

Governance Infrastructure and U.S. Foreign Direct Investment

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Abstract

This paper examines the statistical importance of governance infrastructure as a determinant of U.S. foreign direct investment. In broad terms, governance infrastructure represents attributes of legislation, regulation, and legal systems that condition freedom of transacting, security of property rights and transparency of government and legal processes. Our econometric analysis employs a two-stage estimation procedure. In the first stage, the probability that a country is an FDI recipient is estimated. The results indicate that countries that fail to achieve a minimum threshold of effective governance are unlikely to receive any U.S. FDI. Countries that receive no U.S. FDI are typically countries that do not promote free and transparent markets, have ineffective governments, and are often countries whose legal systems are not rooted in English Common Law. In the second stage, the analysis is restricted to those countries that did receive FDI flows. The estimated equations focus on the determinants of the *amount* of FDI received. Given that a country is a recipient of U.S. FDI, governance infrastructure, including the nature of the legal system, is an important determinant of the amount received.

Keywords: foreign direct investment, capital flows, multinational corporations, infrastructure, governance

Introduction

The international business literature has recognized the importance of country-specific political and institutional factors as determinants of foreign direct investment (FDI) flows. Empirical analyses of FDI routinely include some kind of variable to control for inter-country differences in the broad political environment (Tuman and Emmert, 1999; Mody and Srinivasan, 1998; Stevens, 2000; Bevan and Estrin, 2000; Morisset, 2000; Altomonte, 2000; Wei, 2000), albeit with somewhat mixed results (Dawson, 1998). At the same time, recent empirical evidence indicates that cross-country differences in growth and productivity are related to differences in political, institutional and legal environments (OECD, 2001; Hall and Jones, 1999; Keefer and Knack, 1997; Knack and Keefer, 1995; Levine, 1998; Kaufman et. al. 1999b).¹

We refer to these broad political and legal institutions as the governance infrastructure of a country. The governance infrastructure of a country helps to define its investment environment. A favorable governance infrastructure creates beneficial conditions for investment and economic growth. Since the investment environment of a country affects both domestic and foreign investors, we expect that FDI will be attracted to regions characterized by more favourable governance infrastructures, all other things constant. Also, since inward FDI contributes to improved productivity in developed host economies (Blomstrom, Kokko and Globerman, 2001), the linkage between FDI and governance infrastructure is of obvious policy relevance. Our paper therefore focuses on the linkage between specific measures of governance infrastructure and U.S. FDI flows.

This paper extends the FDI literature in several ways.² First, we utilize newly developed measures to examine the effects of governance infrastructure on U.S. FDI outflows to a broad sample of developed and developing countries over the period 1995-97. Specifically, we employ the indices developed by Kaufman et. al. (1999a), and the legal classification systems developed by LaPorta et. al. (1998a,b) and the University of Ottawa Law School to measure governance infrastructure.³ These various measures, described below, cover a broad range of institutional, legal and policy characteristics available for a large sample of countries. In particular, they include factors not commonly found in the FDI literature, notably classifications of the nature of the legal system, as well as measures of the effectiveness of government, the regulatory environment, and the degree of graft.

Second, we use a two-stage estimation procedure to account for the possibility of sample selection bias (Heckman, 1979). In the present context, sample selection bias may arise if the sample is limited to countries that are recipients of U.S. FDI. In fact, there are a large number of countries in which either no positive FDI flows from the United States were recorded for our sample period, or the country was not listed at all in the Bureau of Economic Analysis data that we employ. In order to avoid sample selection bias, we first estimate the likelihood of a country enjoying positive inflows of FDI from the United States and then estimate the determinants of the magnitude of the positive inflows. In the first stage, the probit method is used to estimate the probability that the US invests in a particular country. In the second stage, ordinary least squares estimates of the determinants of the amount of FDI (given that it is positive) are provided. The second stage equation includes Mills' Ratio which is derived from the first-stage estimates and which accounts for selection bias. Separate estimates of our equations are provided for samples including both developing and developed countries, as well as for developing countries, separately.

Finally, we investigate the possibility that the determinants of FDI, and in particular the importance of governance infrastructure, are different across industries. It is often suggested that an increasing share of FDI is either skill-seeking or efficiency-seeking, often in high-technology industries (Dunning, 1993). Such investments are primarily attracted by the availability of skilled human capital, as well as by the availability of infrastructure investments, particularly in transportation and communications. We therefore provide separate estimates for U.S. FDI flows in two high-technology industries.

Our results indicate that governance infrastructure is an important determinant of location choice by U.S. investors. Countries that receive no U.S. FDI are typically countries that have weak governance structures, and are often countries whose legal systems are not rooted in English Common Law. For those countries that do not receive FDI, investments in governance infrastructure should result in more foreign investment. Since most of the countries that do not receive U.S. FDI are small and developing, the benefits, in terms of inflows, are most pronounced for those countries. Moreover, given that a country is a recipient of U.S. FDI, governance infrastructure, including the nature of the legal system, is an important determinant of the amount received. Thus, investments in better governance infrastructure will also increase FDI inflows.

The study proceeds as follows. In the next section, we discuss the definition and measurement of governance infrastructure. We then present the model to be estimated, and the data employed, followed by a discussion of the estimation technique and results. A summary and conclusions is provided in the final section.

Governance Infrastructure

Broadly speaking, governance infrastructure comprises public institutions and policies created by governments as a framework for economic, legal and social relations. We are most concerned with those elements of the governance infrastructure that can affect the investment decisions of multinational corporations (MNCs). A beneficial governance infrastructure might therefore include: an effective, impartial and transparent legal system that protects property and individual rights; public institutions that are stable, credible and honest; and government policies that favour free and open markets.⁴ These conditions encourage FDI, and presumably private domestic investment as well, by protecting privately held assets from arbitrary direct or indirect appropriation. In a related manner, the same conditions encourage sunk cost investments by MNCs that facilitate efficient operation in host countries. Thus, our basic hypothesis is that countries with better governance infrastructures are more likely to attract U.S. FDI, other things equal.

As we use the term, governance infrastructure is similar to the notion of social infrastructure used by Hall and Jones (1999) in that the definition includes both institutions and policies. We prefer the term governance infrastructure because it is readily distinguishable from related notions of physical infrastructure, social capital and human capital.⁵

We measure governance infrastructure using several indicators. We first employ the six governance measures estimated by Kaufmann, Kraay, and Zoido-Lobaton (1999a and 1999b). These indices (which we will refer to as KKZL indices) describe various aspects of the governance structures of a broad cross-section of countries. The six indices measure: 1. Voice, political freedom and civil liberties (VOICE); 2. Political instability, terrorism and violence (STAB); 3. The rule of law, crime, contract enforcement and property rights (LAW); 4. The level of graft and corruption in public and private institutions (GRAFT); 5. The extent of regulation and market openness, including tariffs and import controls (REG); and 6. Measures of government effectiveness and efficiency (GOV).

The indices have been estimated (using an unobserved components model) employing 31 different qualitative indicators from 13 different sources, including BERI, DRI/McGraw Hill, the Heritage Foundation, the World Bank, the World Economic Forum and the Economist Intelligence Unit.⁶ Thus, they are effectively meta-indices encompassing a wide range of measures and sources, and they should provide more precise measures of governance than individual indicators. Another advantage is that the measures are available for a large number of countries (between 145 and 158). A disadvantage is that they are estimated, and thus subject to measurement error. In addition, the indices are so highly correlated with each other that it is very difficult to use them all in a single equation. We have therefore created an aggregate measure estimated as the first principal component of the six measures. We refer to this aggregated governance infrastructure index as GII. We also consider the role of the individual indices as explained below.

Although the KKZL measures are comprehensive, and do provide an index of the rule of law, they do not explicitly account for the recent literature which focuses on the importance of the origins of the legal system.⁷ In particular, LaPorta et. al. (1998a, 1999, 2001) and Djankov et. al. (2002) argue that countries whose commercial legal systems are rooted in English Common Law better protect shareholders and creditors, better preserve property rights, and are associated with less regulation of markets. These studies therefore suggest that English Common Law facilitates the development of capital markets and investment opportunities. We therefore expect that countries whose legal systems originate in English Common Law will attract more FDI. Conversely, the greater formalism of civil law regimes is associated with higher expected durations of judicial proceedings, more corruption, less honesty and fairness and inferior access to justice. As a consequence, investment incentives in civil law regimes should be weaker than in common law regimes, all other things constant.

