makers will react, and so on. The new equilibrium at point II will be such that FDI is larger *and* corruption is *lower* relative to point I. This is exactly the relationship we test in this paper. The well-known effect of corruption on FDI can be read off the  $V_{fi}'$  line, for movements of the  $V_{pm}'$  line, which would correspond to exogenous changes in corruption. Notice that ignoring the existence of the two effects and not instrumenting for FDI or  $q$ , depending on the case, will bias the estimate of the coefficient of corruption on FDI.

---

<sup>16</sup> The first assumption corresponds to assuming that the sensitivity of the response of  $q$  to FDI along  $V_{pm}$  is lower than the inverse of the sensitivity of the response of FDI to  $q$  along  $V_{fi}$ . The assumption about the ordinate in the origin corresponds to stating that the FDI that makes the policy-maker choose a  $q = 0$  is lower than the level of FDI chosen by the foreign investor when  $q = 0$ .

[Figure I about here]

### 3. Data, Specification and Causality

The empirical specification used in the current paper aims to explore the impact of the share of FDI inflows to GDP on corruption. Other measures of openness previously used in the literature, such as import intensity and the average tariff level are used in addition to FDI intensity; to assess the latter's relative importance.<sup>17</sup> Total FDI inflows come from the World Development Indicators of The World Bank.<sup>18</sup> The degree of country corruption is assessed through the International Country Risk Guide indicator (henceforth ICRG) covering the period 1981 - 2000. This variable has been changed so that higher values mean more corruption and the variable ranges from 0 to 10, for ease of interpretation. We use five-year averages of the variables, covering the 1981-85 to 1996-2000 sub-periods, with the exception of Table 7, which uses yearly data to check for robustness of results.<sup>19</sup> Our specifications include dummies for the time period in order to capture changes in corruption over time that are due to omitted factors. Appendix 1 presents all information on variable sources and definitions.

We include GDP per capita as a control in all specifications since a country's income level is likely to be closely related to the presence of efficient and transparent institutions for at least two reasons: good institutions may be a normal good so that higher income per capita leads to higher public demand for institutions; also, good institutions are more "affordable" in high-income countries where human and physical capital are more widely available. We expect GDP per capita to be negatively associated with corruption and such is the case in our sample, where the simple correlation between the two variables is -0.71. Thus, the basic specification includes

---

<sup>17</sup> We use flows mostly for reasons of data availability, especially as developing countries are concerned. In addition, we believe that flows (rather than stocks of FDI) are likely to have a more direct relation with the change in corruption.

<sup>18</sup> As will be made clear below, we will also use data on bilateral FDI outflows for major OECD economies, obtained from OECD (2004).

the openness indicator (or indicators), per capita GDP and period dummies. The diversion of resources from growth-enhancing to unproductive activities was first suggested in Bhagwati (1982). Ehrlich and Lui (1999) construct two endogenous growth models where the choice of becoming a bureaucrat and collect bribes is endogenous. In these models corruption and per capita GDP are negatively correlated since resources that could have been used in production are diverted instead for non-productive activities, which is confirmed by their empirical estimates.

We also consider indicators of openness other than the intensity of FDI inflows. This is to control for determinants of corruption uncovered in the previous literature on openness and corruption. Protectionist trade policies are an important source of rents. The definition of duties (and respective exceptions) applying to different products becomes the subject of political influence, with public officials wielding substantial discretionary power. Free trade, in contrast, leaves little or no room for policymaker discretion and is effective as a policy tool to fight corruption. Several theoretical efforts have been undertaken to understand the influence of domestic political actors on trade policies.<sup>20</sup> Helpman (1997) emphasizes the importance of two-way interactions between trade policy choices and domestic special interest groups. As to the empirical analysis of the link between trade openness and corruption, Ades and DiTella (1999) report that corruption increases in countries where local companies are isolated from foreign competition.<sup>21</sup> Wei (2000b) constructs an indicator of “natural openness” using bilateral distance, remoteness, country size and common language to find that more open countries are also less corrupt.<sup>22</sup> The level and variability of tariff rates can also affect the opportunity of

---

<sup>19</sup> Previous results in the literature on the impact of corruption on FDI rely on shorter sample periods, often a simple cross-section.

<sup>20</sup> Krueger (1974) developed a theoretical model focusing on trade-restrictions as originators of rents and as inducement to corruption. In her model, corruption results from competition for import licenses giving access to lower cost imports. Bhagwati and Srinivasan (1980) analyzed the case where agents attempt to appropriate a share of the tariff revenue resulting from the adoption of protectionist policies. Brock and Magee (1978) pioneered the theoretical analysis of lobbies seeking the imposition of protectionist tariffs.

<sup>21</sup> The authors use the share of imports in GDP as an indicator of rents available in the economy and find that an increase in international trade exposure decreases the level of corruption. They also use distance to trading partners as a measure of exogenous exposure to competition from foreign firms and find that increases in distance lead to more corruption.

<sup>22</sup> Wei relates his results to the incentive to devote resources to build better local institutions, leading to an equilibrium lower level of corruption.

public officials to collect rents. The natural assumption is that higher and more variable trade tariffs are a proxy for more discretionary trade policy and should be associated with higher corruption. Gatti (1999) has found evidence in support of this argument.

