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Institutions, Integration and the

Location of Foreign Direct Investment

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1. Introduction

One of the most notorious features of the trend toward globalization in recent times has been the increased importance of foreign direct investment around the world. As Figure 1 shows, over the last couple of decades flows of FDI around the world have increased by a factor of almost 10. To put this evolution in perspective, trade flows around the world, by comparison, only doubled during a similar period. This substantial increase in FDI flows has not been smooth over that time span. FDI flows have been characterized by periods of stagnation (such as the first half of the 1980s and 1990s), followed by periods of explosive growth. During the second half of the 1980s and 1990s, the annual rate of FDI growth has been close to 25%!

The evolution of FDI flows to Latin America has followed a similar trend. However, Latin America did not take advantage of the first FDI boom in the late 1980s. Inflows of FDI into the region remained fairly stable from 1980 through 1993, increasing at an annual rate of less than 2%. The Latin American FDI boom began in 1993, and since that year, flows into the region have been growing at almost 30% per year. As a result of the latest boom, Latin America has regained the share in FDI flows it had lost during the late 1980s and is currently receiving around 10% of all FDI flows.

Furthermore, while FDI flows to the developing world have increased so spectacularly, other forms of capital flows have remained fairly stagnant. In fact, FDI represents by far the most important source of private external finance to Latin America in recent years, as can be clearly seen in Figure 2.[1] The figure suggests that, when it comes to private external financing for Latin American countries, FDI has virtually become the "only game in town."

In this context, in which FDI is increasing rapidly but alternative forms of external financing are declining, a couple of questions become very relevant. First, does FDI have a positive effect on host countries? And if so, what can countries do to make themselves more attractive to foreign investors?

The question of whether FDI generates positive welfare effects for host countries has been a subject of heated debate in recent years. In principle, there are several mechanisms through which FDI could generate positive spillovers for the rest of the economy.[2] If the foreign firm is technologically more advanced than most domestic companies, it is possible that the interaction of its technicians and engineers with domestic firms may result in positive knowledge spillovers. Positive spillovers may also arise if the foreign firm trains the labor force, which then may be hired by other domestic firms. A related source of positive spillovers, studied by Rodríguez-Clare (1996), is the potential for the development of new inputs, or the increase in the quality of existing ones, which may be possible due to the demand created by the foreign investment, though these may become available for domestic firms as well. Yet another source of externality identified by Aitken, Hanson and Harrison (1997) is that multinationals that export their goods to foreign markets may induce domestic firms to follow

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[1] Reproduced from Fernández-Arias (2000).

[2] For a discussion of potential spillovers in the context of the case study of Intel in Costa Rica, see Larraín, López-Calva and Rodríguez-Clare (2000).

suit, thus acting as "catalysts" for domestic exporters. Borensztein, De Gregorio and Lee (1998) find evidence that FDI has a positive effect on growth, provided the level of human capital in the host country is sufficiently high. Thus, in order to benefit from the advanced technology introduced by foreign firms, the host country must have capacity to absorb it. However, FDI may also lead to negative spillovers, as domestic firms may be displaced by the foreign firm, or find that the cost of factors of production increases as a result of foreign direct investment.[3]

The answer to the question of the benefits of FDI for the host countries may depend on the manner in which FDI is attracted to a country. In a context in which countries compete aggressively by offering subsidies to potential investors, it is possible that any potential net benefits generated by FDI projects will be competed away and will accrue to the foreign investors. Competing by offering subsidies, however, is not the only way for countries to court potential investors. Oman (2000) discusses other forms of competition, both benign and potentially harmful. Countries could compete by improving their institutions, the quality of their labor force or the quality of their infrastructure. This competition, which Oman refers to as a "beauty contest," would obviously have positive externalities. On the other hand, countries could compete by relaxing labor or environmental standards, which could have obvious adverse effects on the welfare of the population. The important issue of the effects on host countries of competition with subsidies has recently been addressed by Fernández-Arias, Hausmann and Stein (2000).[4] In this paper, we focus instead on Oman's "beauty contest." While the paper examines the effects of a wide variety of variables on FDI location, we place special emphasis on the role played by the quality of host country institutions as a determinant of the location of FDI.

The role of institutions in FDI location has received some attention in recent years. Wheeler and Mody (1992) find that a composite measure of risk factors, which includes institutional variables such as the extent of bureaucratic red tape, political instability, corruption and the quality of the legal system, does not affect the location of US foreign affiliates.[5] However, in their index these variables are lumped together with others such as attitudes toward the private sector, living environment, inequality, risk of terrorism, etc., making it impossible to assess the role of individual variables. Using a data on bilateral FDI stocks from OECD countries, Wei (1997, 2000) finds that corruption, as well as uncertainty regarding corruption, has important negative effects on FDI location. This result is robust to the use of different measures of corruption. Hausmann and Fernández-Arias (2000) study the effects of institutional variables on the composition of capital inflows using six different institutional variables compiled by Kaufmann *et al*. (1999a), as well as indices of creditor and shareholder rights from La Porta *et al*. (1998).[6] They find that better institutions lead to a *reduction* of the share of inflows represented by FDI. They conclude that, in comparison to FDI, other forms of capital are more sensitive to the quality of institutions. When they look at the effects of their institutional variables on FDI as a share of GDP, only a small subset of the institutional

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[3] For a relatively recent survey of the effects of FDI on host countries, see Blomström and Kokko (1997). For a more skeptical view regarding the benefits of FDI for host countries, see Hanson (2000).

[4] See also Bond and Samuelson (1986) and Black and Hoyt (1989)

[5] Their risk factor variables were taken from the Country Assessment Service of Business International.

[6] The institutional variables from Kaufmann *et al*. (1999a and 1999b) are regulatory burden, voice and accountability, government effectiveness, political instability, graft and rule of law. We will describe these in more detail below, as we will use them here as well.

variables—regulatory burden, government effectiveness and shareholder rights—remain significant after including some controls. Their summary measure of institutions, the first principal component of Kaufmann's six institutional variables, does not have significant effects on FDI.

In this paper, we revisit the role of institutions in attracting FDI. As in Wei (1997, 2000), we use bilateral data on FDI from the OECD *International Direct Investment Statistics Yearbook*, but we consider a much wider set of institutional variables. Unlike Hausmann and Fernández-Arias (2000), our focus is on FDI per se, rather than as a share of capital inflows. In addition, our use of bilateral data allows us to use a much richer set of control variables than the one used by those authors.

A second important feature of globalization has been the increase in the number of trading blocs that have been formed during the last decade, or are currently under consideration. Examples of trading blocs implemented or strengthened in our region during the last decade include NAFTA, MERCOSUR, the Andean Community, the Central American Common Market, and the G-3, among others. Perhaps more importantly, negotiations are under way for the creation of the Free Trade Area of the Americas, an initiative that would create a hemispheric free trade area by the year 2005, and which would no doubt have a tremendous impact on the economies of our region. For the purposes of our work, the deepening of regional integration leads to the following questions: do source countries tend to locate FDI in host countries to which they are linked through free trade agreements? Beyond the size of the country itself, does the size of the market to which a country's goods have free access affect the location of FDI?

The rest of the paper is organized as follows: In Section 2, we take a quick look at the location of FDI flows in Latin America. In Section 3, we introduce the institutional variables and perform some simple exercises to take a first look at the association between these variables and location of FDI. In Section 4, we present the rest of the data and discuss our empirical strategy, based on the gravity model. Section 5 presents our main results on the determinants of the location of FDI. Section 6 presents some sensitivity analysis, and Section 7 concludes.

2. Foreign Direct Investment in Latin America

In the introduction we discussed the general trends of foreign direct investment around the world, as well as the evolution of these flows for Latin America as a whole. In this section, we take a closer look at FDI flows into Latin America. We should point out that a very detailed analysis of these flows is beyond the scope of the present paper. In this section, we just focus on three questions: First, how does Latin America compare with other regions in terms of its success in attracting FDI? Second, which are, within our region, the countries that have been most successful in this regard? Third, where do FDI flows to Latin American countries originate? In other words, which source countries are responsible for most of the flows to our region?[7]

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[7] For a much more complete and detailed analysis of FDI flows into Latin America, see CEPAL (2000). For a similar analysis of FDI trends around the world, see UNCTAD (2000).

To answer the first two questions, we will rely on data on FDI flows from *International Financial Statistics*, which we averaged for the period 1997-1999. A first look at the distribution of FDI flows around the world is presented in Figure 3, which shows the share of total FDI that goes to each of the regions. Developed countries received 70 percent of FDI flows in this period. Latin America comes in second among these regions, with 11 percent of the total, which is quite a bit more than countries in East Asia, for example, which received 6% of total FDI flows.

A more interesting comparison, however, comes from looking at FDI inflows normalized by GDP. This is presented in Figure 4. The dark bars represent yearly inflows over GDP for each of the regions, averaged over the period 1997-99. Once we normalize in this way, East Asia appears to be the region that receives the greatest inflows, nearly 4 percent of GDP, closely followed by the developed countries. The corresponding value for Latin America is just above 2 percent. The light bars represent the simple average of the ratios of FDI flows over GDP across the countries in each region. In contrast to the darker bars, in this case all countries in the region are given the same weight. According to this measure, Latin America comes a close second to the developed countries, with annual flows of 2.4 percent of GDP. The fact that the light bar is longer in Latin America is a reflection of the fact that smaller countries in the region tend to have larger shares of FDI flows over GDP, while the contrary is true in the developed countries, as well as in East Asia.

Figure 5 provides a first, rather crude answer to the second question. The countries that have received largest flows are Brazil, with 38% of the total, followed by Argentina, Mexico and Chile. These four countries have received nearly 80 percent of total inflows. Figure 6 provides a more meaningful answer, normalizing FDI flows by GDP. Trinidad and Tobago, which received FDI inflows averaging 9 percent of GDP in the period 1997-99, is by far the country with the most inflows, followed by Panama, Bolivia, and Chile. In Trinidad and Tobago, foreign direct investment has been mainly associated with large energy projects (in particular, related to natural gas, following the deregulation of the sector). In Panama, privatization of services, and investment in pension funds administration have played a major role. In Bolivia, the energy sector has been at the center of the country's efforts to attract FDI.[8] Chile and Argentina have increased their ranking thanks to huge individual acquisitions by two Spanish companies, Endesa in the case of Chile, and Repsol in the case of Argentina.[9] In contrast, countries such as Brazil, Costa Rica and Mexico, which according to popular perception receive a disproportionate amount of FDI flows, are in fact only slightly above the regional average, in the case of the first two countries, and below the regional average in the case of Mexico.

Latin American countries participate in FDI flows mostly as recipients. However, some of the countries in the region have recently become more active as sources of FDI. In particular, Chile, Argentina and Brazil, Colombia and Venezuela have been increasing their share as

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[8] See CEPAL (2000: pp. 55-57) for a discussion of FDI flows into Panama and Trinidad and Tobago, and pp. 89-97 for a detailed account of Bolivia's strategy to attract FDI.
[9] See CEPAL (2000: pp. 139-177), for a very complete account of the aggressive expansion of Spanish firms into Latin America.

sources of FDI. The case of Chile is the most notorious one. For the period 1997-99, its FDI outflows represented 38% of total outflows from the region, and almost 2.5% of GDP. Argentina is second as a source country. In this case, outflows represent 28% of the regional total, but this only corresponds to 0.5% of GDP.[10]

Where do FDI flows to Latin American economies originate? In order to answer this question, it is not enough to have data on aggregate inflows of foreign direct investment to individual countries. It is necessary to use data on bilateral flows of FDI, that is, data that identifies the source country for each flow, as well as the host country. For this purpose, we use bilateral data for 1997 on FDI flows from the OECD *International Direct Investment Statistics Yearbook* (2000).[11] The ranking of countries, according to their importance as a source of FDI to our region, is presented in Figure 7.[12] Not surprisingly, the United States is the most important source of FDI for the region. More remarkable is the fact that Spain is already in second place. As we will see later in the paper, common language and past colonial links may be playing an important role here. Chile and Argentina, and to a lesser extent Brazil, have also become major players as a source of FDI for Latin America.[13]

3. Institutional Variables and FDI Flows: A Preliminary Exploration

In order to explore the role of institutional variables as determinants of the location of FDI, we will use a large number of institutional variables drawn from several different sources. The first set of institutional variables are the governance indicators developed by Kaufmann *et al.* (1999a and 1999b). These indicators are constructed on the basis of information gathered through a wide variety of cross-country surveys, as well as polls of experts. These authors use a model of unobserved components, based primarily on 1997 and 1998 data, which enables them to achieve levels of coverage, for each of their indicators, of approximately 160 countries. They construct six different indicators, each representing a different dimension of governance: voice and accountability, political instability, government effectiveness, regulatory burden, rule of law, and graft. This clustering of institutional indicators into different dimensions allows us to study whether some dimensions of governance matter for FDI location, while others do not.