LaPorta et. al. (1998b) have classified a large number of countries according to the origin of their commercial or corporate legal codes. Specifically, they classify countries' legal systems as having their origins in English Common Law (ENGLAW), civil law of French, German or Scandinavian origin (FRELAW, GERLAW, SCALAW), or socialist law (SOCLAW). One disadvantage of this measure is that it classifies all formerly communist countries in the last category, and therefore possibly conflates the role of legal systems with other factors.

The University of Ottawa Faculty of Law provides an alternative taxonomy. They classify legal systems according to whether their origins are in common or civil law, but provide somewhat different categories within each. Pure common law systems (COMLAW1) are based primarily on English Common Law, and assign a pre-eminent position to case law, not legislation. Mixed common law systems (COMLAW2) blend English Common Law with elements of customary or religious (usually Muslim) law. Pure civil law (CIVLAW1) systems are based on the Roman system and give precedence to codified, written law; mixed civil law (CIVLAW2) systems combine elements of civil law with customary or religious law. Under this classification method, most formerly communist countries are defined as having either pure or mixed civil law systems.

We therefore measure governance infrastructure in a number of ways. We view the two legal system classifications as substitutes. Hence, we do not consider them in the same estimating equation. The relationship among these measures is further discussed below.

Modelling U.S. FDI Flows

The basic question we seek to address is whether governance infrastructure, as measured by some or all of the indicators discussed above, affects U.S. FDI flows across countries. Our two-stage model is summarized in the following way:

$$(1) FDI_{it}^* = \alpha_0 + \alpha_1 \text{GOVERNANCE}_{it} + \alpha_2 X1_{it-1} + \varepsilon_{1it},$$

where FDI_{it}^* is a latent variable, defined such that $FDI_{it} = 1$ (country i is a recipient of U.S. FDI) if $FDI_{it}^* > 0$ and $FDI_{it} = 0$ (country i is not a recipient of U.S. FDI) if $FDI_{it}^* = 0$ or < 0 ;⁸ GOVERNANCE is one or more of the measures (or sets of measures) defined above; $X1$ is a vector of control variables; and ε_{1it} is a normally distributed error term. We hypothesize that $\alpha_1 > 0$ for the continuous governance measures, and for countries whose legal systems originate in English Common Law.

$$(2) \text{Ln } FDI_{it} = \beta_0 + \beta_1 \text{GOVERNANCE}_{it} + \beta_2 X2_{it-1} + \beta_3 \text{Mills} + \varepsilon_{2it},$$

where $\ln FDI$ is the natural logarithm of the dollar value of U.S. FDI flows received by country i in time t ; GOVERNANCE is as above; X_2 is a vector of control variables, some of which are the same as X_1 above; Mills is the inverse of Mills' ratio derived from (1); and ε_{2it} is a normally distributed error term. We hypothesize that $\beta_1 > 0$ for the continuous governance measures, and for countries whose legal systems originate in English Common Law. The natural log value of FDI is utilized so as to minimize the influence of .extreme. values of that variable. In fact, our results, to be reported, are insensitive to the precise specification of the FDI variable.

Equation (1) is a simple Probit specification, whereby a country is an FDI recipient if it surpasses a critical value of an index, FDI^* . The value of the index is a linear combination of its governance infrastructure (GOVERNANCE) and other variables (X_1). Equation (2) is a basic linear equation, confined to observations where $FDI > 0$. It includes the inverse of Mills' ratio to test for sample selection bias (Heckman, 1979).

Data and Measurement

The data for this study were obtained for a cross-section of countries over the period 1994-1997. The variables and their sources are summarized in Table 1, and are discussed in more detail below. The FDI data are measured over the three-year period, 1995-97, while other explanatory variables were measured, where possible, using a one-year lag. Thus, for each country there are a maximum of three years of data. At the time the data were collected, 1997 marked the last year for which FDI data were available, and this determined the end-date. At the same time, several key independent variables were available only from the mid-1990s, which conditions the chosen start-date. For some variables, data were available for every year, but for others, including the governance infrastructure measures, they were not. Hence, our ability to create a complete time-series panel was limited. Nevertheless, we pooled the data to increase sample size and the reliability of the estimates.⁹

The number of observations was limited by the availability of data. For the first-stage probit estimates, the number of sample countries was limited by the availability of the KKZL indices and other variables. Specifically, we were able to compile data for 143 countries, of which 88 were recipients of positive U.S. FDI flows in at least one year. Some data were missing for individual years, resulting in 404 observations of which 223 were positive. The 88 countries (223 observations) served as the basis for the second-stage estimates. Developing and transition

economies were defined as non-OECD members excepting Hong Kong and Singapore, resulting in 115 countries so classified (320 observations), of which 62 (152 observations) were FDI recipients. Given the limited industry detail regarding U.S. FDI, two industries were explicitly identified as technology-intensive: electrical equipment and chemicals. In order to ensure a sufficient number of observations, we pooled these two industries, resulting in 39 countries (108 observations) that were recipients of high-tech FDI.

The Dependent Variables

We measure FDI in terms of flows, mainly for practical reasons relating to data availability. In the first stage of the estimation process, the dependent variable is defined to take a value of unity if there were positive U.S. FDI flows to the sample country in a given year during the sample period (1995-97), and zero otherwise.¹⁰ In the second stage, the logarithm of the average dollar value of U.S. FDI received in that year is used as the dependent variable. The logarithmic specification was chosen because it is consistent with gravity models, but in practice the results are not changed when absolute or proportionate measures are used.¹¹ High-technology industries are defined as the chemical and allied industries, and the electric and electronics industry, and U.S. FDI in high-tech is the sum of FDI in these industries.

Included Control Variables

The choice of control variables (independent variables in addition to governance measures) was based on the existing theoretical and empirical literature, although the specification chosen was constrained by data availability. Our goal was to create parsimonious specifications for each equation while effectively controlling for the large number of factors that have been found to influence FDI flows. Conceptually, the same variables should be included in both the first- and second-stage estimations. We will discuss the exact specification of each equation in the next section.

Although the FDI literature has discussed a large number of potential determinants of FDI, surprisingly few are consistently significant across the broad set of empirical studies that have been performed.¹² One variable that is consistently statistically significant is a measure of the host country's size, usually identified by a measure of real gross domestic product (GDP).¹³ Large market size is expected to attract FDI because of economies of scale in production and

distribution for products sold in the host market. In addition, large markets may be associated with agglomeration economies that lower costs for all producers in that market. Contributing to the relevant agglomeration economies may be the availability of highly specialized inputs that cannot be found in smaller markets.¹⁴ Like FDI, and for similar reasons, GDP is measured in logarithms in our models. The GDP coefficient measures the elasticity of FDI flows in the second-stage estimations, and should be positive.

To the extent possible, we attempted to measure the relevant independent variables for a prior period. GDP is therefore measured in U.S. dollars over the period 1994-1996. The GDP variable was lagged both to allow for adjustment lags, and to reduce the potential for a bias created by the dependent variable (FDI) causing higher values of GDP.

We use the U.N. Human Development Index (HDI) as a summary measure of a variety of factors that have been found to influence FDI. This index is now available for 168 countries, although not for every year. HDI is derived from three sub-indices: GDP/population, educational literacy and enrolment, and life expectancy at birth. The measures are available for 1995 and 1997, and we use their average value for 1996. The health and education components are direct measures of human capital. The GDP per capita component is a measure of wealth that has traditionally been used to measure consumer demand, but it may also serve as a proxy measure for the amount of physical infrastructure.¹⁵ Increased values of human capital and physical infrastructure should be positively related, on average, to inward FDI (Mody and Srinivasan, 1998), but the role of health has to our knowledge not been explored. In addition, recent evidence suggests that the location decisions of foreign investors may be influenced by quality of life variables, (Peterson, Malhotra and Wagner, 1999). In this regard, GDP per capita is a measure of quality of life, although one that has been recently questioned (OECD, 2001). Indeed, HDI might be viewed as a broad measure of quality of life. Other things equal, we expect that higher levels of HDI will attract more FDI.

The literature also suggests that FDI flows may be affected by exchange rates. We measure these effects in two ways. First, we include dummy variables identifying countries that operated with fixed exchange rates (in 1996). We further distinguish those countries whose currencies were pegged to the U.S. dollar (FIXUS) from those whose currencies were fixed, but not in terms of the U.S. dollar (FIXNUS). The presumption is that a country will fix its currency against the major currency (or currencies) in which its trade and investment flows are most

heavily concentrated. As such, if currency volatility discourages FDI flows, countries operating fixed exchange rate regimes should be characterized by more FDI than those operating floating rate regimes, all other things constant. Currency volatility will discourage FDI if risk-averse investors view such volatility as a direct cost (if hedging is used to reduce the volatility) or an indirect cost (if risk is unhedged).¹⁶ Thus we expect that countries with fixed exchange rates should attract more FDI, but since we are dealing with U.S. FDI flows, these effects may be limited to those countries that peg their currencies to the U.S. dollar.