In addition to income per capita and the openness indicators, we consider other possible determinants of corruption suggested by the literature. The widest specification uses as additional controls the following variables:

- Ethno-linguistic fractionalization measures the likelihood that two citizens in a given country belong to different ethnic or linguistic groups. The degree of a country's ethno-linguistic heterogeneity is relevant in explaining corruption, as shown in Mauro (1995), who uses this measure of diversity as the instrumental variable for corruption. Ethno-linguistic fractionalization can lead to redistributive pressures between groups and --in this way-- increase the likelihood of corruption. Alesina et al. (1999) model and test the hypothesis that more diverse local communities are more subject to redistributive pressures and display higher levels of government spending. In his review of the causes of corruption, Tanzi (1994) suggests that in developing countries, where non-economic ties are strong, government officials tend to benefit their next of kin and ethnic group.<sup>23</sup>
- Natural resource export intensity signals how heavy the reliance of the economy is on natural resources. The variable is constructed as the sum of agricultural exports, fuel exports, and ores and metals exports, all as percentage of merchandise exports. The range of variation is between 0 and 100, and in our sample it takes values from 0 to 99.68. Economies relying heavily on natural resource-based production and exports are more prone to corruption: since natural resources are geographically immobile, their fruitful exploitation cannot bypass the cooperation of local governments, which are able to extract higher rents (partly through corruption) than in other sectors. Leite and Weidmann (1999) develop a theoretical model and present empirical evidence which supports that economies abundant in natural resources are prone to display higher levels of corruption.<sup>24</sup> Gylfason (2004) presents robust empirical

---

<sup>23</sup> Shleifer and Vishny (1993) go further and suggest that ethno-linguistic diversity leads to a more erratic and thus a more harmful kind of corruption.

<sup>24</sup> Sachs and Warner (1995) argued that natural resource economies grow more slowly, and suggest this is due in part to a lower efficiency of government. See also Tornell and Lane (1998), who develop a common-pool theoretical

evidence suggesting that very high dependence on natural resources is associated with more corruption and lower levels of political rights, highlighting the importance of diversification.<sup>25</sup>

- The share of public expenditures in GDP may increase the opportunities for corruption, as it implies greater involvement of the government in economic activity. Tanzi (1998) presents the general argument for the relationship between fiscal policy variables and corruption.
- Ever a colony variable indicates whether a country achieved independence from a former colonizing nation after 1825. Since these countries achieved independence relatively recently, they are less likely to have developed efficient local institutions. Mauro (1995) argues that “a country’s colonial history may affect its ability to form a stable government, as well as the honesty and efficiency of its bureaucracy”. Also, mentioning Ekpo (1979), he argues that “recently independent former colonies will have more decentralized bribe collection machines, so that they will be subject to more deleterious corruption”.
- Population controls for the size of the country, as several recent papers suggest a relationship between the quality of public services and country size: Fisman and Gatti (2002) and Treisman (1999) present evidence that larger states with lower degrees of decentralization are more corrupt.<sup>26</sup> Knack and Azfar (2003) argue that per capita rents extracted by corrupt customs officials are larger in small countries, so that there is a greater incentive for corruption.<sup>27</sup>

The number of countries included in the benchmark sample is 39 and the list includes both developed and developing countries, as listed in Appendix I.

---

model for a country relying on undiversified commodity exports. An increase in the price of that commodity leads to a fight for public revenues between groups, and this results in overspending. This so-called “voracity” effect of price increases on commodity exporters is likely to foster government corruption.

<sup>25</sup> In a related paper Gylfason and Zoega (2006) relate dependence on natural resources, growth and institutions.

<sup>26</sup> Knack and Azfar (2003) contest this finding, suggesting it may be the result of sample selection bias since most corruption indices are collected to guide international investors, which are interested in large markets, i.e. countries which are large or, if small, offer a high quality of governance (such as Singapore and Hong Kong).

<sup>27</sup> These authors rely on the fact that customs officials have been shown by several studies to be the most corrupt public officials.

As Section 2 argues, there is an abundant literature showing how higher corruption discourages foreign direct investment inflows. In this paper we investigate the opposite direction of causality, that is, how does country openness affect the level of corruption? Since it has been established that corruption decreases FDI and we will investigate the opposite causal direction, the issue of reverse causality becomes crucial for our interpretation of the results. We deal with reverse causality by constructing a new set of instrumental variables for FDI as a share of GDP, using information on geographical and cultural proximity. This is suggested, for instance, by Wei (2000a), who shows that common linguistic ties and geographical proximity affect foreign direct investment flows positively. Our objective is to find exogenous variables that affect openness but are not affected by individual country characteristics such as corruption.

For each country in the sample, we have built four new variables capturing the exogenous component of FDI inflows: the inverse of the bilateral distance to each of the 20 largest countries in 1990,<sup>28</sup> dummy variables indicating whether it shares a land border, an official language or one of the major religions with each of the 20 large economies. This approach is consistent with the empirical studies based on the gravity equation, which found that geographical proximity, contiguity, common language and land border have exceptional power to explain bilateral trade flows.<sup>29</sup> We then take the constant US dollar value of foreign investment outflows of those 20 largest economies and weigh them by the bilateral proximity indicators above.<sup>30</sup> Data for FDI outflows from major economies come from the OECD (2004). For each country in the sample, the summation of the product of FDI outflows from large countries and the bilateral proximity variables constitutes the set of instrumental variables for FDI inflows. The idea is that, as FDI outflows from any of the 20 largest economies increase, the FDI inflow intensity of countries that are closest to them – geographically and/or culturally - increases concomitantly. The first stage estimations regress country FDI inflows using the

---

<sup>28</sup> The 20 largest economies in 1990 according to Gross Domestic Product were: Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Iran, Italy, Japan, Korea, Mexico, Netherlands, Poland, Spain, Turkey, United Kingdom and United States.

<sup>29</sup> See, for instance, Frankel et al. (1997).

<sup>30</sup> Religious and linguistic proximity as well as common land border deliver the weights 1 and 0, whereas bilateral distance provides a continuous weight that is decreasing in bilateral distance.

“weighted” total FDI outflows from large countries. Appendix 2 provides a detailed explanation of the process of creating the instruments for a country’s inflows of foreign investment.