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[10] We did not have data on FDI outflows from Mexico, which should be important as well.

[11] This database also provides information on bilateral FDI stocks, which will be used later on in the paper, when we study the determinants of the location of FDI.

[12] Notice that we have included in the figure a number of Latin American countries. The OECD dataset only includes investment flows that originate or are located in OECD countries. However, it is possible to infer the value of FDI outflows from individual Latin American countries to Latin America, by subtracting from total outflows in each country (as reported in *International Financial Statistics*) the outflows of FDI to each of the OECD countries (as reported by OECD).

[13] The way the data for Latin American countries was constructed, discussed in the previous footnote, may be overstating their relative ranking, for two different reasons. First, Latin American countries could be source of FDI for other non-Latin American, non-OECD countries. These flows would be counted here as flows into Latin America. Second, the bilateral data used for OECD countries does not include all Latin American host countries. Those countries that are included, however, represent more than 90 percent of the total inflows between 1997 and 1999. Neither of these problems should be of significance.

Kaufmann *et al*. standardized their indicators so that they all have mean zero and a standard deviation of one, and in all cases larger values indicate better institutions.[14]

Voice and accountability, as well as political instability and violence, aggregate those aspects related to the way authorities are selected and replaced. The first variable focuses on different indicators related to the political process, civil rights, and institutions that facilitate citizen control of government actions, such as media independence. The second variable combines indicators that measure the risk of a destabilization or removal from power of the government in a violent or unconstitutional way.

The indicators clustered in Government Effectiveness and in Regulatory Burden are related to the ability of the government to formulate and implement policies. The first variable aggregates indicators on the quality of bureaucracy, the competence of civil servants, the quality of public service provision and the credibility of the government's commitment to its policies. The second brings together indicators related to the content of the policies, like the existence of market-unfriendly regulations such as price controls and other forms of excessive regulation.

The last two variables, Rule of Law and Graft, consider aspects related to the respect, on the part of both citizens and the government, for the institutions that resolve their conflicts and govern their interactions. The first includes variables that measure the perceptions on the effectiveness and predictability of the judiciary, as well as enforceability of contracts, while the second aggregates different indicators of corruption.

While we expect in general that improvements in the governance indicators will make countries more attractive for foreign investors, not all of these dimensions are expected to have similar effects. A foreign investor may be more worried about excessive regulation, corruption, or disregard for the rule of law, and less worried about the independence of the media, or the ability of citizens to hold their leaders accountable.

A second source for institutional variables is the International Country Risk Guide (ICRG) compiled by the PRS Group. Unlike the variables in Kaufmann *et al*., these indicators rely exclusively on polls of experts. The variables we consider are a subset of those available from the ICRG database. Specifically, we use the Risk of Repudiation of Contracts by the Government, Risk of Expropriation, Corruption in Government, Rule of Law and Bureaucratic Quality.[15] While the first two variables are coded on a 0 to 10 scale, the last three are coded between 0 and 6. In all cases, higher rankings imply better institutions.

A third source for institutional variables is La Porta *et al*. (1998). In particular, we use an index of shareholder rights developed by these authors. In contrast to the previous two sets of indicators, this variable is based on objective data: the analysis of the laws and commercial

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[14] In our empirical work, we re-standardize these variables to have a mean of zero and standard deviation of one in our own sample, in order to simplify the interpretation of the coefficients, as well as the comparison of their relative importance.

[15] This is the same set of ICRG variables previously used in Knack and Keefer (1995)

codes in each country. The index varies between 0 and 5, with higher values indicating stronger protection of shareholders.

Our last source for institutional data is the World Business Environment Survey (WBES), a joint initiative of the World Bank and the IDB which surveys about 100 enterprises in 100 countries. While the survey is very extensive, here we focus on a specific question in the survey, in which respondents are asked to assess whether a number of factors constitute major obstacles for the operation and growth of their business in the country. The factors are taxes and regulations, policy instability, functioning of the judiciary, corruption, street crime, organized crime, and anti-competitive practices by government or private enterprises.[16] Because of the way these variables are constructed, as the percentage of affirmative responses per factor for each country, in this case lower values indicate better institutions.

It is important to emphasize that we are using three different types of institutional indicators: some based on expert opinions (which may suffer from problems of subjectivity), others based on cross-country survey data (which may suffer from problems of comparability), and others based on the objective analysis of laws and legal codes. Yet another set of institutional variables combines the different types into governance indicators. The use of these different types of variables to study the effects of institutional variables on the location of FDI should provide us with a good sense of the robustness of the results.

A First Look at the Evidence

In this section, we take a first look at the evidence on institutions and the location of FDI. Unlike the main exercise in the paper, in which we focus on bilateral FDI stocks, here we will use FDI inflows from IFS, which are available for a wider range of countries. In addition, in this first look at the data, we will only use the institutional variables from Kaufmann *et al*. (1999a and 1999b). In the six scatter plots presented in Panel 1, we plot each of the six governance indicators against the average (for 1997-99) FDI inflows normalized by the GDP of 1998. Although the relationship between institutions and the FDI/GDP ratio does not seem to be linear, all show a positive and highly significant correlation.[17] So, it seems that better institutions are associated with greater FDI inflows. However, there may be some problems with this conclusion.

All the correlations between the six institutional variables are high, ranging from 0.62 to 0.94 (the average is 0.76). In addition, all these variables are highly correlated to GDP per capita (correlations range between 0.65 and 0.8). This raises the concern of whether these six variables are in fact capturing essentially the level of development of the economy, or other omitted factors such as the quality of the infrastructure or the education of the labor force. In order to address this problem, we look instead at the partial correlation between FDI/GDP and the institutional variables, holding constant for GDP per capita.[18] The partial correlation is obtained using the following steps: 1) obtaining the residuals from a regression of FDI/GDP on a constant and GDP per capita. 2) obtaining the residuals from a regression of an institutional variable on a constant and GDP per capita. 3) The partial correlation is the simple correlation

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[16] The question actually asks about a wider set of potential obstacles. For a detailed description of the survey, see Lora, Cortés and Herrera (2001).

[17] In each one of the scatter plots, we report the correlation coefficient, as well as the p-value.

[18] See Greene (1997: p. 248).

between these two residuals. Intuitively, we correlate the component of FDI ratios left unexplained by GDP per capita, against the component of institutions left unexplained by GDP per capita. In Panel 2, we plot these correlations for each of Kaufmann's institutional variables.

As expected, all the correlations in Panel 2 are lower than the corresponding ones from Panel 1, in which GDP per capita is not kept constant. However, they all remain significant, with the exception of voice and accountability. The correlation is strongest in the cases of regulatory burden, government effectiveness and graft, which provide a first indication of the relative importance of institutional variables as determinants of the location of FDI. While these partial correlations provide a preliminary idea of what we can expect to find, we need to perform a more complete analysis of the determinants of FDI location in order to determine in a more precise way the role played by institutions in this regard. This is what we do in the rest of the paper, using data on bilateral stocks of FDI, in the context of a gravity model.

4. The Determinants of the Location of FDI: Data and Empirical Strategy

The scatter diagrams presented at the end of the previous section are obviously a very rough indication of the effect of the institutional variables on the location of FDI. In particular, there are a number of variables that may affect location, which need to be controlled for. In this section, we look at the question of the determinants of FDI more carefully, and more generally, by estimating a gravity model of bilateral FDI.

We will consider four different groups of explanatory variables. The first group consists of the variables which are typically used in gravity models of trade, such as GDP, per capita GDP, and distance between the source and the host countries, as well as dummies reflecting whether the countries share a common border, a common language and common colonial links. The second group consists of variables, other than the institutional ones, which can affect the attractiveness of a country as a location for FDI, such as the level of taxes on foreign direct investment activities, human capital, infrastructure quality, etc. The last two groups of variables are the focus of the paper: the institutional variables described in the previous section, and variables associated with trade integration, such as common membership in a free trade area, or the size of a host country's "extended market."

FDI Data

We use bilateral outward FDI stock for 1996 from the OECD *International Direct Investment Statistics Yearbook* (2000) database as our main dependent variable. The information is available with a breakdown of 63 host countries from 28 OECD source countries, but as several source countries do not report any information, or do not have significant outward FDI, the sample size is reduced to 1,025 observations.[19] Data limitations in some of the control variables will further reduce the sample used in most of our regressions to 846. By using *outward* stocks, we ensure that differences across countries in the definition and measurement of FDI do not alter the relative allocation of FDI for each of the source countries.

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[19] 18 source countries and 58 host countries, 18*(58-1) = 1,025.

The reason to use stocks rather than flows as our main dependent variable is that the characteristics of host countries should have an effect on the total amount of exposure that a firm in a source country may want to have in them. Firms can and do adjust this exposure, upwards or downwards, according to their business strategies, and to changes in the relative attractiveness of different locations.[20] Thus, flows of FDI may partly reflect not just the relative "beauty" of different locations, but also changes in this relative beauty.[21] In spite of this argument, in a number of regressions we use the gross bilateral flows of FDI, in order to check the robustness of our results. In these cases, we average outward flows for the period 1995-97, in order to deal with the lumpiness of investment.

The Gravity Model

Our empirical strategy is based on the gravity model, that is a standard specification in the empirical literature on the determinants of bilateral trade, and has also been recently used in the analysis of FDI location.[22] In its simplest formulation, it states that bilateral trade flows (in our case bilateral FDI stocks) depend on the product of the GDP of both economies and the distance between them, an analogy to Newton's gravitational attraction between two bodies. The gravity model has been very successful in predicting bilateral trade flows, and has good theoretical foundations.[23] Typical variables added to the simplest gravity specification in the trade literature include GNP per capita or population, as well as dummies indicating whether the two countries share a common border, a common language, past colonial links, etc. These variables can also be relevant for FDI. For example, the fact that two countries share the same language may encourage FDI flows between them, since it reduces transaction costs (foreign executives learning the language of the host country, need to hire bilingual workers, translation of contracts, etc).

Our basic regression specification is:

$$\log(1 + FDI_{ij}) = \alpha d_i + \beta x_{ij} + \gamma z_j + \delta\, inst_j + \varepsilon_{ij}, \tag{1}$$

where FDI_{ij} is the stock of outward FDI of source country i in host country j in 1996, d_i is a vector of source country dummies, x_{ij} is a vector of bilateral control variables (such as log distance between source and host country, and dummies for adjacency, common language and past colonial links), z_j is a vector of host country characteristics (including traditional gravity variables such as log GDP and log GDP per capita, as well as other characteristics which may affect the attractiveness of the host for FDI, such as tax rates on foreign corporations, quality of infrastructure, etc), $inst_j$ represents the institutional variable considered in the regression, and ε_{ij} is the error term. Given the high degree of correlation among the institutional variables, we include them in the regressions one at a time in order to avoid problems of multicollinearity.

