

**International Studies Program
Working Paper 06-14
March 2006**

**Are Other Government
Policies More Important than
Taxation in Attracting FDI**

Timothy Goodspeed
Jorge Martinez-Vazquez
Li Zhang



**International Studies Program
Working Paper 06-14**

**Are Other Government Policies
More Important than Taxation in
Attracting FDI**

**Timothy Goodspeed
Jorge Martinez-Vazquez
Li Zhang**

March 2006

International Studies Program
Andrew Young School of Policy Studies
Georgia State University
Atlanta, Georgia 30303
United States of America

Phone: (404) 651-1144
Fax: (404) 651-4449
Email: ispaysps@gsu.edu
Internet: <http://isp-aysps.gsu.edu>

Copyright 2006, the Andrew Young School of Policy Studies, Georgia State University. No part of the material protected by this copyright notice may be reproduced or utilized in any form or by any means without prior written permission from the copyright owner.

International Studies Program Andrew Young School of Policy Studies

The Andrew Young School of Policy Studies was established at Georgia State University with the objective of promoting excellence in the design, implementation, and evaluation of public policy. In addition to two academic departments (economics and public administration), the Andrew Young School houses seven leading research centers and policy programs, including the International Studies Program.

The mission of the International Studies Program is to provide academic and professional training, applied research, and technical assistance in support of sound public policy and sustainable economic growth in developing and transitional economies.

The International Studies Program at the Andrew Young School of Policy Studies is recognized worldwide for its efforts in support of economic and public policy reforms through technical assistance and training around the world. This reputation has been built serving a diverse client base, including the World Bank, the U.S. Agency for International Development (USAID), the United Nations Development Programme (UNDP), finance ministries, government organizations, legislative bodies and private sector institutions.

The success of the International Studies Program reflects the breadth and depth of the in-house technical expertise that the International Studies Program can draw upon. The Andrew Young School's faculty are leading experts in economics and public policy and have authored books, published in major academic and technical journals, and have extensive experience in designing and implementing technical assistance and training programs. Andrew Young School faculty have been active in policy reform in over 40 countries around the world. Our technical assistance strategy is not to merely provide technical prescriptions for policy reform, but to engage in a collaborative effort with the host government and donor agency to identify and analyze the issues at hand, arrive at policy solutions and implement reforms.

The International Studies Program specializes in four broad policy areas:

- Fiscal policy, including tax reforms, public expenditure reviews, tax administration reform
- Fiscal decentralization, including fiscal decentralization reforms, design of intergovernmental transfer systems, urban government finance
- Budgeting and fiscal management, including local government budgeting, performance-based budgeting, capital budgeting, multi-year budgeting
- Economic analysis and revenue forecasting, including micro-simulation, time series forecasting,

For more information about our technical assistance activities and training programs, please visit our website at <http://isp-aysps.gsu.edu> or contact us by email at ispaysps@gsu.edu.

Are Other Government Policies More Important than Taxation in Attracting FDI?

Timothy Goodspeed

Hunter College and CUNY Graduate Center

And

Jorge Martinez-Vazquez and Li Zhang

Andrew Young School of Policy Studies, Georgia State University

Abstract

This paper attempts to broaden the existing empirical literature on foreign direct investment by incorporating government expenditures (both investment in infrastructure and consumption) as well as tax, classical location factors, institutional factors that may hinder business investment (such as corruption), and agglomeration effects. We investigate the determinants of FDI inflows in two unbalanced panel data sets of 47 countries from 1995-2002 and 37 countries from 1996-2002. We use fixed country and year effects and examine different infrastructure measures. The evidence indicates that lower taxes, lower corruption, and better infrastructure attract FDI. Government consumption expenditures negatively impact FDI inflows. The magnitude of the response of FDI to our investment in infrastructure is similar to that of corruption and taxes in elasticity terms.

1. Introduction

Foreign direct investment (FDI) can provide a number of benefits to countries that need capital including higher growth, greater exports, higher wages, and greater productivity through technology spillovers to local firms. While the evidence of the impact of FDI is somewhat mixed,¹ a big question for government officials in developing and developed countries alike is the impact of tax, regulatory, and public expenditure policies on foreign investors. Wheeler and Mody (1992) conducted an early and important study of foreign investment determinants and found that agglomeration – measured by infrastructure quality – is an important determinant while taxes are not a significant determinant. In contrast, a growing set of studies on taxation has arisen in the public finance literature that generally find significant tax effects, though the estimated elasticity varies significantly between them depending on the data set used and whether the study is cross-sectional or panel.² Given these contrasting results, it is somewhat difficult for policymakers to know what to make of this literature. In addition, a large literature in regional public economics suggests that government spending that is beneficial to investors (such as public investment in infrastructure for foreign investors) should have positive effects on investment in a region. In this paper we try to provide

¹ Lipsey (2002) surveys this literature and finds that the evidence indicates that FDI increases exports, sometimes increases growth (especially in developing countries with export promotion policies), has a somewhat ambiguous impact on local wages, and also has an unclear impact on technology spillovers to local firms.