As can be verified in Appendix 2, the first-stage regression of FDI on the instrumental variables finds that the distance-weighted instrument has the expected sign and is significant, with countries closer to the large economies benefiting more from outward flows of investment.<sup>31</sup> The fitted values of these first-stage regressions of intensity indicators on exogenous openness are then used as independent regressors in the final specification explaining corruption. We present results for the regression of the residuals of these second stage regressions on the instrumental variables and find that none are significant, suggesting that these instruments affect corruption only through their effect on openness.

#### **4. Empirical Results**

In this section we present estimates of the impact of FDI inflows on the level of corruption after controlling for several other indicators, including import intensity and average tariff levels. Table 1 presents summary statistics. FDI inflows range from 0 to 49 percent of GDP while import intensity varies between 3 and 125 percent. The corruption index range goes from 0 (lowest corruption) to 10 (highest) but in our sample countries corruption indexes range from 1.5 to 10. The simple correlation coefficients for the main variables in the data set show that higher levels of corruption are associated with lower levels of FDI inflows, import intensity and higher levels of average tariffs. The negative correlation between corruption and FDI is higher in absolute value than the correlation between corruption and import intensity ( $-0.31$  and  $-0.12$ , respectively) suggesting that FDI may be as important as trade as a determinant of corruption. In addition, FDI inflows are positively related to import intensity – correlation coefficient of  $0.3$  – and negatively correlated with tariff levels ( $-0.2$ ), suggesting that studies concentrating solely on the role of import intensity may suffer from omitted variable bias.

[Table 1 About Here]

Table 2 presents ordinary least squares (OLS) estimates for the basic specification with FDI intensity and per capita GDP as the sole right-hand side variables and then adds, in succession, the five additional control variables mentioned in Section 3. We present t-statistics computed from White heteroskedasticity-consistent standard errors below the coefficient estimates and find that FDI inflows are negatively and significantly related to corruption in all specifications. An increase of 5 percent in the share of FDI in GDP, the standard deviation of FDI from Table 1, leads to a decrease in the corruption index between 0.4 and 0.62. GDP per capita is also negatively related to corruption: a one standard deviation increase in per capita GDP leads to a decrease in the corruption index between 1.4 and 2. The quantitative impacts of FDI inflows and per capita GDP are thus of similar magnitude, suggesting the importance of FDI inflows for corruption. As far as the explanatory power of the regressions, the  $R^2$  ranges from 0.62 to 0.72, with openness to FDI, income per capita and the time dummies explaining more than half of the cross-country variation in corruption. Table 3 presents results for the exact same specifications but using import intensity instead of FDI intensity. The coefficient on import intensity shows that openness to trade decreases corruption. The quantitative effect of a one standard deviation increase in trade openness leads to almost exactly the same decrease in corruption as the one standard deviation increase in FDI intensity.

As to the control variables in Tables 2 and 3, we find that more natural resource intensive countries, by one standard deviation, have a corruption index about 0.3 higher. This difference is robust and highly significant and confirms previous results in the literature. We also find that larger countries are more corrupt. Contrary to expectations, an increase in the share of government expenditures in GDP is associated with less corruption.<sup>32</sup> Since countries with more

---

<sup>31</sup> The religion-weighted instrument actually has a negative sign, suggesting that countries which share the majority religion with a large economy are actually less likely to benefit from FDI outflows from that country.

<sup>32</sup> As to possible interactions between FDI inflows and institutional variables we have confirmed that our results are not dependent on interactions with political rights and legal origin variables.

developed institutions and legal rights tend to have larger governments, this variable may be proxying for the former.

[Table 2 About Here]

[Table 3 About Here]

Tables 4, 5 and 6 present the determinants of corruption levels when FDI inflows are instrumented for. In Table 4 instrumented FDI inflows and import intensity are the openness indicators considered. In Table 5 we use the average tariff level instead of import intensity as the openness indicator, while in Table 6 we again add import intensity to the regression. All the results confirm the importance of FDI. Moreover, while the coefficient on instrumented FDI inflows is everywhere significantly and negatively associated with corruption, import intensity and the tariff level are almost always insignificant once we control for FDI. The exceptions are the two last columns of Table 4 and Table 6, where import intensity matters, but the coefficient comes out with the “wrong” sign and is too small, about 90% smaller than the coefficient on FDI. In sum, our results suggest that empirical studies exploring the effect of trade on corruption but ignoring the role of FDI in reducing corruption may suffer from severe omitted variable bias. This is important, as the correlation between FDI and import intensity is strongly positive.

[Table 4 About Here]

[Table 5 About Here]

[Table 6 About Here]

Finally, Table 7 uses yearly data, as opposed to five-year data, to reproduce the last columns of Table 2, run the same specification with instrumented FDI and reproduce the last

columns of Tables 4 and 6, where we control for import intensity and tariff levels. We confirm that the coefficient on FDI is always significant and negative, suggesting that higher FDI inflows decrease the level of country corruption. After controlling for foreign direct investment and import intensity, average tariff levels are not significantly associated with corruption. GDP per capita, government expenditure and the fact that the country was a former colony decrease corruption, while countries that are larger or depend more heavily on exports of natural resources tend to display higher corruption levels.

[Table 7 About Here]

## **5 - Conclusions**

This paper attempts a first systematic investigation of the effect of openness to foreign direct investment on corruption. The literature has uncovered several important results on the effect of host country corruption on foreign direct investment, but we address the exact reverse issue. For that purpose we present a simple model of the joint determination of corruption and foreign direct investment suggesting that there are two directions of causation; empirical analyses that ignore this argument may suffer from serious omitted variable bias. We address the causality issue ourselves by constructing a new set of instrumental variables that consider geographical and cultural proximity of each host country to the major economies that originate FDI outflows. The use of instrumental variables is key to obtaining a clean estimate of the effect of FDI to corruption, in contrast to what has been reported in the literature.