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[20] An example of a downward adjustment would be the closure or sale of a foreign-owned manufacturing facility in a host country.

[21] We thank Shang-Jin Wei for this argument in favor of the use of stocks.

[22] See Eaton and Tamura (1994), Wei (1997, 2000), Lipsey (1999), Portes and Rey (1999) and Blonigen and Davis (2000).

[23] For a discussion of the origins and theoretical foundations of the gravity model, see Frankel et al. (1997).

The double-log specification is chosen because it has typically shown the best adjustment to the data in the empirical trade literature using the gravity model. In our sample, most source countries show some zero values for the bilateral FDI stock. These observations, which would be dropped by taking logs, provide very relevant information for the location of FDI, so their omission would lead to an important bias in the estimation of the coefficients of interest. For this reason, we use the log $(1 + FDI_{ij})$ as our dependent variable in order to keep these zero observations.[24] The standard gravity model usually includes the source country's size (GDP) and its population or GDP per capita. In our specification, we include instead source country dummies, which capture all the relevant characteristics of the source countries. As Wei (2000) points out, this specification is preferred because it also solves the problem posed by possible differences in the definition and measurement of FDI across source countries.

Gravity Variables

The bilateral distance is the "great circle distance" used in Frankel, Stein and Wei (1995). The information on adjacency, official language and colonial links, taken from Rose (2000), is available on his web site (http://www.haas.berkeley.edu/~arose/), and was complemented with information from the 1999 *World Factbook* available on the CIA's web site.[25] GDP and GDP per capita are adjusted for purchasing power parity, and were taken from the World Bank's WDI (2000).

Attractiveness Variables

Beyond our institutional variables, there are many other factors that can affect the attractiveness of a host country as a location for FDI. Here we consider tax rates on foreign corporations, restrictions on FDI activities, different measures of the education of the labor force, average wages, the quality of the infrastructure, the rate of homicides, and the rate of inflation, to control for macroeconomic instability.

The tax rate data consists of withholding tax rates of foreign corporations on dividends, as reported by Price Waterhouse (1997). In case tax treaties exist between the host country and some source countries, tax rates on foreign corporations will differ according to the nationality of the foreign owners. In order to account for these differences, we use bilateral data on tax rates, taking into account the content of the tax treaties in existence. Tax rates may also differ within a host country, according to the sector of activity, or the structure of ownership of the firm (i.e., on the share of the firm that is foreign-owned). In these cases, since we do not have information on the structure of foreign ownership, or the sectors of activity, we just use the

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[24] This specification to deal with the problem of the observations with a value of zero for the dependent variable has been used in gravity models of trade by Eichengreen and Irwin (1995, 1997), and more recently by Redding and Venables (2000). In Section 6 we will use a TOBIT estimation that deals with the problem in a different way, in order to check the robustness of our results.

[25] We would have liked to include a dummy for common currency unions, which have been found by Rose (2000) to have very important effects on trade. However, Panama and the US were the only pair of countries in our sample that shared the same currency.

simple average of the different rates reported. We expect a negative impact of tax rates on FDI.[26]

We also consider the existence of restrictions on FDI activities, which are reported in the IMF *Exchange Arrangements and Exchange Restrictions* (1997). This publication reports on two types of capital controls that should affect FDI. The first is the existence of restrictions on the purchase of assets that qualify as FDI, such as foreigners not being able to invest in certain sectors, or acquire more than a given share of a domestic company. Unfortunately, the data does not distinguish between controls on inflows or outflows, which means that the controls could refer to restrictions on nationals investing abroad. The second type of control involves restrictions on liquidation of direct investment, including repatriation of proceeds from the sale of investments, repatriation of profits, etc. A problem with both variables is that they reflect the existence of a restriction, but not the severity of the restriction. Countries that outright ban FDI are lumped together with countries that have mild restrictions on very few strategic sectors.[27]

In order to measure human capital, we use the updated data for 1995 from Barro and Lee (2000). While the Barro-Lee database contains several indicators of the stock of human capital, we prefer the percentage of the population older than 25 years that has at least attended any post-secondary educational institution. This choice is justified by our prior that foreign firms may base their location decisions on the availability of skilled workers. One problem with the Barro-Lee data is that it is greatly affected by the educational achievement of individuals who are no longer part of the labor force. This is particularly problematic in countries where access to education has increased substantially over the years. As an alternative, we constructed, on the basis of Barro and Lee's data as well as data on age composition of the population from United Nations, a variable that approximates the average years of education of the population between the age of 25 and 45.[28] As a proxy for labor costs, we use the ratio of wages and salaries paid in manufacturing (in current dollars) to the total number of employees in the sector, from the UNIDO database. A problem with the data on wages is that it is only available for half of the countries in our sample.

Another variable we consider is the quality of infrastructure in the host country. The location decision in many industries may critically depend on the quality of communication and transportation facilities, the reliability of the provision of electricity, etc. We expect countries with a higher quality of infrastructure to be able to attract more FDI. We use the results of a survey of experts from the 1999 *Global Competitiveness Report* of the World Economic Forum, 1999. The measure used is the average host country score on the survey, in response to

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[26] An important consideration, which we left out of the analysis, is the existence of tax credits in some source countries, which may reduce the effect of this variable. For evidence on the impact of tax credits on the effects of tax rates in relation to FDI location, see Hines (1996).

[27] In addition to reporting the existence of restrictions, this publication includes detailed descriptions of the nature of these restrictions. This means that it is possible to create an index of the severity of restrictions, a task that may be worthwhile, but which exceeds the scope of this paper.

[28] We are grateful to Suzanne Duryea, Miguel Székely and Andrés Montes for their input in constructing this variable.

the following question: Is the infrastructure of the country among the best in the world? Responses ranged from 1 ("strongly disagree") to 7 ("agree totally").[29]

Social instability, violence and crime may affect the economic outcomes, and in particular, the location decision of FDI. While these aspects could be captured in the Kaufmann variable of Political Instability and Violence, or in the crime variables from the World Business Environment Survey, it is interesting to test this hypothesis with more objective data. Here we consider the average homicide rates in 1991-95, taken from the World Health Organization (WHO).[30]

FDI location decisions may be affected by risk considerations about the host country. While several risk dimensions are considered in the institutional variables, it is possible that macroeconomic instability is an additional relevant factor. In order to control for macroeconomic volatility we incorporate average inflation rate over the period 1991-95.[31]

Trade Integration Variables

We include two variables that are associated with trading blocs. The first one is a dummy variable that takes a value of 1 if the source and host countries belong to the same free trade area (or customs union). This variable is used to explore whether firms in source countries favor their FTA partners when deciding about investment location. We construct the variable using information about the status of several FTAs from the appendix in Frankel *et al*. (1997).[32]

Another interesting question is whether the size of the market to which a host country has free access is a relevant factor in attracting FDI. In order to analyze this, we construct a market size variable, defined as the log of the joint GDP of all the countries that are FTA partners of the host country. We exclude the GDP of the host country from this measure of market access, since we are already controlling for domestic market size. As with the previous variable, here again we use the information on the status of FTAs from Frankel *et al*. (1997).

In the next section, we present the results of our estimations. The descriptive statistics of most of the variables used in the regressions are presented in Table 1.[33]

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[29] Alternatively, we also used an index of infrastructure based on telephone lines per person and paved roads per square kilometer, which was provided by Alejandro Micco. The results were fairly similar, and for this reason we do not report them in the empirical section.

[30] We are grateful to Daniel Lederman for sharing his data on homicides used in Fajnzylber, Lederman and Loayza (2000).

[31] More precisely, our measure is log (1 + inf/100), which is the standard specification in order to reduce the importance of outliers.

[32] Specifically we account the following FTAs and custom unions: NAFTA, EEA, MERCOSUR, ASEAN, Group of Three, EFTA, Australia-New Zealand, CEFTA, GCC, Andean Community, SACU, and CACM.

[33] Since in most of our regressions our sample size is 846 observations, the descriptive statistics presented here correspond to these observations. In order to simplify the interpretation, all the variables that enter in logs in the regressions are described according to their levels instead.

5. Empirical Results

Table 2 presents the results of the estimation including gravity and attractiveness variables only. Column (1) includes only the variables corresponding to the extended gravity model. All the coefficients have the expected sign and are statistically significant, the only exception being the colonial links dummy, which is in fact significant in all the remaining regressions. The size of the host economy—i.e., GDP—shows a unitary elasticity when GDP per capita is held constant. This means that, other things equal, an increase in the host country's GDP leads to a proportional increase in FDI. GDP per capita, common language and adjacency have a positive impact on FDI, while distance has a negative impact. The coefficient for distance suggests that a 1 percent increase in this variable results in little more than half a percent reduction in the stock of FDI.[34] Even more so than in the case of trade, we can think of this variable not just as transportation costs, but as a proxy for transaction and informational costs, which tend to increase with distance. The effect of the dummies is also quite important economically.

In column (2) of Table 2 we introduce three additional variables: the tax rate on dividends of foreign corporations, human capital and inflation. In the rest of the table we add, one at a time, the quality of infrastructure, average wages, restrictions on FDI and homicides.[35] There is strong evidence of a negative effect of taxation on FDI. In all specifications of Table 2 the coefficient is highly significant, and the point estimates suggest that a one-percentage point increase in the tax rate decreases the stock of FDI by about 3 percent. The stock of human capital—using the Barro-Lee variable of percentage of the population older than 25 years that has attended at least some post-secondary institution—shows in all regressions the expected sign. A higher stock of human capital seems to attract more FDI, but the significance levels are low and depend on the specification of the model. When we replace this variable by our measure of average years of education for population between the ages of 25 and 45 (not reported in the table), human capital loses significance.[36] Macroeconomic instability, measured by the average inflation rate, appears to have a negative impact on FDI, although the significance depends on the specification of the model.

In column (3) we introduce as additional explanatory variable the quality of the infrastructure in the host country. The variable is highly significant and shows that better infrastructure attracts FDI. It also reduces the effect of GDP per capita, suggesting that this variable is in part capturing differences in infrastructure development between rich and poor countries. In column (4) we add average wages. It is a common hypothesis that low wages are an important factor in attracting FDI. However, our results are not consistent with this hypothesis. On the contrary, wages appear to have a significant and positive effect on FDI, a result that is even stronger if GDP per capita is excluded from the regression.[37] In column (5) we test the influence of restrictions on FDI activities of the host country. Even though the point estimate shows the expected negative sign, the coefficient is not significant. This result can be

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[34] The effect of distance is very similar to the coefficient of –0.51 obtained by Frankel, Stein and Wei (1997) for the case of trade.

[35] With the exception of FDI restrictions, these variables are not available for all the host countries, and thus reduce the sample size significantly.

[36] More generally, we found that results are very sensitive to the human capital variable utilized.

[37] The effect of wages on FDI for the case of non-OECD host countries is also positive and significant, although smaller than that for OECD countries. These results are consistent with similar findings by Wei (2000).

attributed to the problems identified above in the definition of this variable. A more detailed analysis that addresses the severity of FDI might produce more conclusive results.[38] Finally, in column (6) we include the homicide rate as an explanatory variable. The coefficient is negative and significant at a level of 10%. As expected a higher environment of crime and violence tends to reduce the attractiveness of the country to foreign investors.

The Impact of Institutional Variables

In Table 3 we report the results of the estimates, adding to the specification of the second column of Table 2 our first set of institutional variables: the governance indicators of Kaufmann *et al*. (1999a and 1999b). The first six columns consider each of these indicators separately, while the last column includes the average of the six.[39] All these variables, with exception of Voice and Accountability, are highly significant and show the correct sign. More importantly, their impact is economically significant.