We also include a variable (DEXR) that measures whether a domestic currency appreciated or depreciated against the U.S. dollar over the sample period. Specifically, the variable is measured as the ratio of the value of the exchange rate (in U.S. dollars) in a given year (lagged one year relative to FDI) to its average value over the two previous years. Froot and Stein (1991), among others, argue that companies must usually fund international expansion through their retained earnings. Hence, companies located in countries with relatively strong currencies should enjoy increased purchasing power in international asset markets, while the opposite will be true for companies headquartered in weak currency regions. In the context of our model, U.S. MNCs should find it cheaper to acquire assets in countries whose currencies are depreciating against the U.S. dollar, other things constant. Conversely, asset acquisitions should become more expensive in countries with appreciating currencies. Based on this argument the sign of DEXR should be negative.

One relevant caveat is that MNCs frequently fund a substantial portion of their overseas investments using financial capital raised abroad. In such cases, it is theoretically unclear which, if any, specific currency represents the home currency. Another caveat is that U.S. MNCs expect to earn dividends and other receipts on their foreign direct investments, and those remittances will be converted from the host country currency to U.S. dollars. Hence, an appreciating dollar implies lower U.S. dollar-based returns on U.S. direct investments in the country experiencing a depreciating home currency (Safarian and Hejazi, 2001).

Obviously, the practical relevance of this latter point is sensitive to the nature of a foreign affiliate's activities. For example, if the affiliate is primarily exporting products priced in U.S. dollars, such as oil, the resulting income stream to the parent might be naturally hedged against depreciation of the local currency. It is also sensitive to the anticipated permanence of the change in the local currency's value. Specifically, if the change reflects purchasing power parity

differences between the U.S. dollar and the local currency, it is unlikely to be reversed soon after a foreign investment is made. In many cases, therefore, the positive influence (on inward FDI from the U.S.) of lower U.S. dollar-equivalent asset prices might be offset by lower U.S. dollar-equivalent returns on the relevant assets. In this regard, recent evidence suggests that currency movements largely reflect underlying purchasing power changes, even over periods as short as several years (Taylor, 2000; Popell, 2001).

Finally, we include a variable to account for physical proximity to the U.S. This term is measured by a dummy variable that equals 1 if the country is contiguous with the U.S. (Canada and Mexico). The latter are also signatories, with the U.S., to the North American Free Trade Agreement (NAFTA), which lowers barriers to FDI. Thus, this variable should be positively related to FDI. We refer to the variable as PROXIMITY, but it may well reflect NAFTA effects.

Omitted Control Variables

In closing this section, we acknowledge some possible control variables that are omitted from our models. Two obvious candidates are unit labour costs and tax rates. Neither is included because the appropriate data could not be found for a sufficiently large sample of countries. Data on wage rates are available, but wage rates are misleading because they can reflect productivity advantages (and are thus correlated with GDP per capita). Consequently, it is not surprising that GDP per capita and relative wage rates are frequently either statistically insignificant or appear with the .wrong. signs in FDI regression equations.¹⁷

Likewise, most available tax measures are inappropriate. The conceptually appropriate measure to compare across countries is the *marginal effective* tax rate. This rate differs across industrial sectors, and it is extremely difficult to measure (Chen, 2000). As well, there is considerable intra-country variation in tax rates within large countries, and simple averages may disguise the ability of a particular region to attract FDI. Finally, any aversion to high taxes might be mitigated by their link to the provision of infrastructure that, in turn, is highly valued by international investors. We were able to calculate one proxy measure for taxes, the ratio of government tax revenue to GDP. This measure does not capture the impact of taxation at the margin, and was not statistically significant in any preliminary estimated equations.

Another variable commonly found in the literature is a measure of the openness of the economy, often measured as (imports + exports)/GDP (Grosse and Goldberg, 1991; Goldberg

and Grosse, 1994). In fact, this concept is captured by one of the KKZL indices, the measure of regulatory burden (REG), which includes factors such as tariffs and other trade restrictions. Thus, this measure, as well as the over-all GII index is, to some degree a measure of the openness of an economy.

We also attempted to measure cultural distance using a dummy variable that equals 1 if the recipient country has English as an official language. Common language is expected to facilitate FDI flows. This variable was highly collinear with the legal system terms and, in particular, with either the LaPorta et. al. English Law variable or the University of Ottawa Pure Common Law term ($r=.62$ in both cases). The language dummy variable was typically positive and statistically significant in the absence of the legal terms, but often lost significance when the latter were included (and vice-versa). Thus we cannot rule out the possibility that the legal system terms, to some degree, measure cultural proximity. On the other hand, studies that previously interpreted similar language terms as representing cultural factors exclusively may have confused cultural effects with the effects of legal systems.

Finally, we considered the relationship between environmental quality and environmental regulation, and FDI flows. Although environmental regulation may increase the costs of doing business, and thus deter FDI, a clean environment may be associated with a higher quality of life, and thus attract FDI. The KKZL regulation measure does not consider environmental regulation. One relevant measure is the Environmental Sustainability Index (ESI), created by The World Economic Forum, in conjunction with Columbia and Yale Universities. The ESI index is derived from 22 factors that contribute to environmental sustainability including air quality, public health and environmental regulation. The ESI index therefore reflects environmental infrastructure in the form of policy choices made by governments, as well as human capital reflected in public health conditions. However, it is available only for a relatively limited sample of countries, as well as for only a single time period that post-dates the time period for the dependent variable. Specifically, the earliest year for which ESI is available is 2000. Nevertheless we included this variable in provisional estimates (not reported) and found that it was never statistically significant. This result is broadly consistent with other studies reporting that tighter environmental regulations do not discourage inward FDI (Wheeler, 2001; Smarzynska and Wei, 2001).

Estimation and Results

Specification and Estimation

The equations to be estimated are (1) and (2) above. For the first-stage (probit) equations, the dependent variable equals 1 if the country received positive FDI flows in that year, and zero otherwise. For the second stage equations, the dependent variable is the logarithm of the dollar amount of FDI received in that year. The independent variables may be broadly classified as either governance infrastructure variables (the KKZL indices and the legal system variables) or as control variables (ln GDP, HDI, proximity, and exchange rate variables). All independent variables are candidates for inclusion in either equation.

The first specification issue, common to both equations, is how to choose from among the governance infrastructure variables. A representative correlation matrix for selected variables, including all of the governance infrastructure variables, is presented in Table 2, together with the means of the relevant variables. Since we will work with several different samples, several correlation matrices are potentially relevant. However, the correlation coefficients for the different samples are not very different from those presented in Table 2, which refers to the full sample of 143 countries (404 observations) considered.

Clearly, the various KKZL measures (VOICE, STAB, GOV, REG, LAW, and GRAFT) are highly correlated with each other, with correlation coefficients that range from 0.65 to 0.92. Given this degree of intercorrelation, it is not possible to use the relevant variables in the same equation. As a consequence, they are either entered individually, or we use a summary measure that is their first principal component, denoted as GII.¹⁸

Since the KKZL variables are estimated, and because they are not available for each year, we also consider the Index of Economic Freedom (IEF), published by the Heritage Foundation and the Wall Street Journal. This index is based on a number of sub-indices, all of which are related to open and free markets, and macro-economic stability. The index is available for each year of our sample period. As can be seen, it is highly correlated with most of the KKZL variables, and with GII.¹⁹

It is also clear (and not surprising) that many of the LaPorta et. al. legal system variables are quite highly correlated with the University of Ottawa legal system variables. Thus, the two legal system variables are never included in the same equation. On the other hand, the correlation between individual legal system variables and the KKZL variables is moderate,

suggesting that they can be included in the same equation. It is of particular interest that the KKZL Rule of Law measure is only moderately correlated with any of the legal system terms. The KKZL measure in fact includes a variety of outcome terms, including costs of crime, extent of tax evasion, police effectiveness, and various measures of the rule of law and the protection of property rights. It does not, however, take into account the legal tradition of the country. Thus it would appear that the KKZL Rule of Law measure and the legal system variables contain different information.

Finally, we note that the Human Development Index (HDI) is highly correlated with the individual KKZL variables, although in varying degrees. For example, the simple correlation coefficient between HDI and GII is 0.68, thereby posing a potential multicollinearity problem if both variables are included in the same estimating equation.²⁰ Hence, we at times drop HDI from our estimating equation when its presence clearly affects the governance infrastructure terms that are our main concern.