Several important results arise. First, FDI is an important and robust determinant of a country's level of corruption: higher openness to FDI tends to decrease corruption. This result is robust to the inclusion of additional controls, to the exclusion of outliers and to the presence of heteroskedasticity. Second, controlling for import intensity and for tariff levels does not change this fundamental result, as the coefficient of FDI maintains its significance. In other words, if trade openness has been shown to affect corruption, it is partially because countries that are more

open to trade are also more open to foreign direct investment, and the latter is important in explaining corruption. A third result is the strength of the coefficient of FDI. A one percentage point increase of FDI's share in GDP decreases the corruption index between 0.4 and 0.6 on a 0 to 10 scale, making the impact of FDI on corruption smaller but comparable in magnitude to the effect of income per capita.

The results in this paper suggest a beneficial effect of country openness to foreign direct investment. We already knew from the literature that higher corruption levels deter FDI inflows. It seems the opposite is also very true: higher FDI flows can deter corruption. After openness to FDI is controlled for, other openness indicators do not seem to be as important for corruption. A promising avenue for future research may be analyzing the different channels through which FDI decreases corruption levels.

## Appendix 1 - Data Sources and Summary Statistics

The benchmark sample includes 39 developed and developing countries, namely, Argentina, Australia, Austria, Bangladesh, Brazil, Canada, Colombia, Dominican Republic, Ecuador, Germany (Federal Republic of), Ghana, India, Indonesia, Iran, Ireland, Israel, Italy, Kenya, Korea, Kuwait, Malaysia, Mexico, Morocco, New Zealand, Nicaragua, Nigeria, Pakistan, Peru, Philippines, Singapore, South Africa, Sri Lanka, Sweden, Thailand, Turkey, United Kingdom, United States of America, Uruguay and Venezuela.

**FDI - Source:** World Bank (2003). **Definition:** Gross inflows of foreign direct investment as a share of domestic economy's GDP. **Unit:** Percent.

**Import Intensity - Source:** World Bank (2003). **Definition:** Imports as a share of economy's GDP. **Unit:** Percent.

**Average Tariff Level - Source:** World Bank (2003), Ng and Yeats (1998), and Gatti (1999). **Definition:** Average level of tariffs. **Unit:** Tariff levels in percent.

**Corruption - Source:** International Country Risk Guide (2001) and Mauro (1995) for the Business International indicator. **Definition:** Indicator of corruption as reported by international consultants. **Unit:** 0 to 6, with higher values denoting less corruption, transformed into a 0 to 10 scale where higher values denote more corruption.

**GDPpc- Source:** World Bank (2003). **Definition:** Level Gross Domestic Product per capita at the beginning of the five-year period. **Unit:** US Dollars PPP.

**Fractionalization - Source:** LaPorta et al. (1999). **Definition:** Measures ethno-linguistic fractionalization: the probability that two random selected individuals within the country belong to the same religious and ethnic group. **Unit:** Continuous variable between 0 and 100, with 100 denoting lower fractionalization.

**Natural resource export intensity - Source:** World Bank (2007). **Definition:** Dummy for oil exporting-countries. **Unit:** Dummy.

**Government Expenditures - Source:** Barro and Lee (1994). **Definition:** Share of government expenditures in GDP. **Unit:** Continuous variable.

**Ever Colony - Source:** Barro and Lee (1994). **Definition:** Countries that were colonies after 1825. **Unit:** Dummy variable with 1 denoting colony.

**Population - Source:** Barro and Lee (1994). **Definition:** Country population. **Unit:** In billions.

## Appendix 2 - Instruments for FDI Intensity

We explain here the procedure to develop new, more powerful, instruments as indicators of a country's openness to foreign direct investment inflows. In the context of the present paper we seek to find variables that are both exogenous to FDI inflows and do not affect corruption directly. We have built four new variables that are likely to affect FDI openness and are exogenous to a country's policy choices. The procedure was the following:

(i). Select the 20 largest economies by Gross Domestic Product in 1990. The full list includes Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Iran, Italy, Japan, South Korea, Mexico, Netherlands, Poland, Spain, Turkey, the United Kingdom and the United States.

(ii). Compute, for each pair country in the sample – one of 20 largest economies, 4 variables that indicate the geographic and cultural closeness between each country in the sample and each of the 20 largest. The variables are: bilateral distance, dummy taking the value 1 if the country pair has a common land border, dummy taking the value 1 if the country pair has the same majority religion and dummy taking the value 1 if the country pair shares an official language.

(iii). Take the constant US dollar value of (absolute) FDI outflows for each of the 20 largest economies, compute the five-year average, and multiply them by the dummy variables constructed in step 2. For bilateral distance, multiply the FDI inflows by the inverse of the distance. The sum in each of the four categories (distance, contiguity, religion and language) constitutes the instrument for FDI openness for each country in the sample. Each country in the sample will have four exogenous variables that will serve as instruments for its degree of trade openness, defined as:

$$\text{FDI-DI}_{\text{country } i \text{ in the sample}} = \text{SUM}_{\text{country } j=1 \text{ to } 20 \text{ of largest economies}} \{ (\text{Inverse of Bilateral Distance}_{ij}) * \text{FDI Outflows}_j \}$$
$$\text{FDI-CO}_{\text{country } i \text{ in the sample}} = \text{SUM}_{\text{country } j=1 \text{ to } 20 \text{ of largest economies}} \{ \text{Contiguous}_{ij} \text{ FDI Outflows}_j \}$$
$$\text{FDI-RE}_{\text{country } i \text{ in the sample}} = \text{SUM}_{\text{country } j=1 \text{ to } 20 \text{ of largest economies}} \{ \text{Religion}_{ij} * \text{FDI Outflows}_j \}$$
$$\text{FDI-LA}_{\text{country } i \text{ in the sample}} = \text{SUM}_{\text{country } j=1 \text{ to } 20 \text{ of largest economies}} \{ \text{Language}_{ij} * \text{FDI Outflows}_j \}$$

We are left with a group of exogenous variables that capture the impulse to any country's FDI inflows deriving from FDI outflows from the 20 largest economies in the world, and weighted by cultural and geographical proximity.