² This literature starts with a set of papers from the 1980s, including Hartman (1984), Boskin and Gale (1987), and Young (1988). These papers use a time series of aggregate BEA data and find significant effects of taxation on FDI with an elasticity of about -0.6. Others, such as Swenson (1994) find significant effects when disaggregating the data by industry. A second set of studies, such as Hines and Rice (1994) and Grubert and Muti (1991), use the cross-sectional depth of the BEA data to examine FDI across countries for a given year. These studies also find significant effects, though with more variation in the point estimate of the effect of taxes. A third set of studies uses firm-level data, usually in a panel. Studies such as Auerbach and Hassett (1993) and Cummins and Hubbard (1995) use Compustat data, Ondrich and Wayslenko (1993) use a Commerce Department survey, and Altshuler, Grubert, Newlon (2001) use U.S. Treasury data. Hines (1996) also uses a panel, but exploits state-level tax differences using BEA data.

evidence that both reconciles the international and tax literatures concerning foreign direct investment and gauges the relative importance of public sector foreign investment determinants by examining both taxation and government spending and investment policies in a panel data set.

The idea that government spending and investment decisions as well as taxes influence location decisions is a central theme of studies that examine regional or within-country location of mobile factors and is embodied in Tiebout (1956) models of location. A very large body of theoretical and empirical work has developed around this model which is too lengthy to cite here, but the basic insight is that owners of mobile factors of production consider the benefits from government spending as well as the costs of taxation in location decisions.³ Importantly, the omission of the expenditure side of the budget will bias estimates of the effect of taxes and other variables.

In addition to these public sector variables, FDI location decisions can result in part from historical accident (Markusen, 1991) through agglomeration effects. Wheeler and Mody (1992) use infrastructure quality as one measure of agglomeration. An alternative interpretation is that infrastructure quality measures government investment spending since roads and many forms of infrastructure are in fact publicly provided. Wheeler and Mody (1992) also include a taxation measure, but find no impact of taxation. Their study is subject to certain criticisms, however, since they use a pooled data set but do not use fixed country effects since this eliminates much of the variation in their data. A more recent study by Cheng and Kwan (2000) examines FDI in China and finds a positive impact of infrastructure, but they do not include a tax measure. While they have a

³ A partial review of certain aspects of this literature is found in Oates (1999).

regional panel data set they do not include regional dummies. Instead, they include the lagged FDI stock to account for agglomeration effects.

Institutions that provide a good environment for conducting business are also important potential determinants of FDI. The level of corruption is one measure of the business environment. The impact of corruption has been studied most carefully by Wei (2000a, 2000b). He finds significant negative effects of corruption for several corruption definitions.

There is also a literature in development economics that examines FDI flows. For instance Loree and Guisinger (1995), Kumar (2001), and Asiedu (2002) study the impact of infrastructure on FDI but do not use country fixed effects. A recent study by Dollar et al. (2004) uses a firm-level data set for eight countries to estimate the effect of some "investment climate" indicators (days to clear goods through customs, days to get a telephone line and sales lost to power outage) on FDI. Their study is cross-sectional in nature and they find that FDI is larger in those countries where these indicators are better.

Our study uses a panel data set, includes fixed country and year effects, and also includes taxes, different infrastructure measures, other government spending, and corruption in the same specification. This makes our study more comprehensive than other studies and allows us to compare the relative impact of taxes, changes in infrastructure, and corruption. The use of fixed country effects controls for agglomeration effects (and any other observed or unobserved cross-sectional variation) since the regression coefficients will be reflecting variation within a country.

The evidence indicates that lower taxes, lower corruption, lower government consumption spending and better infrastructure attract FDI. In elasticity terms

infrastructure improvements, corruption, and taxes are of similar magnitude. The rest of the paper is organized as follows. In section II we present our empirical approach and the data that we use. In section III, we take a first look at the data using a series of bar graphs for 1996. Section IV presents the econometric results from our panel data set. Section IV concludes.

2. Empirical Approach and Data

This paper attempts to broaden the existing empirical literature on foreign direct investment by incorporating government expenditures (both investment in infrastructure and consumption) as well as tax, classical location factors, institutional factors that may hinder business investment (such as corruption), and agglomeration effects. The basic empirical model used in our regression analysis takes the following form:

$$\text{Log (FDI/GDP)}_{it} = a_0 + a_1 X_{it} + a_2 C_{it} + a_3 T_{it} + a_4 I_{it} + a_5 G_{it} + u_{it}$$

where X_{it} represents a vector of control variables discussed below, C_{it} is a measure of corruption, T_{it} is a tax rate measure, I_{it} is a vector of measures of government infrastructure quality, G_{it} is government consumption expenditures, and u_{it} is the error term. Agglomeration effects will be controlled for by including country dummies, discussed further below. A number of econometric issues arise in the estimation of this equation. First, as mentioned previously, cross-country results have been emphasized in many previous studies of FDI. However, a common criticism of empirical work using cross-country data is that it is difficult to control for unobserved country differences that are correlated with the variables of interest – and so one might attribute significance to a variable that is really due to some unobserved country factors. For this reason we use a

panel data set and employ fixed country effects estimation.⁴ Our estimates therefore are to be interpreted as the impact of changes of a variable within a country on FDI inflows within that country. This will also control for agglomeration effects since these are country-specific and invariant over time for our sample. Second, in some specifications we control for shocks that are common across countries in a given year by including year dummies. This would be important if FDI flows surged or ebbed worldwide in a given year. Third, the semi-log specification is designed to account for non-linearity in the relation between the dependent and independent variables.