The same basic specification strategy is followed for both equations (1) and (2) above. In both cases, we first estimate a full model that includes one of the KKZL variables, one set of legal system variables plus all of the control variables (ln GDP, proximity, the exchange rate terms, year dummy variables and HDI). We then test restricted versions of the model until we arrived at a parsimonious and statistically acceptable specification.²¹

Equation (1) is estimated by maximum likelihood techniques, and the restricted models are tested using likelihood ratio tests (Greene, 1993: 369-70). Equation (2) is estimated by ordinary least squares with heteroscedastic-consistent standard errors. Restrictions are tested using standard F-tests. The Mills ratio, derived from Equation (1) is also included in the second stage estimate. The estimation technique is a standard application of the method developed by Heckman (1979), and explained in Greene (1993: 711-13).

The preferred equations were subjected to specification tests. For equation (1), Lagrange multiplier specification tests (Verbeek, 2000: 188) reject the need to include higher order terms for GII (or any of its components) and HDI. In the second stage equation, we tested for specification error through a series of one and two power RESET tests (Verbeek, 2000: 58-61). The simple linear specification described by equation (2) passed those tests, and, therefore, no interactive or higher order terms are included.

Finally, all residuals were inspected for evidence of outliers. Unless otherwise reported, none were found. In addition, the role of potentially influential observations, specifically India and China, was examined by excluding one or both from the sample. Unless otherwise indicated, those exclusions did not affect our results.

Results

The primary results for the FDI models are found in Tables 3 (first stage probit estimates) and Tables 4 and 5 (second stage estimates). Each table presents results for total U.S. FDI flows to all countries, total U.S. FDI flows to developing and transition economies, and U.S. high-tech FDI flows to all countries.

First Stage Results

In the first stage of the estimation process (Table 3), the dependent variable is defined to take a value of unity if there were positive U.S. FDI flows to the sample country in a given year (1995-97), and zero otherwise. For these equations, the proximity variable could not be included because it perfectly predicted $FDI = 1$, and would not allow convergence of the parameter estimates. The specification tests discussed above indicated that a full model (containing \ln GDP, one KKZL variable, one set of legal system dummies, HDI, two exchange rate terms and two year dummy variables) was always rejected in favor of a restricted model that contained only \ln GDP plus one KKZL variable *or* one set of legal system variables. Indeed, when a full model is estimated, almost all of the estimated coefficients are statistically insignificant. As a consequence, we estimate and report each governance variable coefficient in a separate equation (Table 3). Each reported coefficient is part of a separate estimated equation containing an unreported constant term and an unreported term for \ln GDP, both of which are always statistically significant. In general, the estimates show good explanatory power as indicated by their ability to correctly classify countries.

These results indicate that governance is an important determinant of the probability that a country will receive U.S. FDI. In general, there is little difference in the results between the total sample and a sample restricted to developing and transition economies. In both cases, the more aggregate measures, GII and IEF are positive and statistically significant, although the coefficients are typically larger in the sample of developing and transition economies. However,

not all of the KKZL variables are individually statistically significant. For these two samples, neither the rule of law, nor political instability/violence are statistically significant. Moreover, judging from the size of the coefficients and the log likelihood statistic, a limited regulatory burden is the most important of the KKZL variables. It is important to recall that this term includes measures such as openness to trade, FDI restrictions, and price controls. Therefore, open economies are more likely to be recipients of U.S. FDI flows. Government effectiveness and graft appear to be the next most important factors. It is typically the case that the coefficients are higher in the sample of developing and transition economies. In particular, the graft coefficient is much higher, indicating that U.S. investors tend not to locate in developing and transition countries where corruption is high.

Although the rule of law term is not statistically significant in the two samples, the results clearly indicate that countries whose legal systems are rooted in English Common Law are more likely to be recipients of U.S. FDI flows. This is true regardless of the legal classification system employed. The University of Ottawa classification scheme reveals that countries that adopt legal systems that mix common law with customary or religious law are less likely to receive FDI, as are all civil law countries. However, the LaPorta et.al. classification suggests that countries adopting French civil law are more likely to receive FDI than are other civil law countries, or countries whose legal systems are socialist.²² In part, the differing results reflect differences in the allocation of socialist and former communist countries. Specifically, the University of Ottawa system classifies them as civil law countries, while La Porta does not. When the countries classified by La Porta et. al. as socialist are removed from the sample, none of the remaining La Porta legal system variables are significant. However, using the University of Ottawa classification, it is still the case that Pure Common Law countries are more likely to receive FDI.

We therefore conclude that governance infrastructure is an important determinant of whether a country is a recipient of U.S. FDI flows. We can conclude that governance variables related to open markets, government effectiveness, graft and political accountability are important determinants of FDI. Moreover, countries whose legal systems are rooted in English Common Law are also more likely to be recipients of U.S. FDI.

It is noteworthy that the HDI term (and each of its components) is not statistically significant when total flows are considered. This is true whether HDI is entered alone (with Ln

GDP), or whether it is entered with other variables. In general, U.S. firms are more likely to locate in countries characterized by relatively large domestic economies and relatively good governance. These factors appear to dominate wealth, education and health.

The results for high-tech FDI are somewhat different. The overall statistical fit of the Probit model is better, as evidenced by the high fraction of correct predictions. The estimated coefficients are also generally higher than those for total FDI flows. In particular, the regulatory burden term is much larger, while the government effectiveness term is also higher. The rule of law term is now significant at the .10 level. Countries with common law backgrounds are more likely to receive high-tech FDI, which is consistent with the view that the common law provides greater protection for property rights. In addition, HDI has a statistically significant and positive impact on the probability that a country will receive high-tech FDI, as do each of its components (not shown). Moreover, when HDI is included in an equation with governance variables, it remains statistically significant. Thus, there is some evidence that wealth and human capital are uniquely important for FDI in high-tech industries than for other industries. Governance infrastructure is also distinctly important in high-tech industries.

Second Stage Results

In estimating the second stage equations, we again began with a model including all control variables and then tested restricted versions using F-tests. In this case, the full model (excluding year dummy variables) was always preferred, and the results are reported in Table 4. For ease of exposition, Table 4 contains results that use GII as a summary measure of the KKZL governance indices, together with separate equations using the two legal system classifications. Results obtained using each of the individual KKZL indices are summarized in Table 5 and will be discussed below. The dependent variable is specified as the natural log value of U.S. FDI (total or high-tech). The tables present separate results for the full sample of countries, for the sample of developing and transition economies and for countries that receive high-tech investments. The Mills ratio was never statistically significant and is, therefore, not included.²³

Table 4 provides representative results obtained from ordinary least squares estimation of the pooled data. For all samples, one set of estimates is provided using the University of Ottawa legal classification method, and another set is provided using the La Porta et. al. system.²⁴ Additional specifications are provided in order to illustrate specific issues.

The main variables of interest are GII and the legal system variables. For the most part, the results are similar to those reported for the first stage estimates. That is, both effective governance and legal systems rooted in English Common Law tend to increase the *amount* of U.S. FDI received by a country. However, the effects depend to a degree on the precise specification of the estimating equation, as well as the sample. For example, the Pure Common Law variable is more statistically robust in the All Countries and High-Tech samples than in the Developing and Transition Economies sample.

We estimated equations with and without HDI (or its components). We did so because of the intercorrelation between GII and HDI, and because of the possible causal relationship between them. For the total sample (columns 1-4), we find that the GII index is positive and statistically significant when HDI is excluded, but it tends to lose significance in equations that contain HDI (or any of its components) and the University of Ottawa legal variables (column 2). The same variable remains statistically significant when HDI is included in an equation with the La Porta variables (column 4). Thus, there is some evidence that wealth and human capital exert an independent and positive effect on FDI inflows.

However, the results are somewhat different when the sample is restricted to developing and transition economies (columns 5-7). As before, the GII term is positive and statistically significant when HDI (or any of its components) is excluded, but it loses significance when HDI is included, even for equations using the La Porta et. al. legal system classification (column 7). We interpret this result as indicative of the statistical difficulty in distinguishing human capital effects from governance effects.

The results are again different for high-tech FDI flows (columns 8-10). The GII term in this sample is always positive and statistically significant, as before; however, HDI term is rarely statistically significant, whether GII is included or not. On the other hand the education component of the HDI index is always positive and statistically significant, even with GII in the equation. Thus, it appears that governance improvements will increase FDI flows in high-tech industries, but investments in education have additional and independent effects.