We regressed actual FDI intensity on these exogenous instruments presented above. The correlation between exogenous and actual openness indicators is 0.21 for FDI. The predicted value of the dependent variable in the regression above is then used in a second stage regression to explain the degree of country corruption. We infer the causal effect of foreign direct investment inflows on corruption by examining the coefficient of openness in this second stage regression.

### **Instruments for FDI Intensity First Stage and Residual Regression Statistics**

	<b>Foreign Direct Investment</b>	
	<b>First Stage</b>	<b>Residuals</b>
<b>Contiguity</b>	0.96	-1.31
<b>Distance</b>	4.13	1.46
<b>Religion</b>	-2.66	-1.03
<b>Language</b>	0.00	-0.48
<b>Nr. Observations</b>	356	247
<b>R<sup>2</sup></b>	0.10	0.01

Note: The dependent variable for the first stage regression is FDI intensity, whereas the residuals regression uses the difference between actual and predicted corruption as the dependent variable. Predicted corruption is computed from the baseline regressions in the last column of Table 2. In the residuals regression reported above, we use as right-hand-side variables instrumented FDI intensity, income per capita, the time dummies in addition to the four exogenous variables reported above.

## References

- Ades, A., and DiTella, R. (1999), "Rents, Competition and Corruption", *American Economic Review*, 89, pp. 982-993.
- Aizenman, J., and Spiegel, M. (2004), "Institutional Efficiency and the Investment Share of FDI", Mimeo, University of California Santa Cruz.
- Alesina, A., Baqir, R. and Easterly, W. (1999), "Public Goods and Ethnic Divisions", *The Quarterly Journal of Economics*, 114, pp. 1243-1284.
- Barro, R., and Lee, J. (1994), "Sources of Economic Growth", *Carnegie-Rochester-Conference-Series-on-Public-Policy*, 40, pp. 1-46.
- Bhagwati, J. (1982), "Directly Unproductive, Profit-Seeking (DUP) Activities", *Journal of Political Economy*, 90, pp. 988-1002.
- Bhagwati, J., and Srinivasan, T. N. (1980), "Revenue Seeking: A Generalization of the Theory of Tariffs", *Journal of Political Economy*, 88, pp. 1069-1087.
- Bliss, C., and DiTella, R. (1997), "Does Competition Kill Corruption?", *Journal of Political Economy*, 105, pp. 1001-1023.
- Brock, W., and Magee, S. (1978), "The Economics of Special Interest Politics: the Case of the Tariff", *American Economic Review Papers and Proceedings*, 68, pp. 246-250.
- Ekpo, M. (1979), *Bureaucratic Corruption in Sub-Saharan Africa: Toward a search of Causes and Consequences*. Washington, DC: University Press of America.
- Ehrlich, I., and Lui, F.T., (1999), "Bureaucratic Corruption and Endogenous Economic Growth", *Journal of Political Economy*, 107, pp. 270-293.
- Field, A., Sosa, L. and Wu, X. (2003), "Impacts of Endogenous Bribes on Foreign Direct Investment", Mimeo, Department of Economics, University of North Carolina, Chapel Hill.
- Fisman, R., and Gatti, R. (2002), "Decentralization and Corruption: Evidence Across Countries", *Journal of Public Economics*, 83, pp. 325-345.

Frankel, J., Stein, S., and Wei, S-J. (1997), "Continental Trading Blocs: Are They Natural, or Super-Natural?", In Frankel, J. (ed.), *The Regionalization of the World Economy*, University of Chicago Press, Chicago.

Gatti, R. (1999), "Corruption and Trade Tariffs, or a Case for Uniform Tariffs", World Bank Working Paper 2216.

Gylfason, T. (2004), "Natural Resources and Economic Growth: From Dependence to Diversification", CEPR Discussion Paper No. 4804, December.

Gylfason, T., and Zoega, G. (2006), "Natural Resources and Economic Growth: The Role of Investment", *The World Economy* 29 (8), pp. 1091-1115.

Helpman, E. (1997), "Politics and Trade Policy". In Kreps,-David-M.; Wallis,-Kenneth-F. (eds.), *Advances in economics and econometrics: Theory and applications: Seventh World Congress. Volume 1, Econometric Society Monographs*, no. 26. Cambridge; New York and Melbourne: Cambridge University Press, 1997, pp. 19-45.

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

Hakkala, K., Norbäck, P-J., Savleryd, H., (2003), "FDI and Corruption Evidence from Swedish Multinational Firms", Mimeo, The Research Institute of Industrial Economics, Sweden.

Hines, J. (1995), "Forbidden Payment: Foreign Bribery and American Business After 1977", NBER Working Papers 5266, Cambridge.

Hojman, D., (2004), "Deception, corruption and 'schizophrenia' in an incomplete-information model of foreign direct investment", *Mimeo*, Department of Economics and Accounting, University of Liverpool.

International Country Risk Guide (2001), Financial, political and economic risk ratings for 140 countries. PRS Group. <http://www.prsgroup.com/icrg/icrg.html>

Johnson, A., and Dahlström, T. (2004), "Bureaucratic Corruption, MNEs and FDI", Mimeo, Jönköping International Business School, Sweden.

Karahan, G., Razzolini, L., and Shughart, W. (2006), "No Pretence to Honesty: County Government Corruption in Mississippi". *Economics of Governance*, 7, pp. 211-227.