The variable with the largest impact is government effectiveness, which captures factors such as the quality of public services, the quality of the bureaucracy, competence and independence of civil servants, independence of government policies from political pressures, and the credibility of government's commitments. A one standard deviation improvement in government effectiveness increases the stock of FDI by a factor of 3.5![40] Although this may seem like a surprisingly large impact, it is important to understand that a one standard deviation improvement in this variable is quite substantial. Such an improvement, for example, would increase the index of Russia to that of Argentina, or the index for Morocco to that of Chile.

Similarly, an improvement of one standard deviation in regulatory burden, a variable that captures the quality and market friendliness of government policy, increases the regulatory burden by a factor of nearly 3.[41] Such an improvement would, as an example, take the quality of government policies in Mexico to the level of Australia. Similar improvements in one standard deviation for graft, rule of law, and political instability would increase FDI by 155%, 96% and 47%, respectively. The corresponding impact of an improvement in the summary variable of governance is an increase in FDI of nearly 130%. Notice that GDP per capita loses significance, and becomes negative in several of the regressions, when institutional variables are considered. This suggests that richer countries may be getting more FDI not because they are rich, but because they have better institutions. The impact of education, as well as that of inflation, is also sensitive to the specification used. All other variables appear to be quite robust to the inclusion of the institutional variables.

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[38] Restrictions on liquidation of FDI proceeds did not yield significant results either.

[39] Like Hausmann and Fernández-Arias (2000), we have also considered the first principal component of the six governance variables. The results are similar to the case of the simple averages reported here. In fact, the correlation between the principal component and the simple averages is 0.995.

[40] Remember that these variables have been standardized, so that one standard deviation is equal to 1. The impact on the stock of FDI is given by exp $(1.233) – 1 = 2.43$. This implies an increase in FDI stocks of 243%, i.e., the stock of FDI increases by a factor of 3.43.

[41] More precisely, the effect would be exp $(1.008) - 1 = 1.74$. This implies an increase of 174%, i.e., the stock of FDI nearly triples

Table 4 looks at the impact of a different set of institutional variables: those reported in the International Country Risk Guide (ICRG) for 1995. Unlike those of Kaufmann *et al*., which combine indicators based on polls of experts with cross-country surveys, these rely exclusively on polls of experts. Compared to the surveys, these polls have the advantage that substantial efforts are made to ensure comparability across countries. However, they may be subject to subjectivity bias. For example, the fact that Costa Rica has landed Intel may change the perceptions of experts about this country. For this reason, in the last column of Table 4 we consider an index of shareholders' rights, a more objective variable developed by La Porta *et al*. (1998), based on the analysis of the relevant laws and commercial codes of each country.

Out of the five ICRG variables, four have the expected positive sign, but only two of them, representing the risk of repudiation of contracts by government, and the risk of expropriation, are statistically significant. The impact of these variables, which can be directly associated with the enforcement of property rights, is also quite large, although smaller than that of Kaufmann's governance indicators. An improvement of one standard deviation (=0.51) in the expropriation risk variable results in an increase in FDI of 56 percent.[42] Similarly, an improvement of one standard deviation (=1.12) in the variable measuring the repudiation of contracts increases FDI by 64 percent.[43]

Bureaucratic quality and rule of law are not significant, and corruption is significant but has the wrong sign. This last result is especially surprising, given the findings in Wei (1997, 2000), who reports that corruption has a strong negative impact on the location of FDI, using this same measure of corruption, among others. These results may be partly due to multicollinearity between the institutional variables and GDP per capita, a variable that was left out of Wei's studies. In fact, corruption becomes positive, although not significant, if GDP per capita is excluded from the regression, while rule of law and quality of the bureaucracy become highly significant.

The principal component of the five variables, reported in column (6), is positive and highly significant. Similar results apply to the shareholder's rights variable from La Porta *et al*., a variable that should have a particularly large impact on minority-owned investments. The conclusion from this table is similar to the one using the Kaufmann *et al*. variables: better institutions attract FDI.

Table 5 presents the results of our last set of institutional variables, drawn from the World Business Environment Survey (WBES).[44] In contrast to the polls and the variables based on actual laws and codes, these surveys can potentially have more serious problems of comparability. Their advantage, on the other hand, is that they are answered by a larger number of people (in this case, 100), who have a deep knowledge of the countries in which their business operates.[45] As discussed in Section 3, here we will focus on a specific aspect of this

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[42] exp (0.875*0.51) – 1 = 0.56

[43] exp (0.439*1.12) – 1 = 0.635

[44] Since the surveys cover a narrower set of countries, the number of observations in this table is reduced compared to that in Tables 3 and 4.

[45] For a more thorough discussion of the advantages and disadvantages of polls and surveys, see Kaufmann *et al*. (1999b).

survey: that of major institutional obstacles to the operation and growth of the business in the country.

For each of the institutional dimensions reported in the table—taxes and regulations, policy instability, functioning of the judiciary, corruption, street crime, organized crime and anti-competitive practices—the variable represents the proportion of respondents who considered that dimension to be a major obstacle to the development of their business. In contrast to the institutional variables used above, we expect their coefficients to have a negative sign. As Table 5 shows, all the institutional variables have the expected sign, and all but one (street crime) are highly significant.

Taken individually, the results of Tables 3 though 5 suggest that institutional development is a good way to attract FDI. Taken together, the conclusions are much stronger still: Whether they are measured through polls of experts and cross-country surveys or on the basis of laws and legal codes, institutions matter for the location of FDI, and they matter a lot! In Section 6, we will perform some further robustness checks. In particular, we will use a different estimation procedure, and check whether the results are similar when we use bilateral flows of FDI in place of the stocks. Before that, however, we will turn to a different dimension: the role of trade integration on the location of FDI.

The Impact of Trade Integration on FDI

In this section we analyze two different aspects of trade integration, and its impact on the location of FDI. First, we explore whether bilateral FDI is larger among pairs of countries that belong to the same free trade area. There are several channels through which this variable could have an impact on FDI. First, countries belonging to a FTA often make efforts to further reduce transaction costs, by homogenizing legal norms, setting up institutions to handle cross-border disputes, etc. Second, FDI is often established in order to take advantage of some characteristic of the host country (low wages, for example), but with the objective of re-exporting production to the source country. In these cases, the elimination of trade barriers between the host and the source countries will increase the attractiveness of the FTA partners vis-a-vis other potential hosts (or even domestic production in the source). Through these two channels, membership in the same FTA should increase bilateral foreign investment. A third argument goes in the opposite direction. If production is intended for the host country market, the bilateral elimination of trade barriers may reduce FDI, since it becomes cheaper to serve this market through trade. The effect on FDI of common membership in a FTA, then, is an empirical question, which we explore in Table 6.

As column (1) of Table 6 shows, the dummy for common membership in a FTA is positive, and significant. Although its impact is smaller than those of common language, colonial links or common border, it is still quite significant economically. A host country that is a FTA partner with a source country will receive 70 percent more FDI than a non-partner, other things equal.[46] This variable remains significant, although the estimated impact is somewhat smaller, when we introduce our second trade integration variable, to which we turn next.

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[46] exp (0.545) – 1 = 0.725

Does the size of the "extended market" matter? Columns (2) and (3) present the results of the estimation when our market size variable, which captures the size of the host country FTA partners, is included. The extended market size has positive and significant effects on the location of FDI. Doubling the size of a market to which the host country products have free access leads to a 1.5% increase in location of FDI. These effects do not seem at first sight to be very important economically. However, the small size of the coefficient can be deceiving. Take for example the case of Brazil, which belongs to Mercosur, together with Argentina, Uruguay and Paraguay. What would be the effect on Brazil of becoming a part of the Free Trade Area of the Americas? The size of the extended market (excluding Brazil) is in the case of the FTAA 23 times as large as the rest of Mercosur. This increase of 2200% in market access would result in a 33% increase in the stock of FDI, a fairly important effect. And this does not include the effects that would occur due to the common membership in FTA effect. If we repeat the exercise for a country such as Costa Rica, which belongs to the Central American Common Market, the extended market would increase by a factor of 138 by joining the FTAA. In this case, the effect would be to triple the stock of FDI. It is worth mentioning that the inclusion of the trade integration variables does not affect the importance of institutions in any significant way.[47]

It seems reasonable to think that the effect of changes in the extended market size on FDI location should depend on the size of the host country in question, and perhaps on the initial size of the extended market as well. It is also possible that, while countries benefit from joining a source country in a FTA, they may be hurt by the formation of other FTAs, which result in FDI stocks being diverted away from them. These are all issues that are left for future research.

6. Robustness

The left-hand truncated nature of our dependent variable can be a source of bias and inconsistency in the OLS estimates. In order to investigate the sensitivity of our results to the estimation method, in this section we estimate several specifications of the gravity model using the TOBIT method instead. As our main goal is to know the effects of institutions on FDI, we will focus our robustness analysis on these variables.[48] In Table 7 we present the TOBIT estimation of equation (1) using the different institutional variables defined earlier. With the exception of voice and accountability from the Kaufmann *et al*. database, all the institutional variables are positive and highly significant. These results are perfectly consistent with those of the OLS estimation.

Previously we made the point that the key variable for multinational firms is the position of FDI they hold in the host country. In this sense, in a cross-section analysis the stock data should be the variable to study in order to understand the location decisions, rather than the FDI flows. In spite of this argument, here we will show that the qualitative results still hold if we analyze the flow data instead. In Table 8 we repeat the estimations of equation (1) including the same institutional variables, but this time using the average bilateral flows of FDI

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[47] This can be seen by comparing the coefficients from this table with those of the last column of Table (2).

[48] We also carried out a robustness analysis for the other variables considered in the previous section. In general, the results are robust and are available upon request.

between 1995 and 1997 as dependent variable. Here again, the main results of the previous section hold. All the institutional variables are positive and highly significant, with the only exception of voice and accountability.

7. Conclusions

Foreign direct investment flows around the world have increased at very fast rates in recent times. At the same time, other forms of foreign financing for emerging countries have declined. What can emerging countries do to become more attractive to foreign investors, and benefit from their activities? In this paper, we study the determinants of bilateral stocks of FDI. In particular, we explore the role played by institutional variables, as well as by trading blocs, on FDI location.

We find that the quality of institutions has positive effects on FDI. The impact of institutional variables is statistically significant, and economically very important. Using our summary variable from Kaufmann *et al*. (1999), an improvement of one standard deviation in institutional quality results in increases in FDI stocks of nearly 130 percent. These results are robust to the use of a wide variety of institutional variables, collected from different sources, using different methodologies. Furthermore, they are also robust to different specifications and different estimation techniques.

This strong result suggests that countries that want to attract foreign investors will be well served by striving to improve the quality of their institutions, a strategy that should generate other positive externalities as well. The paper provides a preliminary view as to which institutional dimensions may matter more than others. In particular, market-unfriendly policies, excessive regulatory burden, and lack of commitment on the part of the government seem to play a major role in deterring FDI flows.

We also find that trade integration may have important effects on FDI. Firms in source countries tend to favor their FTA partners when deciding on the location of their foreign investments. A host country that is a FTA partner with a source country will receive 70 percent more FDI than a non-partner, other things equal**.** In addition, membership in a larger free trade area may increase the attractiveness of a host country as a location for FDI. In this regard, the creation of the Free Trade Area of the Americas should bode well for countries seeking to attract a larger amount of foreign direct investment.