Although it is generally true that countries whose legal systems emerged out of the English Common Law tend to attract more FDI (but not necessarily more high-tech FDI), other things equal, the relative impact of this effect depends on the method of classifying the legal system. Using the University of Ottawa classification, it is typically the case that countries with

Pure Common Law systems receive more FDI than do those with pure or mixed civil law systems. Using the La Porta method, countries using the English Common Law receive more FDI than do countries with socialist legal systems, but not necessarily more than all civil law countries. For the total sample, it appears that countries using either the English or French system receive more FDI than do all other countries, including those adopting the German or Scandinavian system. For developing and transition economies, countries whose legal systems are based on French Law receive more FDI than all countries. These differences are attributable to the classification of socialist countries. When the socialist countries are removed from the sample, the apparent advantage of French legal systems disappears.

Given these differences between the two legal classification systems, can we say that one classification system is preferable? To explore this issue, we treat equations using the two systems as being non-nested, and use the Davidson-MacKinnon J-test to test the hypothesis that one (or the other) is the .true. model (Greene, 1993:222-224). For example, we test the null hypothesis that the model in column 1 (Table 4) is preferred to the model in column 3 (the alternative), and then reverse the procedure and test the null that the column 3 model is preferred to the column 1 alternative. The null hypothesis is rejected in *both* cases, and this is the case for all samples and specifications. Thus, it is apparently the case that neither classification method is fully comprehensive, and that further research is required into the optimal method of classifying national legal systems.

One example of the differences between the two methods is provided by the results for high-tech FDI. When the University of Ottawa classification method is employed, we find that pure common law countries attract more FDI, and this is true regardless of whether India and/China are included in the sample. However, when the La Porta method is employed, the results do depend critically on the composition of the sample. For example, columns 9 and 10 in Table 4 present results when China is included and excluded from the sample. China is classified by La Porta et. al. as a socialist law country. It is also a country that receives significant amounts of high-tech FDI. When China is included (column 9), the results indicate that countries with any other form of legal system receive significantly less high-tech FDI than do countries with socialist legal systems, other things equal. When China is excluded (Column 10), we observe that countries using the English Common Law receive more FDI, other things equal, and more than countries using any other legal system.²⁵

It is possible that non-legal institutions protect property rights in China in a unique way that might explain the difference in results when China is included in the sample. In this regard, Zhang (2001) argues that Western FDI in China is motivated by its comparative political stability. Our governance or legal variables might not adequately capture this attribute.

Before concluding this section, we comment on the control variables. We find that the coefficient for the GDP variable is positive and highly significant in all equations and for all samples. Market size is therefore a critical determinant of both the probability of receiving FDI, and the amount received by any particular country. The remaining control variables have somewhat different impacts, depending on the sample and specification. For the most part, the proximity variable is positive and statistically significant. Other things equal, both Canada and Mexico receive additional US FDI, likely the combined result of location and NAFTA membership. Since Canada and Mexico are not included in the sample of developing and transition economies, there is no proximity term for that sample.

Countries with fixed exchange rates attract more total FDI, but only if their exchange rate is pegged to the U.S. dollar. This holds for all countries, but not necessarily for all forms of FDI. Specifically, we find some evidence that this variable is statistically significant for high-tech FDI (column 8), but not for all specifications (Columns 9 and 10). The exchange rate term is rarely statistically significant. When it is, the sign of the coefficient is negative. The exchange rate variable is consistently insignificant for the high-tech industries. In general, exchange rate regimes and exchange rate changes seem to have little effect on high-tech FDI. This result might reflect the possession of market power on the part of high-tech MNCs that, in turn, enables the latter to pass through to customers most, or all, of the explicit and implicit costs of exchange rate hedging. For other industries in which sellers do not enjoy such market power, a stable foreign currency is an important incentive, at the margin, to invest abroad.

Decomposing Indices

In this section we investigate the possibility that specific elements of the GII index may be more influential than the over-all index that we have used as a summary measure in Table 4. The disaggregated results are found in Table 5. Rather than present all of the estimated coefficients for each specification, we present only the estimated coefficient for the relevant component of GII or the legal system. In order to minimize problems of multicollinearity, as well as to conserve space, we present estimates obtained from a specification that did not include

HDI or the legal systems variables. Thus, the estimates reported are obtained from the estimation of an equation that includes the reported variables plus a constant, Ln GDP, the proximity variable, and the two exchange rate terms. For completeness, we also estimate these equations using only the legal systems variables as governance measures.

To facilitate comparisons, we also present the results for GII itself. The results confirm that this broad measure of governance is always positive and statistically significant in any sample, and the coefficient is remarkably stable. It can be seen, however, that while all components of GII are themselves statistically significant, their magnitude and explanatory power (as measured by the R^2) are not. In particular, the most important of the sub-indices, as judged by both the magnitude of the coefficients and the predictive power of the equation, is government effectiveness and regulatory burden, and this is true of all samples. The latter term is the most important, with predictive power exceeding that of GII, and with a coefficient that is larger than those for all the other governance measures.

Thus, countries that adopt policies favoring free and open markets will receive more U.S. FDI, and this result seems robust across samples. This conclusion is confirmed by the results obtained using the Index of Economic Freedom as a measure of governance. However, it is also true that other governance factors are important, although possibly not to the same degree. In particular, good governance also implies maintaining effective government institutions, and this is important for all samples.

Most of the KKZL coefficients, as well as the Index of Economic Freedom coefficient, are slightly lower for the sample of developing and transition economies than for the All Countries sample. However, developing and transitional economies arguably have greater scope for improving governance, since the governance indices for those economies are substantially lower than those for developed countries. A movement towards average governance for developed countries should therefore encourage a substantial increase in inward FDI flows.

The results in Table 5 also tend to confirm the importance of English Common Law origins in attracting FDI when the University of Ottawa classification method is employed. However, the results are more ambiguous when the La Porta method is used. In the latter case, countries whose legal systems originate in the English Common Law receive more FDI than do countries with socialist legal origins, but they do not necessarily receive more than civil law countries.

In summary, our results point in a consistent direction. Specifically, they confirm the well-established fact that the size of a national economy strongly conditions how attractive that location is to foreign investors. They also strongly support the notion that governance infrastructure is an important direct determinant of whether a country will receive any U.S. FDI, and, if so, how much. An inference suggested by our results is that countries wishing to receive FDI, most of which are small and developing, should consider improvements in political governance. Of the governance indicators considered, regulatory burden and government effectiveness are the most important. While legal systems are less amenable to change, our results also suggest that countries whose legal systems are based on English Common Law are likely to have an advantage in attracting FDI.

Summary and Policy Conclusions

This study assesses whether and to what extent governance infrastructure attributes of national economies influence U.S. FDI flows into those economies. Governance infrastructure is measured in terms of the nature of political, economic and legal institutions and policies. The measures of governance infrastructure that are employed have not previously been used in the FDI literature, and cover a variety of factors such as government effectiveness, freedom of markets, political freedom and the nature of the legal system.

Our analysis uses a two-stage estimation procedure. In the first stage, the probability that a country is an FDI recipient is estimated. The results indicate that countries that fail to achieve a minimum threshold of effective governance are unlikely to receive any U.S. FDI. In the second stage, the analysis is restricted to those countries that did receive FDI flows. The estimated equations focus on the determinants of the *amount* of FDI received, with a correction for possible sample selection bias. The results indicate that governance infrastructure also plays a critical role in the determination of the volume of U.S. FDI flows across countries. In addition, no evidence of sample selection bias was found.

We find differences in results across different samples of countries, as well as different policy implications. For example, improvements in governance are likely to be more important for developing and transition economies than for all countries, on average. Developing economies are the least likely to receive any positive FDI, and improvements in governance that put those countries over the minimum threshold will encourage positive FDI flows. In addition,

although we found that the marginal benefits (in terms of increased FDI inflows) of governance improvements for developing and transition economies that do receive FDI are lower than for all countries, the total benefits are likely to be greater, because the scope for governance improvement is commensurately greater.

We also find evidence that countries whose legal systems originate in English Common Law attract more U.S. FDI, other things equal. However, the strength of this result depends on the method of classifying legal systems. Since the evidence suggests that neither of the existing classification methods used in this study is perfect, further research is required into the appropriate classification method. In particular, subsequent research must address the problem of how to classify the legal systems of formerly socialist countries. Classification notwithstanding, it is clear that formerly socialist countries received less FDI, other things equal. It is doubtful that this can be fully explained as a result of their legal system.