Kaufmann, D., and Wei, S-J. (1999), "Does 'Grease Money' Speed Up the Wheels of Commerce?", NBER Working Paper 7093.

Knack, S., and Azfar, O. (2003), "Country Size, Trade Intensity and Corruption", *Economics of Governance*, 4, pp. 1-18.

Keefer, P., and Knack, S. (1995), "Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Measures", *Economics and Politics*, 7, November, pp 207-227.

Kimberley, A., (ed.) (1997), *Corruption and the Global Economy*, Institute for International Economics, Washington, DC.

Klitgaard, R. (1988), *Controlling Corruption*, University of California Press.

Krueger, A. (1974), "The Political Economy of the Rent Seeking Society", *American Economic Review*, 64, no. 3, pp. 291-303.

LaPorta, R., Lopez de Silanes, F., Shleifer, A., Vishny, R. (1999), "The Quality of Government", *Journal of Law, Economics, and Organization*, 15, pp. 222-79.

Larraín, F., and Tavares, J. (2004), "Does Foreign Direct Investment Decrease Corruption?", *Cuadernos de Economía*, 41, pp. 217-230

Leff, N. (1964), "Economic Development through Bureaucratic Corruption", *American Behavioral Scientist*, pp. 8-14.

Leite, C., and Weidmann, J. (1999), "Does Mother Nature Corrupt? Natural Resources, Corruption and Economic Growth", International Monetary Fund Working Paper, Washington DC.

Mauro, P. (1998), "Corruption and the Composition of Government Expenditure", *Journal of Public Economics*, 69, pp. 263-279.

Mauro, P. (1995), "Corruption and Growth", *Quarterly Journal of Economics*, 110, pp. 681-712.

Ng, F., and Yeats, A. (1998), "Good Governance and Trade Policy: Are They the Keys to Africa's Global Integration and Growth?", World Bank Working Paper, Development Research Group, The World Bank, Washington D.C.

North, D., (1990), *Institutions, Institutional Change and Economic Performanc*”, Cambridge University Press.

OECD (2004), “International Direct Investment Statistics”, Organisation for Economic Co-operation and Development.

Persson, T., and Tabellini, G. (2000), *Political Economy in Macroeconomics*, MIT Press, Cambridge, MA.

Rose-Ackerman, S. (1975), “The Economics of Corruption”, *Journal of Public Economics*, 4, pp. 187-203.

Sachs, J., and Warner, A. (1995), “Natural Resource Abundance and Economic Growth”, HIID Development Discussion Paper No. 517, Harvard University.

Shleifer, A., and Vishny, R. (1993), “Corruption”, *Quarterly Journal of Economics*, 108, pp. 599-617.

Smarzynska, B., and Shang-Jin Wei (2001), “Corruption and Composition of Foreign Direct Investment: Firm-Level Evidence”, Mimeo, World Bank.

Tanzi, V. (1994), “Corruption, Governmental Activities and Markets”, IMF Working Papers 94/99, Washington DC.

Tanzi, V., and Davoodi, H. (1997), “Corruption, Public Investment, and Growth”, IMF Working Papers 97/139, Washington DC.

Tanzi, V. (1998), “Corruption Around the World - Causes, Consequences, Scope, and Cures” , *IMF Staff Papers*, 45, pp. 559-594.

Tornell, A., and Lane, P. (1999), “Voracity and Growth”, *American Economic Review*, 89, pp. 22-46..

Treisman, D. (1999), “Decentralization and Corruption: Why Are Federal States Perceived to be More Corrupt?”, Mimeo, UCLA Department of Political Science.

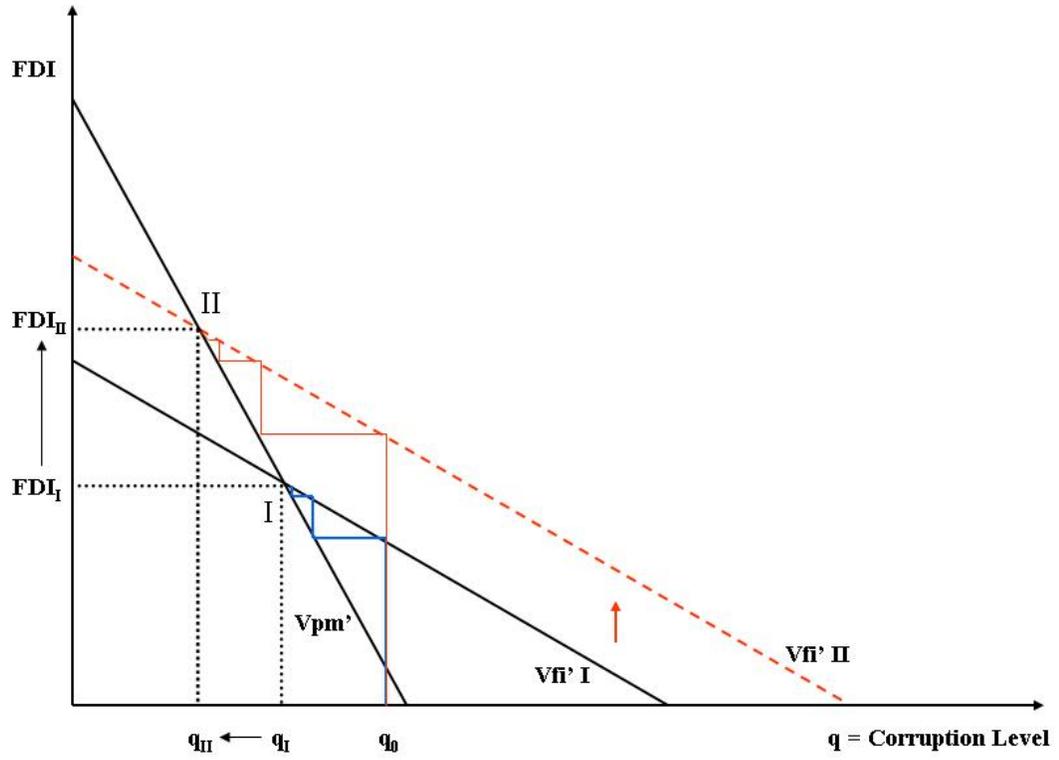
Wei, S-J. (2000a), “How Taxing is Corruption on International Investors?”, *Review of Economics and Statistics*; 82, pp. 1-11.