There are a number of important factors identified by previous authors that we include in our X_{it} vector of control variables. These include:

- *Per capita GDP*: This variable can have two interpretations, with opposite implications for its predicted sign. First, per capita GDP may proxy for market size and, to the extent that FDI is for consumption in the host country rather than for export, a positive sign would be predicted. However, we control for exports with a separate variable reported below. Per capita GDP may also proxy for capital abundance as suggested by, for instance, Edwards (1990). It would in this case be associated with a lower marginal product of capital and a lower return to FDI, thereby leading to a negative relationship with FDI. Since exports are controlled for in a separate variable, the latter interpretation is more appropriate in the reported specifications.
- *Population*: This variable can also have two interpretations, as a proxy for market size or as a reflection of how the marginal product of labor changes within a country. While the first interpretation could be associated with an expected

⁴ Hausman tests indicate that fixed effects are preferred to random effects in the specifications presented.

positive sign, the second suggests that higher populations imply lower MP labor and hence less investment for a given cost of labor and given MP capital.

- *Labor Cost*: Higher labor costs (given MP labor) are expected to deter FDI.
- *Exports/GDP*. One reason that multinationals might invest in a country is to export to other countries. To the extent that this is true, one might suspect that exports relative to GDP would be positively associated with FDI.

As noted previously, a bias would result if one did not take account of both the revenue and expenditure sides of the government budget. We include an average effective corporate tax rate on the revenue side. Taxes are only one side of the fiscal account, however, and a government may use the revenue for government consumption expenditure or to provide or maintain infrastructure that is valued by foreign investors. Hence, we include Government Consumption Expenditure/GDP⁵ for government consumption. We also include various measures of infrastructure investment:

- *Electric Power Consumption*: A first measure of infrastructure is electric power consumption, which can indicate the capacity to support modern computers and other electrical equipment, and thereby encourage FDI. (1995-2002 data are available for this infrastructure variable.)
- *Telephone Mainline*: A second indicator of basic infrastructure is the number of mainline telephone connections. This indicates availability of basic infrastructure, though perhaps somewhat less relevant in very recent years given

⁵ According to the WDI, "general government final consumption expenditure" includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditure on national defense and security but excludes government military expenditures that potentially have wider public use and are part of government capital formation.

the usage of mobile telephones. (1995-2002 data are available for this infrastructure variable.)

- *Infrastructure Index.* A third indicator of infrastructure is a general indicator, an infrastructure index from the World Competitiveness Yearbook. This measure includes basic infrastructure (such as roads, other transportation infrastructure, health infrastructure, and others), technological infrastructure (telecommunications, computers, and so forth), energy self-sufficiency, and environmental infrastructure (waste treatment and so forth).⁶ (This variable is available only starting 1996 so we use a 1996-2002 data sub-sample with this infrastructure variable.)

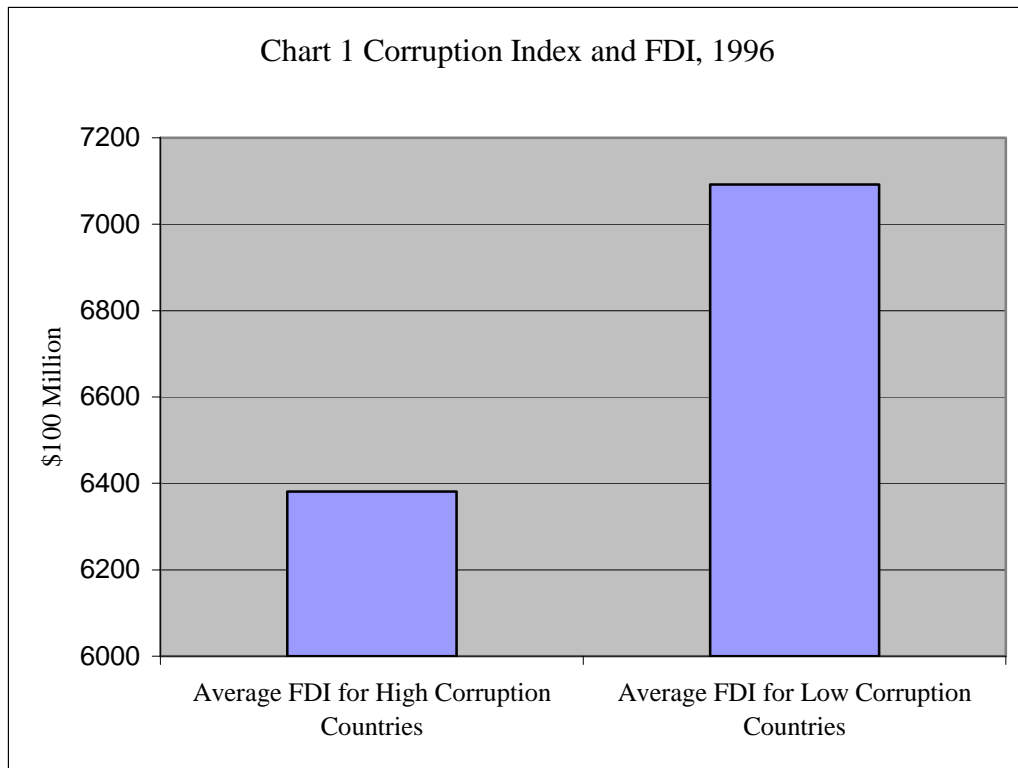
Finally, institutional factors such as corruption may hinder foreign investment. We include a corruption perception index to control for this factor.