In addition, our results suggest that previous studies have, to some degree, confused issues of culture with issues arising from the nature of the legal system. Many, if not most, countries that have adopted English Common Law are also English speaking. Studies that use language as a measure of cultural proximity may therefore be capturing characteristics of the common law system that protect property rights and attract investment.

There is some evidence that FDI flows in high-technology industries respond to somewhat different determinants than is the case for all industries. The differences are particularly marked in the first stage, where both governance *and* wealth and human capital are found to be important. The probability that a country will be the recipient of high-tech FDI increases with its investments in human capital and with higher GDP per capita, while this is not so for all FDI. In the second stage, the amount of high-tech FDI received is more closely linked to investments in human capital (education) than is the case for the total sample of industries.

The results also shed some light on the specific governance factors that are likely to attract U.S. FDI. Reliable estimation of the regression coefficients for individual governance measures is hampered by collinearity among many of the measures. Nevertheless, relatively robust findings are identified for specific governance infrastructure attributes. In this regard, good political governance is characterized by policies promoting open markets, as well as by effective and non-corrupt public institutions. Countries that improve their governance

infrastructures in these respects are not only likely to increase the probability that they will receive U.S. FDI, but they will also receive greater absolute amounts.

Hence, one of our most important conclusions is that political governance contributes in a very important way to attracting inward FDI from the United States. Furthermore, improved governance does not necessarily oblige governments to make large investments of taxpayers' money. In this regard, our findings reinforce similar conclusions drawn in UNCTAD (1998) and Altomonte (2000). Indeed, improved governance might be more consistent, in many cases, with a smaller economic and regulatory role for government. As well, any set of policies that broadly promotes economic growth will indirectly promote increased inward FDI by encouraging a higher level of real GDP. However, it is also the case that countries whose legal systems are not rooted in English Common Law will find it relatively more difficult to attract U.S. FDI, other things equal. Because changing the legal system is both difficult and expensive, such countries will have to compensate by improving other aspects of their governance infrastructure.

Although our study focuses on the role of governance, we obtain other results of interest. For the most part, these results are consistent with those obtained in earlier studies. For example, we find that market size is statistically the most important predictor of whether a country will receive FDI and, if so, the amount. We also find that investments in human capital and the general quality of life are likely to attract more FDI, although these relationships may also be linked to good governance. In particular, countries that meet minimum governance standards tend to be countries with higher levels of wealth, health and education. Whatever the indirect linkage to governance, our results clearly identify an educated work force as an important determinant of U.S. FDI in high-tech industries.

Another of our findings is that fixed exchange rate regimes attract greater FDI flows. This result is indirectly consistent with other studies that find that currency stability promotes inward FDI flows. In our case, it is fixity to the U.S. dollar that matters which is unsurprising given our focus on FDI flows originating from the United States. The weaker relationship between exchange rate regime and U.S. high-tech FDI might reflect the previously mentioned supposition that sellers of high-tech products face relatively inelastic demands curves, and therefore have less difficulty passing on the relevant costs associated with hedging foreign exchange risk. Exploration of this and other possible explanations is a focus of future research. We also find that currency appreciations or depreciations are not consistently related to inward

FDI flows in a statistically significant manner. This latter result is theoretically unsurprising, and it is consistent with evidence from other studies (Safarian and Hejazi, 2001).

Available data dictated that we focus on the nation-state as the unit of analysis. However, regions are increasingly emerging as clusters for specific types of foreign investment, and those clusters frequently cut across political boundaries. Our findings therefore highlight the potential importance of regional trade and investment agreements that harmonize attributes of governance infrastructure across political jurisdictions. Additional research focusing on the relationship between governance infrastructure and related variables and FDI originating in other developed countries would shed further light on the importance of political reform as an instrument of economic growth in developing countries.

For international managers, our findings highlight the importance of understanding the political processes that lead to changes in governance infrastructure. Such changes clearly affect the ability of foreign-owned firms to do business profitably in host economies. Yet the determinants of such changes are not obvious.²⁶ Perhaps political risk analysis in multinational companies would be better focused on political and social initiatives affecting the likelihood of governance reforms than on the likelihood of changes in government. In addition, managers should consider more carefully the importance of the legal system in protecting shareholder rights and property rights.

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Table 1
Variables, Definitions and Data Sources

| VARIABLE | DEFINITION | SOURCE |
|------------------|---|--|
| FDIUS | US FDI outflows, 1995-97, measured in logarithms | Bureau of Economic Analysis, various years |
| FDITECH | US FDI outflows in chemical and allied products and electric and electronic equipment, 1995-97, measured in logarithms | Bureau of Economic Analysis, various years |
| GDP | Real GDP in 1990 \$US, 1994-1996 | United Nations Statistical Yearbook, 1999 |
| HDI | Human Development Index, 1995 and 1997. HDI combines three measures: GDP per capita, education (a combination of adult literacy and school enrolment rates) and life expectancy at birth. | United Nations Development Programme, various years |
| GII | First Principal Component of Governance Indices LAW, STAB,REG, GOV, GRAFT, VOICE, developed by Kaufman et. al., 1997a) | Kaufmann et. al. , World Bank, 1999a, available at: http://www.worldbank.org/wbi/governance/datasets.htm#dataset |
| LAW | Rule of Law Index, measures contract enforcement, property rights, theft and crime, etc. | As above |
| STAB | Political Instability and Violence Index, measures armed conflict, social unrest, ethnic tensions, terrorist threats etc. | As above |
| REG | Regulatory Burden Index, measures government intervention, trade policy, capital restrictions etc. | As above |
| GOV | Government Effectiveness Index, measures red tape and bureaucracy, waste in government, public infrastructure etc | As above |
| GRAFT | Graft and Corruption Index, measures corruption among public and private officials, extent of bribery etc. | As above |
| VOICE | Voice and Accountability Index, measures civil liberties, political rights, free press, fairness of legal system etc. | As above |
| ESI | Environmental Sustainability Index, 2000, based on 22 factors that contribute to environmental stability (air quality, public health, environmental regulation). Ranges from 0-100. | Available at: www.ciesin.columbia.edu/indicators/ESI |
| IEF | Index of Economic Freedom, based on a number of measures including trade, fiscal and monetary policy. Ranges from 0-5 (low numbers indicate more freedom) | Heritage Foundation and Wall Street Journal, available at: www.heritage.org/search |
| COMLAW1 | Countries whose legal systems are based mainly on English Common Law (case law is dominant). Includes US, UK, and Canada. | University of Ottawa, Faculty of Law, at: www.uottawa.ca/world-legal-systems |
| COMLAW2 | Countries whose legal systems, while base on common law, also include elements of customary law or Muslim law. Includes Sri Lanka, Tanzania, and United Arab Emirates. | As above |
| CIVLAW1 | Countries whose legal systems are based mainly on Roman legal system, which gives precedence to written law. Includes Germany, Scandinavian countries, and many former socialist countries. | As above |
| CIVLAW2 | Countries whose legal systems, while base on civil law, also include elements of customary law or Muslim law. Includes Thailand, China, Egypt, and South Korea. | As above |
| ENGLAW | Countries whose corporate law or commercial law originate in English Law. | La Porta et. al. 1998) |
| FRELAW | Countries whose corporate law or commercial law originate in French Law. | As above |
| GERLAW | Countries whose corporate law or commercial law originate in German Law. | As above |
| SCALAW | Countries whose corporate law or commercial law originate in Scandinavian Law. | As above |
| SOCLAW | Countries whose corporate law or commercial law originate in Socialist Law. | As above |
| PROXIMITY, NAFTA | Dummy variable = 1 for Canada and Mexico | |
| ENGLISH | Dummy variable =1 if English is an official language | CIA World Fact Book |
| FIXUS | Dummy variable = 1 if the country uses a fixed exchange rate, with currency pegged to the US dollar | IMF International Financial Statistic Yearbook, 1996 |
| EXCHANGE RATE | Ratio of end period trade weighted exchange rate to average for preceding two years in terms of \$US. Periods are 1992-94; 93-95; 94-96 | Slater, 1999 |