Wei, S-J. (2000b), “Natural Openness and Good Government”, NBER Working Paper 7765, Cambridge, MA.

Wei, S-J. (1997), "Why is Corruption So Much More Taxing Than Tax? Arbitrariness Kills", NBER Working Paper 6255.

World Bank (2003), "World Development Indicators", World Bank, Washington DC.

Figure I



**Table 1**  
**Summary Statistics**

	<b>Number of Observations</b>	<b>Mean</b>	<b>St Dev</b>	<b>Minimum</b>	<b>Maximum</b>
<b>Corruption</b>	897	6.59	2.49	1.5	10,00
<b>FDI intensity</b>	874	2.87	4.63	0,00	48.95
<b>Import intensity</b>	872	29	16.1	2.98	125.71
<b>Tariff Level</b>	897	11.77	8.48	0.00	31.92
<b>GDP pc</b>	895	8.7	0.99	6.45	10.38
<b>Ever Colony</b>	897	0.77	0.42	0.00	1.00
<b>Natural Resources intensity</b>	897	24.75	24.71	0.00	99.68
<b>Fractionalization</b>	897	0.44	0.24	0.00	0,86
<b>Population</b>	897	17.1	1.38	14.13	20.77
<b>Gov. Expenditure</b>	885	15.24	6.84	2.98	76.22

**Table 2**  
**Ordinary Least Squares with FDI alone**

	(1)	(2)	(3)	(4)	(5)	(6)
<b>FDI</b>	-0.124** (-4.42)	-0.104** (-4.05)	-0.109** (-3.93)	-0.109** (-3.74)	-0.08** (-3.13)	-0.094** (-3.47)
<b>GDPpc</b>	-1.78** (-15.59)	-2.00** (-14.71)	-1.9** (-13.11)	-1.82** (-13.51)	-1.62** (-9.16)	-1.40** (-7.34)
<b>Ever Colony</b>		-1.16** (-3.38)	-1.14** (-3.10)	-1.20** (-3.19)	-0.75* (-1.68)	-0.96** (-2.22)
<b>Nat. Resources Intensity</b>			0.014** (3.36)	0.014** (32.2)	0.012** (2.44)	0.013** (2.68)
<b>Fractionalization</b>				0.97 (1.5)	0.83 (1.23)	1.18** (1.77)
<b>Population</b>					0.36** (3.10)	0.26** (2.46)
<b>Gov Expenditure</b>						-0.072** (-3.0)
<b>Year Dummies</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>R<sup>2</sup></b>	0.62	0.65	0.66	0.67	.70	0.72
<b>Number of Observations</b>	154	154	149	149	149	148

Note: t-statistics (in parentheses) are reported below coefficient estimate. \*\* indicates significant at the 5% level and \* significant at the 10% level.

**Table 3**  
**Ordinary Least Squares with Imports alone**

	(1)	(2)	(3)	(4)	(5)	(6)
<b>Import Intensity</b>	-0.017* (-1.78)	-0.012 (-1.25)	-0.009 (-0.98)	-0.0098 (-1.1)	0.0135* (1.8)	0.02** (2.62)
<b>GDPpc</b>	-1.86** (-17.10)	-2.07** (-15.20)	-1.96** (-13.88)	-1.89** (-13.93)	-1.62** (-9.6)	-1.35** (-8.08)
<b>Ever Colony</b>		-1.15** (-3.00)	-1.13** (-2.77)	-1.18** (-2.90)	-0.66 (-1.49)	-0.92** (-2.25)
<b>Nat. Resources Intensity</b>			0.013** (3.19)	0.009* (1.95)	0.0132** (2.62)	0.0143** (2.87)
<b>Fractionalization</b>				1.07 (1.59)	0.72 (1.09)	1.19** (1.89)
<b>Population</b>					0.52** (4.21)	0.40** (3.79)
<b>Gov Expenditure</b>						-0.96** (-4.21)
<b>Year Dummies</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>R<sup>2</sup></b>	0.57	0.61	0.62	0.62	0.67	0.71
<b>Number of Observations</b>	152	152	147	147	147	146

Note: t-statistics (in parentheses) are reported below coefficient estimate. \*\* indicates significant at the 5% level and \* significant at the 10% level.

**Table 4**  
**Instrumental Variable with FDI and Import Intensity**

	(1)	(2)	(3)	(4)	(5)	(6)
<b>FDI</b>	-0.26** (-2.01)	-0.31** (-2.17)	-0.28** (-2.10)	-0.27** (-2.08)	-0.24** (-2.18)	-0.23** (-2.34)
<b>Import Intensity</b>	-0.002 (-0.18)	0.005 (0.41)	0.007 (0.61)	0.0055 (0.5)	0.025* (2.47)	0.032** (3.0)
<b>GDPpc</b>	-1.62** (-10.71)	-1.76** (-10.09)	-1.70** (-9.99)	-1.64** (-9.26)	-1.41** (-6.96)	-1.14** (-5.16)
<b>Ever Colony</b>		-1.08** (-2.81)	-1.14** (-2.73)	-1.18** (-2.83)	-0.709 (-1.59)	-0.93** (-2.26)
<b>Nat. Resources Intensity</b>			0.016** (3.68)	0.0129** (2.79)	0.016** (3.52)	0.018** (3.89)
<b>Fractionalization</b>				0.87 (1.35)	0.57 (0.9)	1.00 (1.62)
<b>Population</b>					0.47** (3.91)	0.4** (3.66)
<b>Gov Expenditure</b>						-0.91** (-3.7)
<b>Year Dummies</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>R<sup>2</sup></b>	0.58	0.5815	0.61	0.62	0.67	0.71
<b>Number of Observations</b>	150	150	145	145	145	144

Note: t-statistics (in parentheses) are reported below coefficient estimate. \*\* indicates significant at the 5% level and \* significant at the 10% level.