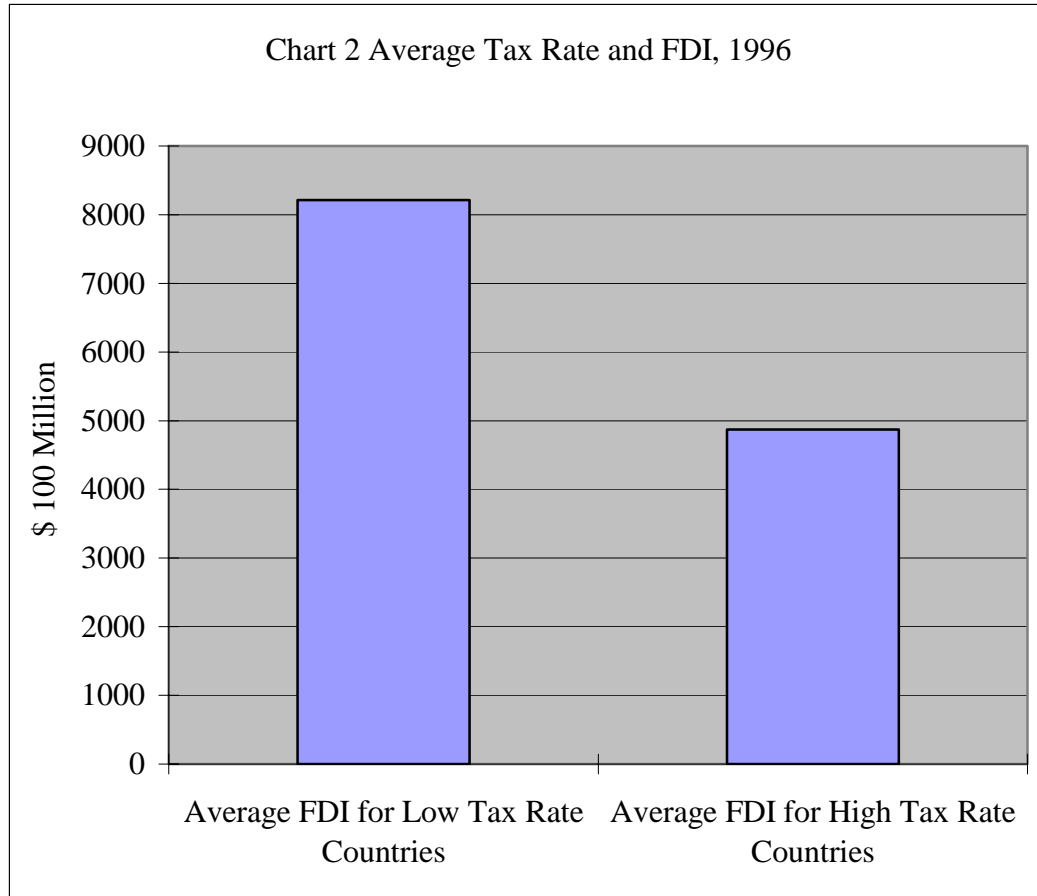
Our data set is an unbalanced panel. Depending on the measure of infrastructure that we use (and hence the number of missing observations), the number of countries will be 47 or 37 and the years will be 1995-2002 or 1996-2002, covering both developing and developed countries in different regions of the world. Most of our data are from the World Development Indicators (WDI) 2005, although information on taxes and labor cost are from the Bureau of Economic Analysis (BEA). A list of the countries and missing data, definition of the variables, data sources, and summary statistics are presented in Tables A-1, A-2, and A-3 in the appendix.

⁶ A smaller number indicates a higher ranking, but we use the transformation $(50 - \text{index value})$ so that a higher number is associated with a higher ranking in the regressions.