Table 2
Correlation Matrix: Governance Infrastructure and Other Measures
N=404

| | MEAN (SD) | HDI | GDP | VOICE | STAB | GOV | REG | LAW | GRAFT | GII | COM LAW1 | COM LAW2 | CIV LAW1 | CIV LAW2 | ENG LAW | FRE LAW | GER LAW | SCA LAW | SOC LAW |
|---------------------|----------------|------|------|-------|------|------|------|------|-------|------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| HDI | .68 (.20) | 1.00 | | | | | | | | | | | | | | | | | |
| GDP | 9.87 (1.94) | .55 | 1.00 | | | | | | | | | | | | | | | | |
| VOICE | .13 (.89) | .60 | .34 | 1.00 | | | | | | | | | | | | | | | |
| STAB | -.02 (.92) | .62 | .37 | .70 | 1.00 | | | | | | | | | | | | | | |
| GOV | .03 (.85) | .63 | .43 | .74 | .80 | 1.00 | | | | | | | | | | | | | |
| REG | .13 (.76) | .49 | .27 | .70 | .69 | .73 | 1.00 | | | | | | | | | | | | |
| LAW | .06 (.90) | .67 | .44 | .70 | .88 | .89 | .71 | 1.00 | | | | | | | | | | | |
| GRAFT | .04 (.89) | .65 | .43 | .74 | .76 | .92 | .65 | .88 | 1.00 | | | | | | | | | | |
| GII | .05 (.98) | .68 | .43 | .85 | .90 | .95 | .83 | .94 | .92 | 1.00 | | | | | | | | | |
| COM LAW1 | .08 (.27) | .27 | .07 | .24 | .24 | .36 | .29 | .28 | .39 | .34 | 1.00 | | | | | | | | |
| COM LAW2 | .26 (.44) | -.27 | -.19 | -.13 | -.11 | -.15 | -.05 | -.04 | -.11 | -.12 | -.16 | 1.00 | | | | | | | |
| CIV LAW1 | .43 (.49) | .38 | .22 | .33 | .22 | .16 | .20 | .12 | .14 | .21 | -.25 | -.51 | 1.00 | | | | | | |
| CIV LAW2 | .23 (.43) | -.33 | -.10 | -.34 | -.29 | -.26 | -.37 | -.27 | -.29 | -.35 | -.16 | -.33 | -.48 | 1.00 | | | | | |
| ENG LAW | .27 (.45) | -.07 | -.13 | .01 | .05 | .08 | .15 | .14 | .19 | .11 | .44 | .68 | -.57 | -.32 | 1.00 | | | | |
| FRE LAW | .44 (.49) | -.20 | -.06 | -.21 | -.30 | -.21 | -.12 | -.32 | -.32 | -.28 | -.25 | -.31 | .05 | .42 | -.56 | 1.00 | | | |
| GER LAW | .05 (.21) | .25 | .39 | .31 | .29 | .33 | .18 | .36 | .32 | .33 | -.07 | -.13 | .16 | .05 | -.14 | -.20 | 1.00 | | |
| SCA LAW | .04 (.18) | .23 | .13 | .32 | .30 | .36 | .20 | .34 | .42 | .36 | -.06 | -.11 | .14 | -.11 | -.12 | -.17 | -.04 | 1.00 | |
| SOC LAW | .18 (.39) | .08 | -.04 | -.05 | .03 | -.18 | -.22 | -.12 | -.18 | -.13 | -.14 | -.30 | .34 | -.12 | -.30 | -.43 | -.11 | -.09 | 1.00 |
| IEF | 3.12 (.76) | .57 | .33 | .64 | .60 | .75 | .79 | .72 | .69 | .77 | .38 | -.02 | .08 | -.31 | .22 | -.23 | .31 | .21 | -.24 |

Notes: Variables are defined in Table 1.

Table 3

Probit Estimates of Governance Coefficients¹

| | (1) All Countries | | | (2) Developing and Transition Economies | | | (3) All Countries, High Tech Industries | | |
|--|------------------------------------|-----|-------------------|---|-----|-------------------|---|-----|-------------------|
| | Coefficient (standard error) | % | Log Likelihood | Coefficient (standard error) | % | Log Likelihood | Coefficient (standard error) | % | Log Likelihood |
| Rule of law | .05 (.08) | .67 | -253.6 | .03 (.10) | .63 | -219.0 | .16* (.08) | .82 | -164.3 |
| Voice and accountability | .17*** (.07) | .68 | -251.4 | .24*** (.09) | .61 | -215.8 | .26*** (.08) | .83 | -161.3 |
| Political instability/violence | .05 (.08) | .67 | -253.6 | .03 (.08) | .61 | -218.9 | .13 (.09) | .80 | -164.9 |
| Government effectiveness | .24*** (.08) | .67 | -249.9 | .33*** (.11) | .65 | -214.9 | .38*** (.09) | .83 | -157.8 |
| Regulatory burden | .48*** (.09) | .73 | -239.1 | .50*** (.10) | .69 | -205.9 | .93*** (.16) | .84 | -143.2 |
| Graft | .22*** (.08) | .68 | -250.3 | .33*** (.12) | .61 | -215.3 | .26*** (.09) | .84 | -161.7 |
| GII² | .20*** (.07) | .68 | -250.1 | .26*** (.09) | .61 | -215.2 | .29*** (.08) | .82 | -159.6 |
| Index of Economic Freedom (IEF) | .21*** (.10) | .70 | -241.8 | .27*** (.11) | .65 | -196.7 | .61*** (.12) | .84 | -148.3 |
| Pure Common Law³ | .87*** (.33) | .70 | -.245.8 | .62* (.39) | .65 | -213.5 | 1.84*** (.36) | .83 | -151.0 |
| Mixed Common Law | .20 (.18) | | | .13 (.18) | | | 1.03*** (.30) | | |
| Pure Civil Law | -.07 (.16) | | | -.20 (.18) | | | .85*** (.27) | | |
| English Law⁴ | 1.40*** (.21) | .74 | -230.0 | 1.17*** (.21) | .71 | 197.6 | 2.05*** (.40) | .84 | -142.4 |
| French Law | 1.22*** (.19) | | | 1.13*** (.19) | | | 1.77*** (.39) | | |
| German Law | -.06 (.39) | | | | | | 1.40*** (.49) | | |
| Scandanavian Law | .69* (.42) | | | | | | 1.27*** (.50) | | |
| Human Development Index | .33 (.38) | .67 | -253.4 | .27 (.40) | .63 | -218.8 | 2.04*** (.57) | .82 | -159.23 |
| No. observations (no. positive) | 404 (223) | | | 320 (152) | | | 404 (108) | | |

Notes:

1. The dependent variable equals 1 if the US invests in that country (industry) and 0 otherwise. Figures in parentheses are standard errors computed from analytic second derivatives (Newton). % refers to correct predictions. Each equation contains unreported constant and LnGDP terms. Each is statistically significant in all equations.
2. GII is the first principal component of the voice, regulation, rule of law, graft, government effectiveness and political instability terms.
3. Categories are defined by the University of Ottawa Law School. The omitted category is Mixed Civil Law.
4. Categories are derived from LaPorta et. al. (1999). Omitted category is Socialist Law.

*** p < .001, ** p < .05, *p < .01, two-tailed tests.

Table 4
Regression Results, US FDI¹

| | All Countries | | | | Developing and Transition Economies | | | High Tech Industries | | |
|---------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------------------------|--------------------|--------------------|----------------------|-------------------|--------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) ² | (9) ² | (10) ³ |
| Ln GDP | .67*** (.07) | .64*** (.06) | .67*** (.07) | .63*** (.07) | .70*** (.09) | .73*** (.10) | .68*** (.10) | .70*** (.10) | .49*** (.09) | .49*** (.09) |
| Governance Infrastructure Index (GII) | .42*** (.14) | .13 (.16) | .53*** (.12) | .36** (.12) | .59*** (.21) | .60*** (.18) | .15 (.24) | .54** (.25) | .55** (.23) | .55** (.23) |
| Pure Common Law | 1.16*** (.30) | 1.16*** (.32) | | | .91** (.41) | | | 2.07*** (.46) | | |
| Mixed Common Law | -.17 (.22) | .10 (.22) | | | -.28 (.25) | | | .46 (1.08) | | |
| English Law | | | .83** (.35) | .98*** (.35) | | .83* (.47) | 1.14*** (.47) | | -1.19*** (.40) | 3.68*** (.78) |
| French Law | | | .95*** (.38) | .97*** (.38) | | 1.42*** (.49) | 1.47*** (.48) | | -1.80*** (.38) | 3.07*** (.82) |
| German Law | | | .64 (.46) | .83* (.47) | | | | | -1.99*** (.48) | 2.88*** (.81) |
| Scandinavian Law | | | -1.00 (.67) | -.75 (.59) | | | | | -4.87*** (.86) | |
| Proximity | 1.39*** (.45) | 1.32*** (.42) | 1.56*** (.32) | 1.43*** (.31) | | | | .77 (.65) | 1.27** (.59) | 1.27** (.59) |
| Fixed Exchange-US | 1.58*** (.36) | 1.52*** (.33) | 1.69*** (.29) | 1.61*** (.29) | 2.02*** (.33) | 1.75*** (.34) | 1.67*** (.31) | .96*** (.33) | -.33 (.35) | -.33 (.35) |
| Exchange Rate Change ⁴ | -.49*** (.14) | -.43 (.28) | .04 (.30) | .04 (.31) | -.35* (.19) | .04 (.25) | .01 (.38) | .05 (.06) | .06 (.04) | .06 (.04) |
| Human Development Index (HDI) | | 2.83*** (.74) | | 2.95*** (.74) | | | 3.14*** (.80) | | | |
| Education Index | | | | | | | | 3.25* (1.75) | 3.73** (1.59) | 3.73** (1.59) |
| Constant | -2.48*** (.68) | -4.18*** (.79) | -3.12*** (.89) | -4.88*** (.98) | -2.67*** (.86) | -4.02*** (1.22) | -5.87*** (1.30) | -7.17** (1.60) | -3.56** (1.61) | -8.43*** (1.60) |
| R ² | .58 | .60 | .59 | .61 | .37 | .41 | .46 | .42 | .47 | .45 |
| n | 223 | 223 | 223 | 223 | 152 | 152 | 152 | 108 | 108 | 105 |