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Table 1. Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
FDI Stock 1996 (mill. US$)	846	2,668	9,819	0.000	134,559
Average FDI Flows 95-97 (mill. US$)	752	414	1,634	0.000	28,411
Tax Rate on dividends	846	0.099	0.084	0.000	0.350
Quality of Infrastructure	756	4.463	1.436	2.040	6.730
FDI Restrictions	846	0.710	0.454	0.000	1.000
Homicides (per 100,000 people)	792	5.859	13.336	0.222	85.506
Higher Education (% of population > 25 years)	846	15.256	9.319	2.200	48.700
Average Inflation rate 91-95	846	0.227	0.450	0.012	2.477
Average Wages 1995 (current US$)	529	16,915	13,322	1,215	42,019
Voice and Accountability (Kaufman)	846	0.000	1.000	-2.624	1.160
Political Instability (Kaufman)	846	0.000	1.000	-2.394	1.462
Government Effectiveness (Kaufman)	846	0.000	1.000	-1.814	1.657
Regulatory Burden(Kaufman)	846	0.000	1.000	-2.364	1.514
Rule of Law (Kaufman)	846	0.000	1.000	-1.938	1.532
Graft (Kaufman)	846	0.000	1.000	-1.585	1.518
Repudiation of Contract Risk (ICRG)	846	8.775	1.122	5.000	10.000
Risk of Expropriation (ICRG)	846	9.681	0.510	8.000	10.000
Corruption (ICRG)	846	4.357	1.130	2.000	6.000
Rule of Law (ICRG)	846	5.110	1.098	2.000	6.000
Bureaucratic Quality (ICRG)	846	4.478	1.340	2.000	6.000
Taxes and Regulations (WBES)	566	0.306	0.183	0.025	0.660
Policy Instability (WBES)	566	0.306	0.203	0.030	0.721
Judiciary (WBES)	530	0.123	0.074	0.015	0.328
Corruption (WBES)	566	0.205	0.155	0.012	0.589
Street Crime (WBES)	566	0.223	0.172	0.012	0.612
Organized Crime (WBES)	566	0.209	0.167	0.026	0.705
Anti-competitive policies (WBES)	530	0.199	0.130	0.038	0.712

Note: The Variables used in logs in the regression are presented in their original levels.

Table 2. Attractiveness Variables, OLS Estimation:
Dependent Variable FDI stock 1996 ($log(1+ FDI_{ij})$)

	(1)	(2)	(3)	(4)	(5)	(6)
GDP	0.993**	0.928**	0.937**	0.904**	0.934**	0.927**
	(0.050)	(0.052)	(0.057)	(0.070)	(0.053)	(0.052)
GDP per capita	0.934**	0.713**	0.223	-0.487##	0.677**	0.681**
	(0.097)	(0.130)	(0.193)	(0.299)	(0.146)	(0.137)
Distance	-0.566**	-0.631**	-0.714**	-0.906**	-0.631**	-0.596**
	(0.089)	(0.093)	(0.097)	(0.116)	(0.093)	(0.097)
Common language	1.974**	1.452**	1.263**	0.988**	1.456**	1.669**
	(0.263)	(0.255)	(0.269)	(0.311)	(0.256)	(0.264)
Colonizer	0.535	1.388**	1.397*	1.588*	1.379**	1.406**
	(0.838)	(0.530)	(0.648)	(0.672)	(0.536)	(0.543)
Adjacency	1.037**	0.795*	0.625#	0.342	0.779*	0.774*
	(0.367)	(0.379)	(0.395)	(0.608)	(0.383)	(0.385)
Tax rate	-	-3.476**	-2.568*	-3.838**	-3.529**	-3.773**
		(0.940)	(1.006)	(1.178)	(0.958)	(1.017)
Higher Education	-	0.013#	0.015##	0.028*	0.014#	0.119
		(0.009)	(0.009)	(0.011)	(0.009)	(0.009)
Inflation	-	-0.436*	0.293	-0.012	-0.423*	-0.287
		(0.208)	(0.210)	(0.197)	(0.210)	(0.222)
Quality of infrastructure	-	-	0.316**	-	-	-
			(0.087)			
Average Wages	-	-	-	0.715**	-	-
				(0.182)		
FDI Restrictions Dummy	-	-	-	-	-0.099	-
					(0.189)	
Homicides	-	-	-	-	-	-0.110##
						(0.063)
R^2	0.643	0.689	0.708	0.708	0.689	0.693
Number of observations	989	846	756	529	846	792
RMSE	2.113	1.993	1.950	1.955	1.994	2.000

Note: All regressions include source dummies. GDP, GDP per capita, Distance, Homicides, and Average Wages are in logs. Inflation is $log(1+inflation)$. Huber-White heteroskedasticity robust standard errors reported in parentheses. ** 1% significant, * 5% significant, ## 10% significant, # 15% significant.

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Table 3. Kaufman *et al*. (1999a) Institutional Variables OLS Estimation: Dependent Variable FDI stock 1996 (*log(1+ FDI_{ij})*)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP	0.922**	0.963**	0.911**	1.169**	0.945**	0.978**	0.991**	0.995**
	(0.053)	(0.052)	(0.050)	(0.053)	(0.052)	(0.052)	(0.051)	(0.052)
GDP per capita	0.763**	0.401**	-0.572**	-0.090	0.019	-0.279#	-0.525**	-0.117
	(0.154)	(0.141)	(0.173)	(0.147)	(0.174)	(0.180)	(0.182)	(0.181)
Distance	-0.644**	-0.567**	-0.606**	-0.637**	-0.586**	-0.567**	-0.576**	-0.521**
	(0.010)	(0.095)	(0.086)	(0.088)	(0.092)	(0.090)	(0.088)	(0.095)
Common language	1.462**	1.346**	0.971**	1.106**	1.200**	1.049**	0.973**	1.178**
	(0.254)	(0.254)	(0.249)	(0.245)	(0.254)	(0.258)	(0.252)	(0.261)
Colonizer	1.377**	1.376*	1.173*	1.090*	1.280*	1.279*	1.182*	1.350*
	(0.524)	(0.556)	(0.486)	(0.472)	(0.541)	(0.526)	(0.514)	(0.582)
Adjacency	0.780*	0.876*	1.055**	1.028**	0.998**	1.065**	1.116**	1.019**
	(0.382)	(0.378)	(0.366)	(0.392)	(0.381)	(0.377)	(0.376)	(0.378)
Tax rate	-3.332**	-4.027**	-5.02**	-3.543**	-4.719**	-4.745**	-5.056**	-4.942**
	(1.006)	(0.948)	(0.855)	(0.857)	(0.932)	(0.901)	(0.876)	(0.940)
Higher Education	0.014**	0.013#	0.022**	0.003	0.015#	0.011	0.014#	0.009
	(0.009)	(0.009)	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Inflation	-0.440**	-0.254	0.369#	0.124	-0.076	-0.055	0.214	-0.074
	(0.212)	(0.207)	(0.194)	(0.191)	(0.206)	(0.188)	(0.191)	(0.198)
Voice (a)	-0.060	-	-	-	-	-	-	-
	(0.119)							
Political Instability and Violence (b)	-	0.387**	-	-	-	-	-	-
		(0.096)						
Government Effectiveness (c)	-	-	1.233**	-	-	-	-	-
			(0.125)					
Regulatory Burden (d)	-	-	-	1.008**	-	-	-	-
				(0.107)				
Rule of law (e)	-	-	-	-	0.674**	-	-	-
					(0.129)			
Graft (f)	-	-	-	-	-	0.943**	-	-
						(0.137)		
Average of (c)-(f)	-	-	-	-	-	-	1.179**	-
							(0.137)	
Average of (a)–(f)	-	-	-	-	-	-	-	0.822**
								(0.144)
Number of observations	846	846	846	846	846	846	846	846
R²	0.689	0.695	0.721	0.718	0.699	0.707	0.715	0.701
RMSE	1.994	1.977	1.889	1.901	1.962	1.937	1.910	1.955

Note: All regressions include source dummies. GDP, GDP per capita and Distance are in logs. Inflation is *log(1+inflation)*. All institutional variables have been standardized within the sample. Huber-White heteroskedasticity robust standard errors reported in parentheses. ** 1% significant, * 5% significant, ## 10% significant, # 15% significant.

Table 4. ICRG and La Porta *et al*. (1998) Variables OLS Estimation:
Dependent Variable FDI stock 1996 ($log(1+ FDI_{ij})$)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP	0.884**	0.847**	0.911**	0.914**	0.926**	0.896**	0.947**
	(0.052)	(0.053)	(0.055)	(0.052)	(0.052)	(0.052)	(0.064)
GDP per capita	0.355*	0.501**	0.606**	0.869**	0.603**	0.398*	0.854**
	(0.143)	(0.134)	(0.168)	(0.137)	(0.145)	(0.156)	(0.139)
Distance	-0.640**	-0.611**	-0.623**	-0.694**	-0.595**	-0.579**	-0.909**
	(0.091)	(0.092)	(0.094)	(0.097)	(0.099)	(0.096)	(0.107)
Common language	1.256**	1.360**	1.407**	1.505**	1.433**	1.332**	1.249**
	(0.260)	(0.245)	(0.260)	(0.254)	(0.254)	(0.255)	(0.263)
Colonizer	1.357**	1.276*	1.396**	1.390**	1.350**	1.346**	1.087*
	(0.520)	(0.515)	(0.532)	(0.536)	(0.524)	(0.522)	(0.559)
Adjacency	0.897*	0.911*	0.825*	0.657##	0.866*	0.950*	0.226
	(0.382)	(0.381)	(0.382)	(0.389)	(0.383)	(0.382)	(0.433)
Tax rate	-4.168**	-4.321**	-3.457**	-3.437**	-3.675**	-3.867**	-1.872*
	(0.942)	(0.934)	(0.944)	(0.924)	(0.951)	(0.958)	(0.947)
Higher Education	0.022*	0.019*	0.013	0.018*	0.014#	0.014#	-0.023*
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.011)
Inflation	0.029	-0.143	-0.388##	-0.515*	-0.351#	-0.178	0.227
	(0.208)	(0.186)	(0.217)	(0.215)	(0.218)	(0.220)	(0.197)
Risk of Repudiation of contract by Government	0.439**	-	-	-	-	-	-
	(0.085)						
Risk of expropriation	-	0.875**	-	-	-	-	-
		(0.157)					
Bureaucratic Quality	-	-	0.083	-	-	-	-
			(0.093)				
Corruption	-	-	-	-0.217*	-	-	-
				(0.087)			
Rule of Law	-	-	-	-	0.121	-	-
					(0.092)		
First Principal Component of ICRG variables	-	-	-	-	-	0.197**	-
						(0.067)	
Shareholder Rights	-	-	-	-	-	-	0.493**
							(0.077)
Number of Observations	846	846	846	846	846	846	649
R^2	0.699	0.701	0.690	0.692	0.690	0.693	0.726
RMSE	1.962	1.957	1.993	1.987	1.992	1.983	1.913

Note: All regressions include source dummies. GDP, GDP per capita and Distance are in logs. Inflation is *log(1+inflation)*. Huber-White heteroscedasticity robust standard errors reported in parentheses. ** 1% significant, * 5% significant, ## 10% significant, # 15% significant.