3. A First Look at the Data

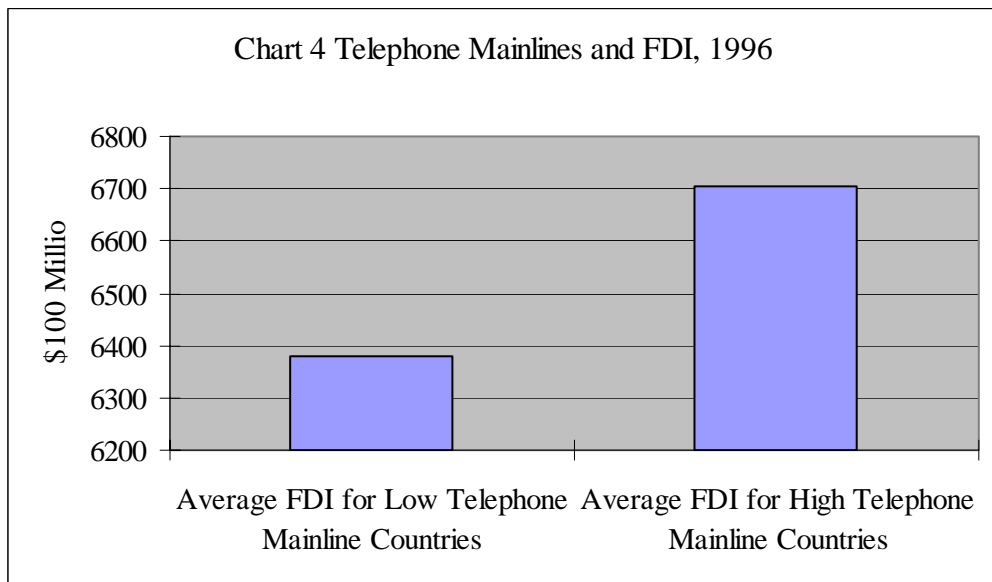
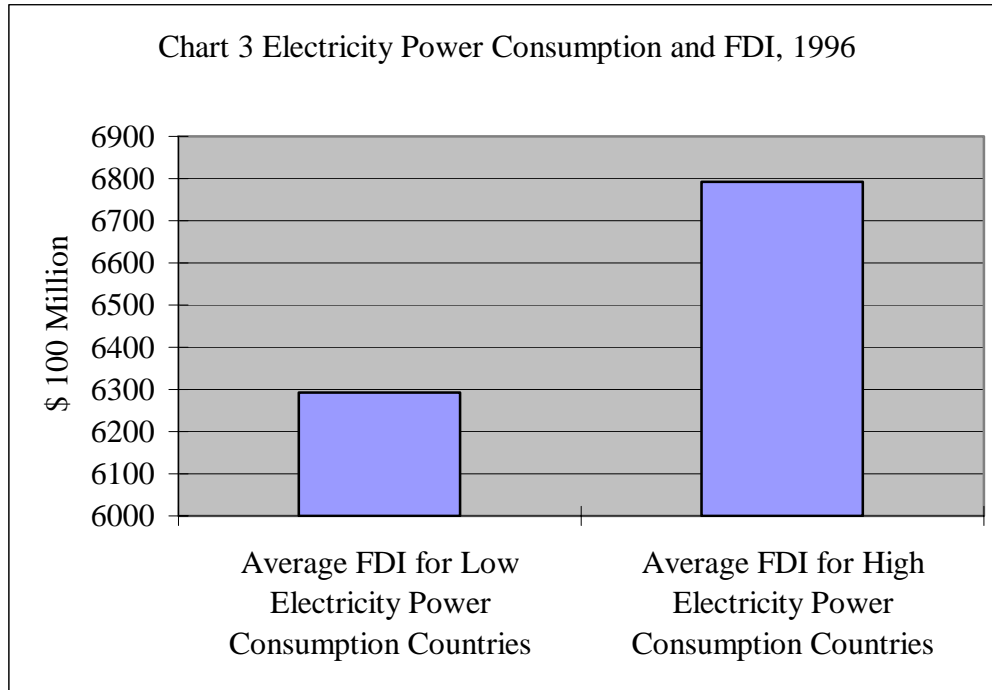
To provide a first look at the relationship between FDI inflows and corruption, taxes, and infrastructure, we construct a series of charts for a single year, 1996. Each chart sorts countries into two groups, high and low, which are defined as those countries above and those below the median value of the variable of interest (corruption, taxes, or infrastructure). Chart 1 shows average FDI inflows for high and low corruption countries for 1996. There is a clear inverse relationship: high corruption countries have less FDI inflows on average. Chart 2 shows average FDI inflows for high and low tax countries. Again a clear inverse relationship emerges: high tax countries have less FDI inflows on average.

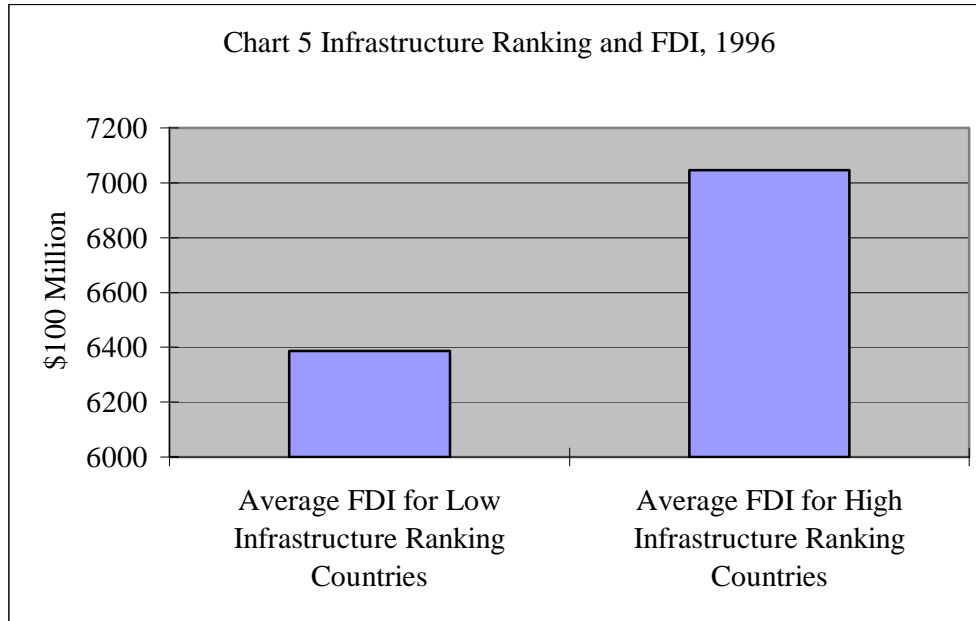




Charts 3, 4 and 5 show average FDI inflows for high and low infrastructure countries, using three different measures of infrastructure. Chart 3 uses electricity power consumption, chart 4 uses the number of telephone mainlines, and chart 5 uses a general infrastructure index.⁷ All three measures indicate that better infrastructure is associated with greater FDI inflows.