**Table 5**  
**Instrumental Variable with FDI and Tariff Level**

	(1)	(2)	(3)	(4)	(5)	(6)
<b>FDI</b>	-0.28** (-2.14)	-0.31** (-2.19)	-0.29** (-2.10)	-0.28** (-2.08)	-0.25* (-1.91)	-0.22** (-1.98)
<b>Tariff Level</b>	0.002 (0.13)	-0.01 (-0.34)	-0.01 (-0.61)	-0.012 (-0.75)	0.007 (0.43)	0.01 (0.65)
<b>GDPpc</b>	-1.56** (-8.16)	-1.72** (-7.65)	-1.67** (-7.53)	-1.60** (-6.86)	-1.46** (-6.23)	-1.27** (-5.25)
<b>Ever Colony</b>		-0.94** (-2.41)	-0.98** (-2.40)	-1.04** (-2.51)	-0.72 (-1.54)	-0.97** (-2.18)
<b>Nat. Resources Intensity</b>			0.016** (3.51)	0.012** (2.41)	0.013** (2.63)	0.013** (2.77)
<b>Fractionalization</b>				1.0 (1.43)	0.88 (1.21)	1.28* (1.79)
<b>Population</b>					0.26* (1.94)	0.18 (1.42)
<b>Gov Expenditure</b>						-0.08** (-3.16)
<b>Year Dummies</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>R<sup>2</sup></b>	0.58	0.59	0.61	0.62	0.65	0.70
<b>Number of Observations</b>	154	154	149	149	149	148

Note: t-statistics (in parentheses) are reported below coefficient estimate. \*\* indicates significant at the 5% level and \* significant at the 10% level.

**Table 6**  
**Instrumental Variable with FDI, Import Intensity and Tariff Level**

	(1)	(2)	(3)	(4)	(5)	(6)
<b>FDI Intensity</b>	-0.25* (-1.97)	-0.31** (-2.14)	-0.29** (-2.08)	-0.27** (-2.06)	-0.26** (-2.16)	-0.23** (-2.32)
<b>Import Intensity</b>	-0.002 (-0.21)	0.005 (0.41)	0.007 (0.63)	0.006 (0.53)	0.025** (2.44)	0.03** (2.95)
<b>Tariff Level</b>	0.006 (0.37)	-0.003 (-0.14)	0.007 (0.42)	0.009 (0.55)	0.003 (0.17)	0.01 (0.72)
<b>GDPpc</b>	-1.59** (-8.8)	-1.77** (-8.53)	-1.73** (-8.63)	-1.67** (-8.17)	-1.42** (-6.20)	-1.17** (-4.88)
<b>Ever Colony</b>		-1.09** (-2.77)	-1.15** (-2.73)	-1.19** (-2.83)	-0.71 (-1.57)	-0.95** (-2.28)
<b>Nat. Resources Intensity</b>			0.017** (3.68)	0.013** (2.75)	0.016** (3.48)	0.018** (3.82)
<b>Fractionalization</b>				0.90 (1.38)	0.58 (0.9)	1.04* (1.68)
<b>Population</b>					0.47** (3.80)	0.39** (3.57)
<b>Gov Expenditure</b>						-0.09** (-3.76)
<b>Year Dummies</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>R<sup>2</sup></b>	0.58	0.58	0.61	0.62	0.67	0.70
<b>Number of Observations</b>	150	150	145	145	145	144

Note: t-statistics (in parentheses) are reported below coefficient estimate. \*\* indicates significant at the 5% level and \* significant at the 10% level.

**Table 7**  
**Instrumental Variable with FDI, Import Intensity and Tariff Level– Yearly Data**

	<b>OLS</b>	<b>IV (1)</b>	<b>IV (2)</b>	<b>IV (3)</b>
<b>FDI</b>	-0.04** (-3.36)	-0.073** (-3.12)	-0.104** (-4.12)	-1.06** (-4.10)
<b>Import Intensity</b>			0.032** (7.25)	0.033** (7.12)
<b>Tariff Level</b>				0.009 (1.33)
<b>GDPpc</b>	-1.4** (-17.15)	-1.33** (-12.31)	1.21** (11.59)	1.24** (11.05)
<b>Ever Colony</b>	-0.84** (-4.66)	-0.83** (-4.18)	-0.78** (4.28)	-0.80** (4.32)
<b>Nat. Resources Intensity</b>	0.009** (4.24)	0.008** (3.37)	0.015** (6.11)	0.015** (6.03)
<b>Fractionalization</b>	1.31** (4.66)	1.37** (4.08)	1.05** (3.54)	1.08** (3.65)
<b>Population</b>	0.32** (7.00)	0.31** (6.05)	0.47** (9.27)	0.47** (9.26)
<b>Gov Expenditure</b>	-0.08** (-6.99)	-0.08** (-6.12)	-0.09** (-7.09)	-0.09** (-7.21)
<b>R<sup>2</sup></b>	0.70	0.69	0.7	0.7
<b>Number of Observations</b>	799	659	640	640

Note: t-statistics (in parentheses) are reported below coefficient estimate. \*\* indicates significant at the 5% level and \* significant at the 10% level.