Table 5. WBES Institutional Variables OLS Estimation:
Dependent Variable FDI stock 1996 ($log(1+ FDI_{ij})$)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP	0.980**	0.947**	0.918**	0.925**	0.931**	0.931**	0.966**
	(0.061)	(0.063)	(0.063)	(0.064)	(0.065)	(0.064)	(0.063)
GDP per capita	1.058**	0.785**	0.565**	0.665**	0.824**	0.614**	0.614**
	(0.164)	(0.168)	(0.182)	(0.182)	(0.178)	(0.183)	(0.189)
Distance	-0.545**	-0.369**	-0.393**	-0.374**	-0.410**	-0.401**	-0.414**
	(0.109)	(0.115)	(0.114)	(0.115)	(0.115)	(0.112)	(0.118)
Common language	0.925**	1.140**	1.261**	1.147**	1.150**	1.064**	1.425**
	(0.318)	(0.328)	(0.346)	(0.325)	(0.342)	(0.342)	(0.359)
Colonizer	1.986**	1.800**	1.480**	1.830**	1.858**	1.830**	1.563**
	(0.529)	(0.575)	(0.532)	(0.524)	(0.611)	(0.603)	(0.572)
Adjacency	1.035**	0.987**	1.029**	1.033**	0.955*	1.035**	0.908*
	(0.382)	(0.383)	(0.378)	(0.387)	(0.391)	(0.382)	(0.391)
Tax rate	-2.399*	-2.668*	-4.304**	-2.799**	-2.480*	-2.914**	-3.380**
	(1.051)	(1.097)	(1.218)	(1.081)	(1.111)	(1.083)	(1.150)
Higher Education	-0.008	0.006	0.005	0.009	0.006	0.012	0.001
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Inflation	0.305	-0.152	-0.426*	-0.442*	-0.450*	-0.474*	-0.563**
	(0.246)	(0.238)	(0.216)	(0.207)	(0.214)	(0.206)	(0.212)
Taxes and Regulations	-3.647**	-	-	-	-	-	-
	(0.611)						
Political Instability	-	-1.660**	-	-	-	-	-
		(0.519)					
Judiciary	-	-	-5.554**	-	-	-	-
			(0.129)				
Corruption	-	-	-	-2.050**	-	-	-
				(0.670)			
Street crime	-	-	-	-	-0.708	-	-
					(0.576)		
Organized Crime	-	-	-	-	-	-1.966**	-
						(0.627)	
Anti-competitive practices by government or private enterprises	-	-	-	-	-	-	-1.784**
							(0.839)
Number of Observations	566	566	566	566	566	566	530
R^2	0.728	0.714	0.723	0.714	0.709	0.714	0.716
RMSE	1.879	1.926	1.913	1.925	1.941	1.924	1.935

Note: All regressions include source dummies. GDP, GDP per capita and Distance are in logs. Inflation is *log(1+inflation)*. Huber-White heteroscedasticity robust standard errors reported in parentheses. ** 1% significant, * 5% significant, ## 10% significant, # 15% significant.

Table 6. Trade Integration Variables OLS Estimation:
Dependent Variable FDI stock 1996 *log(1+ FDI$_{ij}$)*

	(1)	(2)	(3)
GDP	0.982**	0.989**	0.979**
	(0.052)	(0.052)	(0.052)
GDP per capita	-0.136	-0.123	-0.138
	(0.181)	(0.179)	(0.179)
Distance	-0.425**	-0.533**	-0.452**
	(0.098)	(0.095)	(0.099)
Common language	1.220**	1.207**	1.238**
	(0.262)	(0.263)	(0.255)
Colonizer	1.346*	1.343*	1.341*
	(0.589)	(0.576)	(0.584)
Adjacency	1.002**	0.951*	0.946*
	(0.388)	(0.381)	(0.388)
Tax	-4.862**	-4.385**	-4.393**
	(0.937)	(0.961)	(0.956)
Higher Education	0.011	0.012	0.013$^{\#}$
	(0.009)	(0.009)	(0.009)
Inflation	-0.046	-0.043	-0.024
	(0.197)	(0.191)	(0.191)
Same FTA	0.545*	-	0.450$^{\#\#}$
	(0.248)		(0.250)
Market size	-	0.015*	0.013*
		(0.006)	(0.006)
Average of Kaufman variables	0.867**	0.817**	0.783**
	(0.165)	(0.166)	(0.167)
R^2	0.703	0.704	0.705
Number of observations	846	846	846
RMSE	1.950	1.949	1.946

Note: All regressions include source dummies. GDP, GDP per capita and Distance are in logs. Inflation is *log(1+inflation)*. The institutional variable has been standardized within the sample. Huber-White heteroscedasticity robust standard errors reported in parentheses. ** 1% significant, * 5% significant, $^{\#\#}$ 10% significant, $^{\#}$ 15% significant.

Table 7. Institutional Variables TOBIT Estimation:
Dependent Variable FDI stock 1996 ($log(1+ FDI_{ij})$)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GDP	1.268**	1.320**	1.264**	1.531**	1.315**	1.362**	1.353**	1.246**	1.168**
	(0.077)	(0.076)	(0.074)	(0.079)	(0.077)	(0.077)	(0.077)	(0.077)	(0.086)
GDP per capita	1.235**	0.636**	-0.669**	0.052	0.045	-0.316	0.020	0.511*	1.079**
	(0.218)	(0.196)	(0.230)	(0.207)	(0.236)	(0.240)	(0.248)	(0.210)	(0.189)
Distance	-0.994**	-0.850**	-0.861**	-0.910**	-0.862**	-0.822**	-0.785**	-0.845**	-1.218**
	(0.136)	(0.132)	(0.118)	(0.121)	(0.126)	(0.124)	(0.133)	(0.132)	(0.142)
Common language	1.974**	1.802**	1.298**	1.515**	1.572**	1.374**	1.598**	1.727**	1.530**
	(0.339)	(0.340)	(0.332)	(0.331)	(0.340)	(0.344)	(0.349)	(0.342)	(0.341)
Colonizer	1.748**	1.767*	1.453*	1.397*	1.635*	1.620*	1.721*	1.730**	1.436*
	(0.672)	(0.716)	(0.624)	(0.618)	(0.705)	(0.674)	(0.730)	(0.673)	(0.681)
Adjacency	0.168	0.353	0.634	0.582	0.540	0.639	0.542	0.495	-0.405
	(0.503)	(0.499)	(0.489)	(0.520)	(0.504)	(0.504)	(0.503)	(0.505)	(0.524)
Tax rate	-3.790*	-5.049**	-6.142**	-4.302**	-6.092**	-5.964**	-6.070**	-4.994**	-2.027**
	(1.552)	(1.491)	(1.293)	(1.335)	(1.431)	(1.375)	(1.454)	(1.504)	(1.404)
Higher Education	0.010	0.006	0.016	-0.005	0.008	0.001	0.001	0.007	-0.033*
	(0.012)	(0.012)	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.014)
Inflation	-0.587*	-0.340	0.474##	0.080	-0.051	-0.057	-0.133	-0.132	0.265
	(0.293)	(0.278)	(0.249)	(0.257)	(0.272)	(0.243)	(0.264)	(0.290)	(0.241)
Voice (a)	-0.265#	-	-	-	-	-	-	-	-
	(0.162)								
Political Instability (b)	-	0.464**	-	-	-	-	-	-	-
		(0.141)							
Government Effectiveness (c)	-	-	1.630**	-	-	-	-	-	-
			(0.177)						
Regulatory Burden (d)	-	-	-	1.164**	-	-	-	-	-
				(0.158)					
Rule of law (e)	-	-	-	-	0.954**	-	-	-	-
					(0.185)				
Graft (f)	-	-	-	-	-	1.289**	-	-	-
						(0.191)			
Average (a) – (f)	-	-	-	-	-	-	0.983**	-	-
							(0.205)		
ICRG (first component)	-	-	-	-	-	-	-	0.328**	-
								(0.096)	
Shareholder Rights	-	-	-	-	-	-	-	-	0.621**
									(0.106)
Number of observations	846	846	846	846	846	846	846	846	649
Log likelihood	-1516.3	-1512.5	-1476.7	-1490.9	-1504.1	-1494.4	-1505.8	-1511.1	-1191.1
σ	2.558	2.539	2.395	2.441	2.507	2.467	2.509	2.536	2.370

Note: All regressions include source dummies. GDP, GDP per capita and Distance are in logs. Inflation is *log(1+inflation)*. The Kaufman institutional variables have been standardized within the sample. Huber-White heteroscedasticity robust standard errors reported in parentheses. ** 1% significant, * 5% significant, ## 10% significant, # 15% significant.

Table 8. Institutional Variables OLS Estimation:
Dependent Variable FDI Average Flows 1995 - 1997 ($log(1+ FDI_{ij})$)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GDP	0.649**	0.685**	0.648**	0.833**	0.671**	0.690**	0.702**	0.637**	0.648**
	(0.041)	(0.041)	(0.040)	(0.042)	(0.041)	(0.041)	(0.041)	(0.041)	(0.045)
GDP per capita	0.474**	0.163#	-0.431**	-0.199#	-0.079	-0.225##	-0.137	0.165	0.456**
	(0.111)	(0.106)	(0.123)	(0.107)	(0.126)	(0.127)	(0.131)	(0.111)	(0.099)
Distance	-0.501**	-0.434**	-0.465**	-0.488**	-0.448**	-0.441**	-0.413**	-0.443**	-0.584**
	(0.069)	(0.065)	(0.060)	(0.061)	(0.064)	(0.063)	(0.066)	(0.065)	(0.071)
Common language	1.085**	0.999**	0.774**	0.831**	0.905**	0.829**	0.907**	0.992**	0.947**
	(0.201)	(0.205)	(0.203)	(0.193)	(0.203)	(0.208)	(0.211)	(0.204)	(0.201)
Colonizer	0.890*	0.897##	0.765##	0.688##	0.831##	0.836##	0.879##	0.873*	0.440
	(0.415)	(0.459)	(0.423)	(0.390)	(0.450)	(0.434)	(0.471)	(0.417)	(451)
Adjacency	0.481*	0.558**	0.683**	0.701**	0.643**	0.671**	0.643**	0.608**	0.428##
	(0.221)	(0.214)	(0.215)	(0.223)	(0.216)	(0.219)	(0.216)	(0.216)	(0.244)
Tax rate	-2.773**	-3.379**	-3.964**	-3.119**	-3.847**	-3.768**	-3.910**	-3.265**	-2.221**
	(0.679)	(0.653)	(0.581)	(0.877)	(0.635)	(0.615)	(0.642)	(0.655)	(0.627)
Higher Education	0.012##	0.010#	0.015*	0.003	0.011##	0.008	0.007	0.011#	-0.017*
	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Inflation	-0.320*	-0.179#	0.200##	0.088	-0.070	-0.077	-0.083	-0.128	-0.037
	(0.126)	(0.121)	(0.110)	(0.112)	(0.120)	(0.107)	(0.116)	(0.132)	(0.117)
Voice (a)	-0.102	-	-	-	-	-	-	-	-
	(0.079)								
Political Instability (b)	-	0.280**	-	-	-	-	-	-	-
		(0.065)							
Government Effectiveness (c)	-	-	0.784**	-	-	-	-	-	-
			(0.090)						
Regulatory Burden (d)	-	-	-	0.726**	-	-	-	-	-
				(0.075)					
Rule of law (e)	-	-	-	-	0.454**	-	-	-	-
					(0.088)				
Graft (f)	-	-	-	-	-	0.583**	-	-	-
						(0.096)			
Average (a) – (f)	-	-	-	-	-	-	0.519**	-	-
							(0.098)		
ICRG (first component)	-	-	-	-	-	-	-	0.140**	-
								(0.044)	
Shareholder Rights	-	-	-	-	-	-	-	-	0.395**
									(0.052)
Number of observations	752	752	752	752	752	752	752	752	577
R^2	0.747	0.752	0.770	0.773	0.754	0.758	0.755	0.750	0.792
RMSE	1.345	1.332	1.283	1.274	1.325	1.314	1.323	1.338	1.240