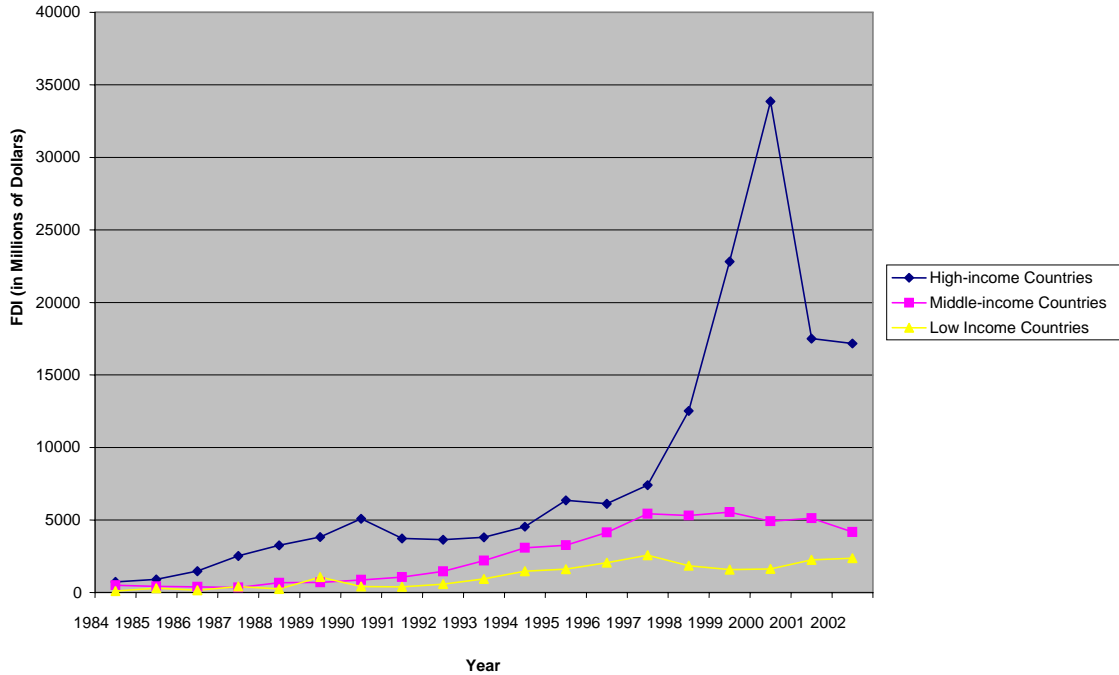
⁷ This index measures the extent to which resources and systems are adequate to serve the basic needs of business and is calculated with rankings from various issues of World Competitiveness Yearbooks. See Table A-1 in the Appendix.





While these simple cross-sectional relationships are suggestive, they of course fail to control for many other factors that can affect FDI inflows. For instance, FDI inflows from a longer time series (1984 – 2002), is shown in Chart 6 and splits FDI inflows between high-, middle-, and low-income countries. High income countries get on average more FDI inflows, with considerably less going to middle-income and low-income countries. Average FDI inflows rose steadily from 1984 until the late 1990s for all three country income categories. For high-income countries, FDI inflows spiked in the late 1990s, peaked in 2000, and declined thereafter. For low- and middle-income countries, FDI inflows leveled off (and declined slightly) in the late 1990s. Clearly one needs to control for other differences between countries that may impact FDI inflows. In the next section we do this and take advantage of the time-series variation in our unbalanced panel.

Chart 6. Average FDI Inflows in Countries by Income Categories



4. Regression Results

We will discuss the regression results in some detail below, but the main results concern the impact of corruption, taxes and particularly infrastructure quality, on FDI. Generally, the results across specifications indicate that corruption and tax levels negatively affect FDI inflows but that infrastructure quality has a positive impact. The positive association of infrastructure and inward FDI flows is quite strong for all measures of infrastructure quality, particularly when one controls for a general year-specific change in FDI across all countries by including year dummies. Government consumption expenditure is negatively related to FDI inflows but a strong relationship is evident only when an infrastructure index is used in the last specifications, as described below.

Table 1 presents three pairs of regression results, six columns in all. The first column of each pair is run with fixed country effects while the second is run with fixed country effects and time dummies. The first two columns are run for a base specification that does not include infrastructure variables. The second two columns are for a specification that includes electrical power consumption per capita and the number of telephone mainlines per 1000 inhabitants as infrastructure measures. The third pair of columns uses an infrastructure index to measure infrastructure spending. As noted above, this index averages a number of infrastructure types into a single index number.

Looking first at the corruption and tax variables, the estimates indicate that higher taxes and higher corruption lower FDI inflows. The tax variables are significant across all specifications. The corruption variables are always significant if time dummies are excluded. Including time dummies weakens somewhat the significance of corruption, but it maintains 90% significance in the last specification that includes the infrastructure index.

Different measures of infrastructure are included in columns 3-6. Columns 3 and 4 include electric power consumption and telephone mainlines and are highly significant. Columns 5 and 6 use an infrastructure index that is an amalgam of several different measures of infrastructure, as described earlier. The infrastructure index is significant once one controls for yearly FDI effects that are common across countries with year dummies in column 6.