1. Dependent variable is Ln FDI. Estimation is by ordinary least squares. Figures in parentheses are heteroscedastic-consistent (White) standard errors.
2. All countries that receive US FDI in chemicals and electronics included.
3. Excludes China.
4. The coefficient for Exchange Rate Change has been multiplied by 1000.

*** p < .001, ** p < .05, *p < .01, two-tailed test.

Table 5

Regression Coefficients, GII Sub-Indices and Legal Variables

| | (1) All Countries | | (2) Developing and Transition | | (3) High Technology | |
|---|------------------------------------|----------------|-------------------------------------|----------------|------------------------------------|----------------|
| | Coefficient (standard error) | R ² | Coefficient (standard error) | R ² | Coefficient (standard error) | R ² |
| GII | .60*** (.12) | .56 | .59*** (.20) | .36 | .61*** (.18) | .33 |
| Rule of law | .57*** (.13) | .54 | .43*** (.19) | .34 | .51*** (.19) | .31 |
| Voice and accountability | .43*** (.12) | .52 | .31* (.18) | .33 | .43** (.21) | .29 |
| Political instability/violence | .50*** (.13) | .53 | .33* (.20) | .33 | .42** (.21) | .29 |
| Government effectiveness | .73*** (.13) | .57 | .73*** (.21) | .37 | .76*** (.19) | .35 |
| Regulatory burden | 1.03*** (.20) | .58 | .89*** (.22) | .40 | 1.69*** (.33) | .38 |
| Graft | .52*** (.13) | .54 | .43* (.25) | .34 | .58*** (.18) | .33 |
| Index of Economic Freedom | 1.02*** (.16) | .60 | .92*** (.21) | .42 | .82*** (.28) | .33 |
| Pure Common Law | 1.63*** (.26) | .55 | .96*** (.42) | .33 | 2.16*** (.35) | .41 |
| Mixed Common Law | -.26 (.23) | | -.17 (.26) | | .18 (.44) | |
| English Law | 1.05*** (.37) | .52 | .96*** (.42) | .38 | 2.54*** (.79) | .33 |
| French Law | 1.01*** (.36) | | 1.46*** (.43) | | 1.83*** (.76) | |
| German Law | 1.54*** (.54) | | | | 2.27*** (.82) | |
| Scandanavian Law | .30 (.51) | | | | | |
| n | 223 | | 152 | | 105 | |

For all samples, the coefficient estimates were obtained from OLSQ estimates of a model that included log GDP, a proximity dummy variable (not included in the sample of developing and emerging countries), a dummy variable if the country had a fixed exchange rate in terms of the US dollar, and a variable for the change in the exchange rate. The high technology sample excludes China. Figures in parentheses are heteroscedastic-consistent (White) standard errors.

*** p < .001, ** p < .05, *p < .01, two-tailed tests. ' .

Notes

¹ For a broader survey of the literature see Brunetti (1997).

² Dunning (1993) offers an extensive review of empirical studies of the determinants of FDI. Globerman and Shapiro (1999) provide an updated literature review with particular emphasis on the influence of government policies.

³ The University of Ottawa data are available at: www.uottawa.ca/world-legal-systems.

⁴ Several of these factors are discussed in Brewer (1993) as aspects of government policies to address market failures. See, also, Gray and Dunning (2000).

⁵ The relationship among these ideas is discussed in Globerman and Shapiro (2001).

⁶ The complete list of sources is provided in Kaufmann et. al. (1999a).

⁷ Differences between the KKZL Rule of Law measure, and the legal system classification methods are discussed below.

⁸ Inward FDI can be negative, since the FDI variable measures net inflows. Hence, a negative value indicates net outward FDI.

⁹ We also estimated the models using averaged data, but this did not alter the basic results.

¹⁰ As noted above, we began with the sample of 143 of which 88 received positive US FDI flows over the period 1995-97. The remaining countries either received no FDI, negative FDI, or were recorded as missing values. We classified all of the latter as having no FDI. This particular classification does not affect the results. For example, excluding missing values from the no FDI category does alter our conclusions.

¹¹ We estimated second-stage equations in which the dependent variable was specified as the proportion of total global FDI received by any country (PFDI), or the logistic transformation of PFDI. These measures were highly correlated with Ln FDI, suggesting some indifference as to the choice among them. The results are in fact similar, regardless of measure, and so we only present results based on the (natural) logarithmic specification.

¹² Dunning (1993) identifies an exhaustive list of such variables and also discusses empirical evidence regarding their importance. For additional summaries of available evidence, see Caves (1996) and Globerman and Shapiro (1999).

¹³ Some studies identify a near perfect positive correlation between FDI and GDP across host countries. See, for example, Morisset's (2000) study of African countries.

¹⁴ The various sources of agglomeration (or external) economies are discussed in Krugman (1991).

¹⁵ A number of studies have confirmed the importance of physical infrastructure as a determinant of FDI. See, for example, Kumar (1996), Zhao and Zhu (2000), Cheng and Kwan (2000), Wheeler and Mody (1992), Mody and Srinivasan (1998) and Loree and Guisinger (1995). In our sample, for example, GDP/capita is highly correlated with telephones/capita ($r = .94$).

¹⁶ Several studies document a negative association between measures of foreign exchange volatility and FDI flows. See, for example, Kogut and Chang (1996) and Barrell and Pain (1997).

¹⁷ Altomonte (2000) references several studies that provide ambivalent findings on the relationship between labour costs and the geographical distribution of FDI.

¹⁸ In fact, when they are entered jointly in any equation, none of the KKZL variables are statistically significant, whereas many are significant when entered individually. We experimented with various subsets of the sub-indices, but there was no improvement on the reported results.

¹⁹ We also attempted to assess the reliability of the KKZL measures by comparing them to the measure of political risk published by Institutional Investor Magazine (IIM). This measure is often used in the FDI literature (Keefer and Knack, 1997; Mody and Srinivasan, 1998; Bevan and Estrin, 2000), but was not available for our full sample. The correlation coefficient between the IIM risk variable and GII is $r = .87$, and similar values were obtained for the KKZL sub-measures.

²⁰ Causality may also be an issue in that HDI may be seen as a development outcome, caused by GII. Evidence to this effect is found in Kaufman et.al. (1999b). However, in the context of an FDI equation, each is likely to exert a separate effect.

²¹ Country-specific fixed effects were not included because many important variables (notably the KKZL measures and the legal system variables) are time invariant and therefore capture permanent differences across countries.

²² Note that there are no countries in the sample of developing and transition economies whose legal systems are German or Scandinavian in origin.

²³ In Table 4, the Mills Ratio was derived from first stage probit equations containing a constant, ln GDP and GII. In Table 5, the Mills Ratio was obtained from probit equations containing a constant, ln GDP and the relevant governance variable. The use of other specifications does not alter the results in any way.

²⁴ We have not included a separate term for pure civil law because it was never statistically significant. Thus, in the equations using the University of Ottawa definition of the legal system, the omitted category is all civil law countries.

²⁵ Note that China was the only country receiving high-tech FDI in this period that was classified as having a socialist legal system. When it is excluded, the omitted category became Scandinavian law countries.

²⁶ For example, Brewer (1983) suggests that policy instability is not closely linked to political instability.