Note: All regressions include source dummies. GDP, GDP per capita and Distance are in logs. Inflation is *log(1+inflation)*. The Kaufman institutional variables have been standardized within the sample. Huber-White heteroscedasticity robust standard errors reported in parentheses. ** 1% significant, * 5% significant, ## 10% significant, # 15% significant.
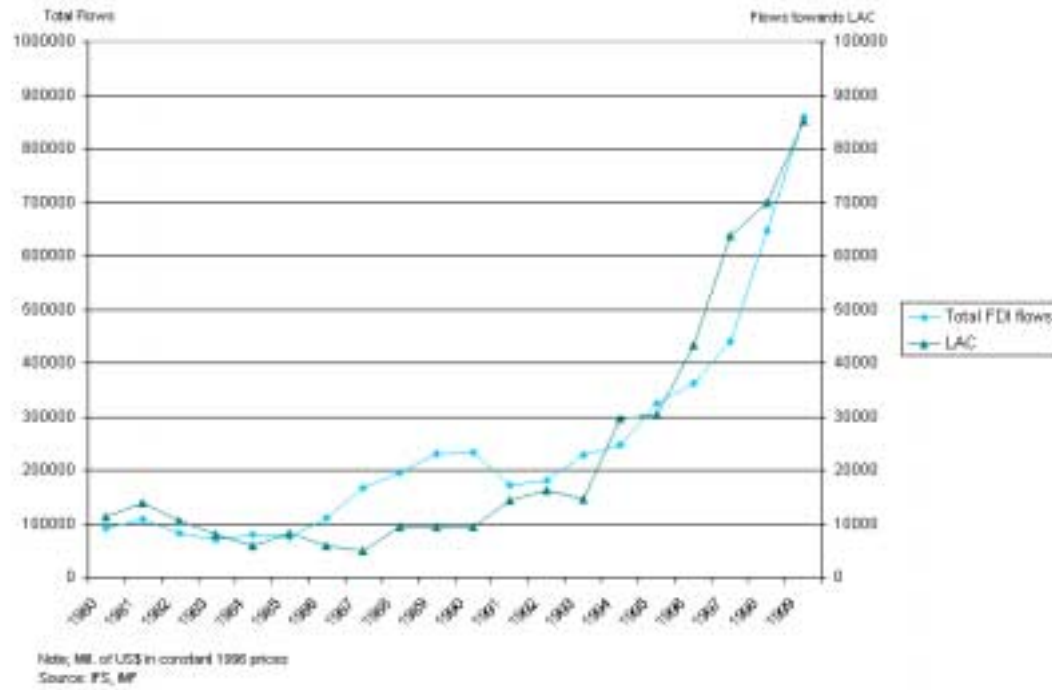
Figure 1: Annual FDI flows, 1960-99

Total Flows

Flows towards LAC

Legend: Total FDI flows, LAC

Note, Mill. of US$ in constant 1995 prices
Source: IFS, IMF

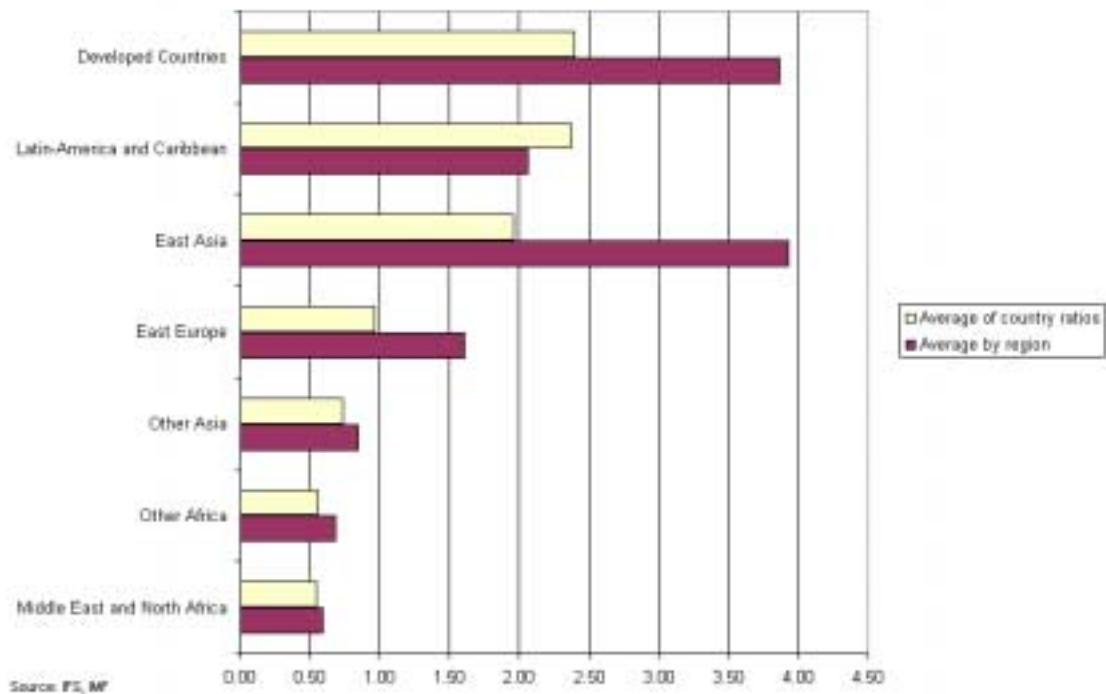## Figure 2: Net Private Capital Inflows, Portfolio, FDI and Loans in Latin America, 1990-99

Legend: Net private Capital Inflows, Portfolio, FDI, Loans

Note: As percentage of GDP
Source: Balance of Payments, IMF
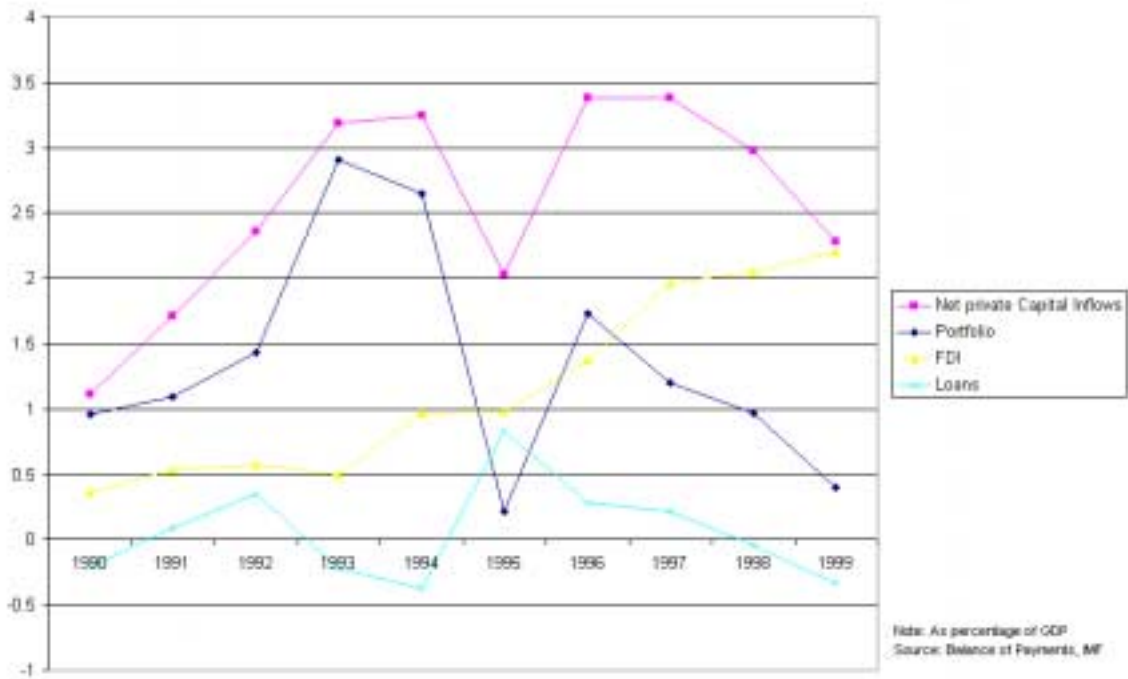
Figure 3: Distribution of FDI Inflow 1997-99

Legend:
- Middle East and North Africa
- Other Africa
- Other Asia
- East Europe
- East Asia
- Latin-America and Caribbean
- Developed Countries

70%
11%
6%
4%
7%
1%
1%
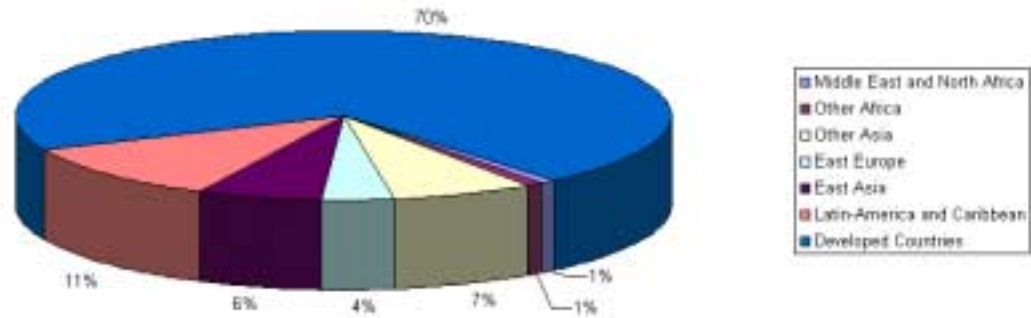
Source: IFS, IFM.

Figure 4: Total Inflows as percentage of GDP by Region

Legend:
- Average of country ratios
- Average by region

Regions (top to bottom): Developed Countries, Latin-America and Caribbean, East Asia, East Europe, Other Asia, Other Africa, Middle East and North Africa