What factors are most important in attracting FDI? One way to shed light on this question is to compare the magnitude of changes in taxes, corruption, and infrastructure. In elasticity terms, the magnitude of the response of FDI to infrastructure is similar to that

of corruption and taxes. As an example, the coefficients in column 6 evaluated at their means indicate an elasticity with respect to the tax rate of about -0.6, with respect to the corruption index of about 0.6, and with respect to the infrastructure index of close to 0.8. Thus, for column 6, an improvement in infrastructure is slightly more important in elasticity terms than either taxes or corruption.

Table 1. Determinants of FDI Fixed Effects; Unbalanced panel⁸; Columns 1-4: 1995-2002, Columns 5-6: 1996-2002

	(1)	(2)	(3)	(4)	(5)	(6)
Population	-0.356 (0.62)	-1.069 (1.91)*	-1.069 (1.96)*	-0.748 (1.35)	-0.736 (1.03)	-1.355 (2.06)**
Per capita GDP	-0.074 (2.34)**	-0.041 (1.35)	-0.087 (2.98)***	-0.071 (2.42)**	-0.047 (1.28)	0.003 (0.09)
Gov. Cons./GDP	-0.162 (0.56)	-0.329 (1.19)	-0.242 (0.92)	-0.041 (0.15)	-1.116 (1.58)	-1.496 (2.24)**
Exports/GDP	.2943 (3.34)***	-.0239 (0.24)	-.0303 (0.33)	-.0624 (0.66)	.3206 (3.23)***	-.0277 (0.25)
Labor Cost	-0.024 (2.25)**	-0.031 (2.81)***	-0.020 (2.03)**	-0.025 (2.33)**	-0.017 (1.46)	-0.027 (2.25)**
Avg. Eff Tax Rate	-11.627 (2.52)**	-9.334 (2.16)**	-8.004 (1.88)*	-8.814 (2.13)**	-23.867 (3.55)***	-20.639 (3.39)***
Corruption Index	1.056 (1.99)**	0.730 (1.45)	1.204 (2.47)**	0.724 (1.51)	1.447 (2.48)**	1.030 (1.93)*
Electric Power			3.721 (2.26)**	5.306 (2.60)***		
Tele. Mainline			0.094 (5.30)***	0.096 (4.67)***		
Infrastructure Index					0.156 (1.22)	0.294 (2.44)**
Constant	-27.431 (3.05)***	-1.717 (0.18)	-60.608 (5.89)***	-71.018 (4.47)***	-16.410 (1.02)	2.111 (0.13)
Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Time dummies included?	No	Yes	No	Yes	No	Yes
Observations	331	331	331	331	254	254
Number of countries	47	47	47	47	37	37
R-squared	0.15	0.29	0.29	0.36	0.17	0.36

Absolute value of t-statistics in parentheses

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

⁸ In this table, we rescale FDI by $\ln(\text{fdi}/\text{GDP}) \cdot 10$, per capita GDP by $\text{pgdp} \cdot 10^{-2}$, population by $\text{pop} \cdot 10^{-3}$, labor cost by $\text{labor} \cdot 10^{-2}$, electric power by $\text{epower} \cdot 10^{-3}$.

Among the classic control variables, wage costs are significantly negatively related to FDI across almost all specifications. Per capita GDP is negatively related to FDI inflows (suggesting that it is picking up a higher marginal product of capital in poorer countries) and tends to be significant without time dummies, but loses significance when time dummies are included. Population is also negatively related to FDI inflows and tends to gain in significance with time dummies. When significant, exports are positively related to FDI inflows, but the export to GDP ratio is significant only in columns 1 and 5 (where fixed effects without time dummies are employed). Finally, government consumption spending tends to be negatively related to FDI inflows, but is strong only when the infrastructure index is used to measure infrastructure quality in columns 5 and 6.

5. Conclusion

The main goal of this paper is to broaden the existing empirical literature on foreign direct investment by incorporating government expenditures (both investment in infrastructure and consumption) as well as tax, classical location factors, institutional factors that may impact business investment (such as corruption), and agglomeration effects in a panel data setting. We do so in an unbalanced panel data setting, where we use fixed effects to control for country specific idiosyncrasies and also year dummies in some specifications. Our two data sets span 1995-2002 and 47 countries or 1996-2002 and 37 countries, respectively, depending on the measure of infrastructure used in the regressions. The regression results indicate that lower taxes, lower corruption, and better infrastructure attract FDI. These results are robust and hold for within country variation when controlling for common year effects of FDI, and hence add strong evidence to previous cross-sectional results.

In conclusion, the adequate provision of infrastructure seems to be just as important in our data as low taxes and low corruption in attracting FDI. From a policy perspective, it would appear that the right approach by governments concerned with attracting foreign direct investment is to lower corruption and to keep taxes low but to maintain investment in infrastructure rather than using revenue for consumption expenditures. Keeping public revenues too low to adequately maintain or invest in infrastructure is unlikely to be a successful long run policy.