Axis: 0.00, 0.50, 1.00, 1.50, 2.00, 2.50, 3.00, 3.50, 4.00, 4.50

Source: IFS, IMF

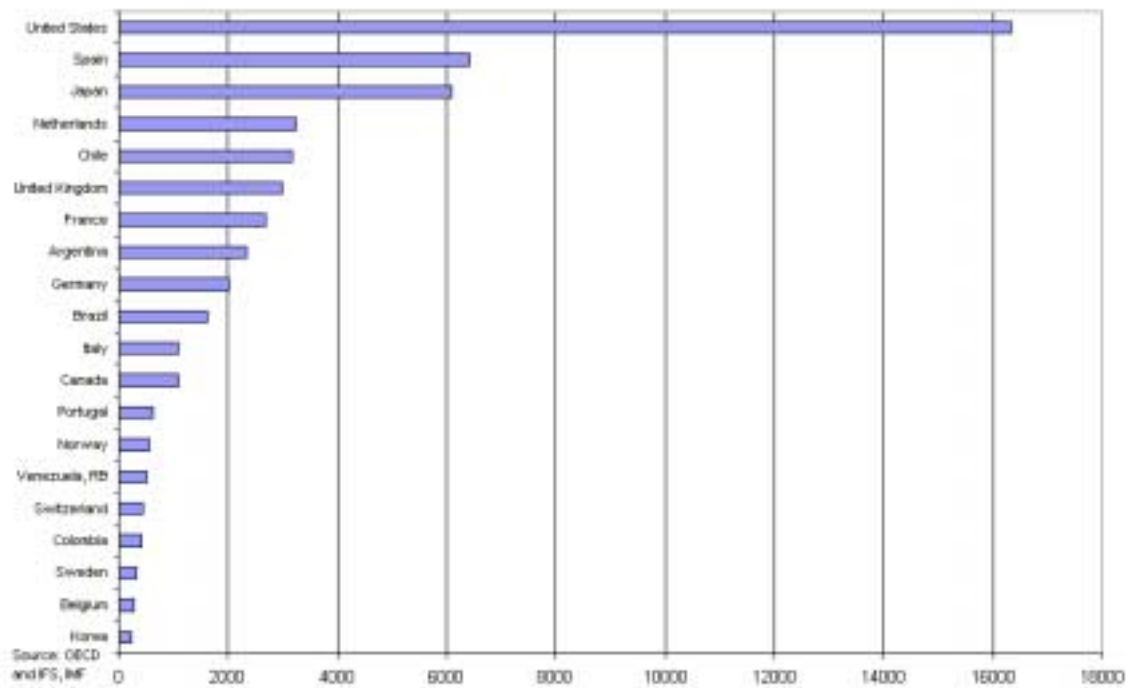## Figure 5: Distribution of FDI inflows in Latin-America and Caribbean countries
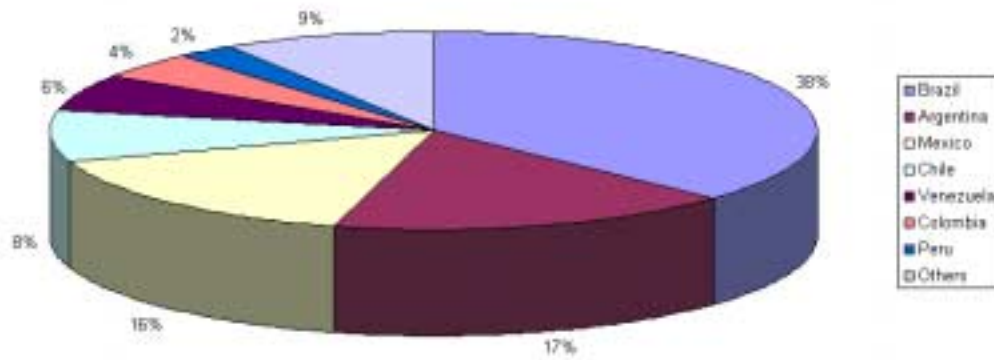
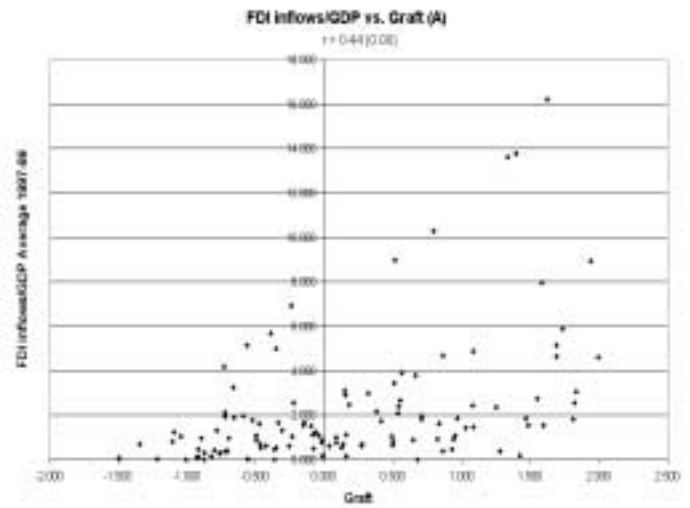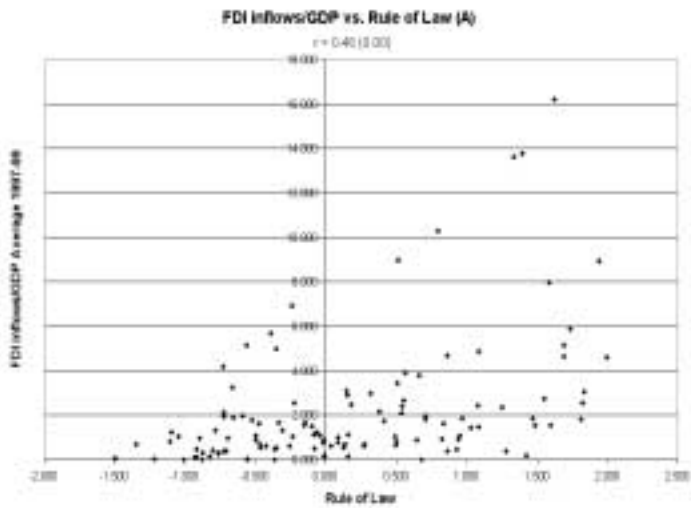
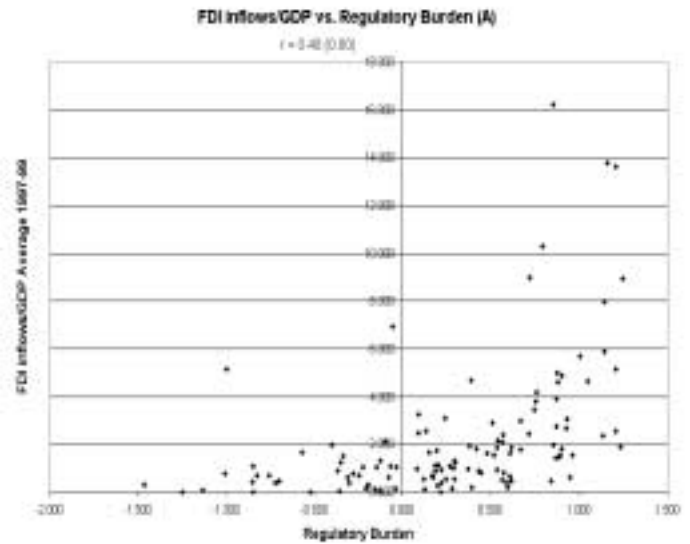Source, IFS, IMF
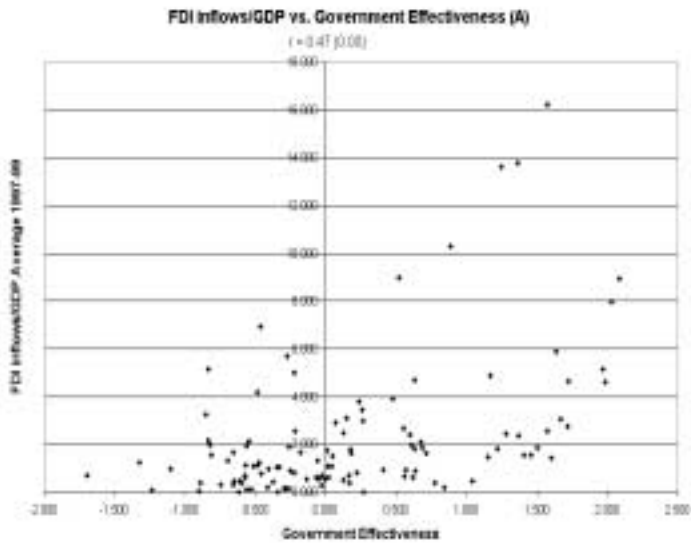
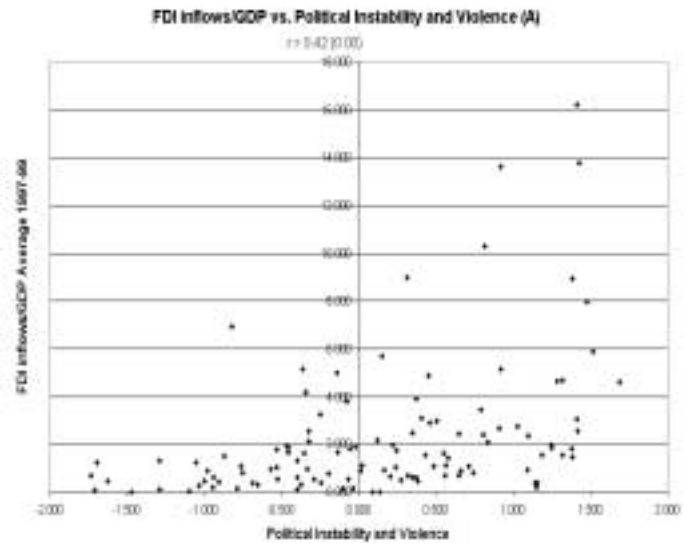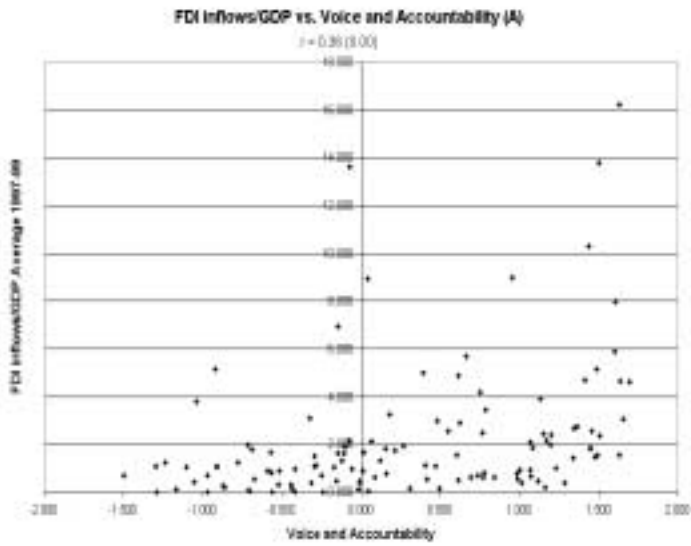## Figure 6: Inflows as percentage of GDP

Source: IFS, IMF

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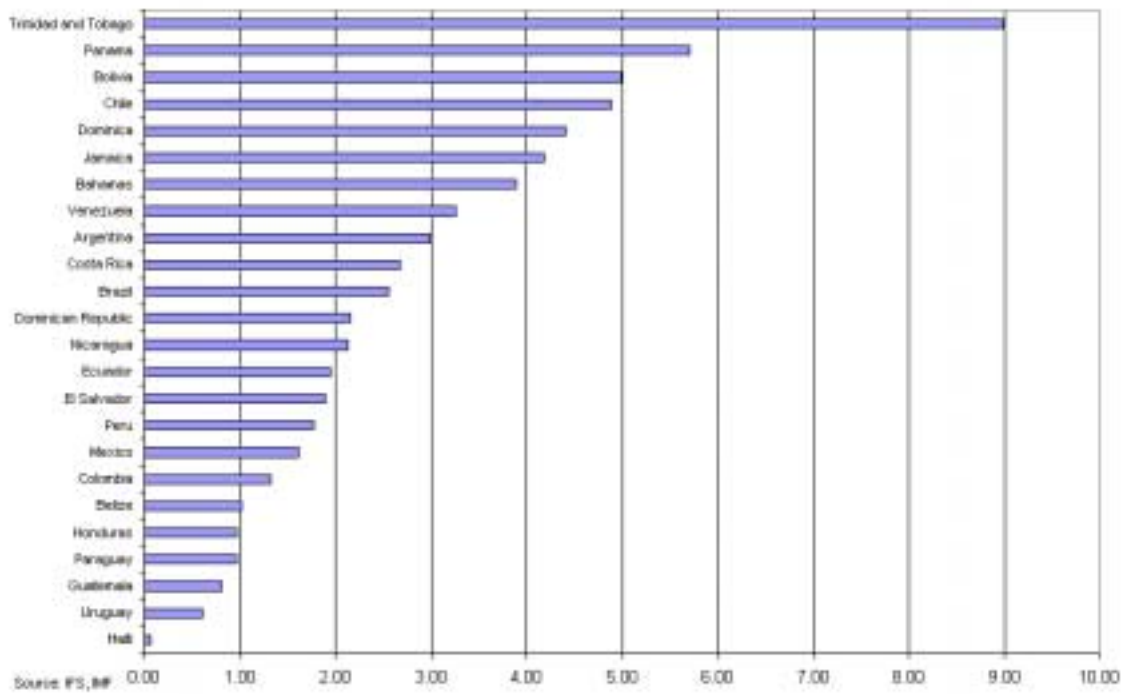
Figure 7: Inflows towards Latin-American and Caribbean countries 1997

Panel 1. Institutional Variables and FDI Inflows/GDP: Simple Correlations

FDI Inflows/GDP vs. Voice and Accountability (A)

FDI Inflows/GDP vs. Political Instability and Violence (A)

FDI Inflows/GDP vs. Government Effectiveness (A)

FDI Inflows/GDP vs. Regulatory Burden (A)

FDI Inflows/GDP vs. Rule of Law (A)

FDI Inflows/GDP vs. Graft (A)

Panel 2. Institutional Variables and FDI Inflows/GDP: Partial Correlations
(holding constant for GDP per capita)

FDI Inflows/GDP vs. Voice and Accountability (B)

FDI Inflows/GDP vs. Political Instability and Violence (B)

FDI Inflows/GDP vs. Government Effectiveness (B)

FDI Inflows/GDP vs. Regulatory Burden (B)

FDI Inflows/GDP vs. Rule of Law (B)

FDI Inflows/GDP vs. Graft (B)