Appendix

Table A-1. Countries and missing data in regression specifications

Regressions 1-4 1995-2002		Regressions 5-6 1996-2002	
1	Argentina	1	Argentina
2	Australia	2	Australia
3	Austria	3	Austria
4	Belgium	4	Belgium
5	Brazil	5	Brazil
6	Canada	6	Canada
7	Chile	7	Chile
8	China	8	China
9	Colombia	9	Colombia
10	Costa Rica ⁹		
11	Denmark	10	Denmark
12	Ecuador ¹⁰		
13	Egypt ¹⁰		
14	Finland	11	Finland
15	France	12	France
16	Germany	13	Germany
17	Greece	14	Greece
18	Guatemala ¹¹		
19	Honduras ¹¹		
20	Hong Kong	15	Hong Kong
21	India	16	India
22	Indonesia ¹²	17	Indonesia ¹²
23	Ireland	18	Ireland
24	Israel ¹³	19	Israel
25	Italy	20	Italy
26	Jamaica ¹⁴		
27	Japan	21	Japan
28	Luxembourg ⁹	22	Luxembourg
29	Malaysia	23	Malaysia
30	Mexico	24	Mexico
31	Netherlands	25	Netherlands
32	New Zealand	26	New Zealand
33	Nigeria ¹³		
34	Norway	27	Norway
35	Panama ¹⁵		
36	Peru ¹⁰		
37	Philippines	28	Philippines
38	Portugal	29	Portugal
39	South Africa	30	South Africa
40	Spain	31	Spain
41	Sweden	32	Sweden
42	Switzerland	33	Switzerland
43	Thailand	34	Thailand
44	Trinidad and Tobago ¹⁵		
45	Turkey	35	Turkey
46	United Kingdom	36	United Kingdom
47	Venezuela ¹³	37	Venezuela

⁹ CPI is missing for 1995-1996.

¹⁰ CPI is missing for 1995-1997.

¹¹ CPI is missing for 1995-1997, and 2000.

¹² FDI has negative entries for 1998-2001, and therefore were left out when taking logs.

¹³ CPI is missing for 1995.

¹⁴ CPI is missing for 1995-1997, 2000-2001.

¹⁵ CPI is missing for 1995-2000.

Table A-2. Data Source and Definitions

Variable	Definition	Source	Years
FDI/GDP ¹⁶		UNCTAD and World Development Indicator (WDI) 2005	1995-2002
Population	Population (10,000s)	World Development Indicator (WDI) 2005	1995-2002
Per capita GDP	In Current Dollars	World Development Indicator (WDI) 2005	1995-2002
Government Consumption Expenditure/GDP ¹⁷	General government final consumption expenditure (% of GDP)	World Development Indicator (WDI) 2005	1995-2002
Export/GDP		World Bank	1995-2002
Labor Cost	Wages of employees working in US companies' foreign affiliates, (\$/year)	Bureau of Economic Analysis (BEA)	1995-2002
Average Effective Tax Rate	Average Effective Tax Rate = foreign income taxes/(foreign income tax + net income) of all affiliates for U.S. firms operating abroad in each country and year	Calculated with data from Bureau of Economic Analysis (BEA)	1995-2002
Corruption Perception Index	Corruption Perception Index, ranging from 0-10, with 10 denoting least corruptive	Transparency International	1995-2002
Infrastructure Ranking	Ranking for infrastructure among factors of competitiveness, measured by the extent to which resources and systems are adequate to serve the basic needs of business	World Competitiveness Yearbook, World Competitiveness Center, IMD	1996-2002
Electric Power	Electric power consumption (kwh per capita)	World Development Indicator (WDI) 2005	1995-2002
Telephone Mainline	Telephone mainlines (per 1,000 people)	World Development Indicator (WDI) 2005	1995-2002

¹⁶ According to the UNCTAD definition, for associates and subsidiaries, FDI flows consist of the net sales of shares and loans (including non-cash acquisitions made against equipment, manufacturing rights, etc.) to the parent company plus the parent firm's share of the affiliate's reinvested earnings plus total net intra-company loans (short- and long-term) provided by the parent company. For branches, FDI flows consist of the increase in reinvested earnings plus the net increase in funds received from the foreign direct investor. FDI flows with a negative sign (reverse flows) indicate that at least one of the components in the above definition is negative and not offset by positive amounts of the remaining components.

¹⁷ General government final consumption expenditure includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security but excludes government military expenditures that potentially have wider public use and are part of government capital formation.

Table A-3. Summary of statistics

Summary of Statistics for Regression 1-4

Variable	Obs	Mean	Std.Dev.	Min	Max
FDI	331	12133.47	20750.19	41.46307	198276.5
Population	331	9038.103	23746.79	42.2	128040
Per capita GDP	331	14734.76	12497	266.0538	47703.41
Government Consumption Expenditure/GDP	331	16.51411	5.396421	5.0128	31.168
Export/GDP	331	40.12616	29.11883	7.121518	153.3906
Labor Cost	331	30580.74	18014.21	2930.801	83882.87
Average Effective Tax Rate	331	0.313785	0.165671	0.009205	0.924658
Corruption Perception Index	331	5.747825	2.536534	0.69	10
Electric Power	331	5070.857	4938.95	68.166	24858.41
Telephone Mainline	331	357.0402	233.2334	3.7979	796.82

Summary of Statistics for Regression 5-6

Variable	Obs	Mean	Std.Dev.	Min	Max
FDI	254	14810.71	22806.14	50.5	198276.5
Population	254	9821.691	25371.11	42.2	128040
Per capita GDP	254	16615.79	12272.16	406.2273	47703.41
Government Consumption Expenditure/GDP	254	17.16338	5.226445	5.0128	31.168
Export/GDP	254	41.79072	31.03655	7.121518	153.3906
Labor Cost	254	32457.16	17629.12	2930.801	81557.38
Average Effective Tax Rate	254	0.290586	0.151215	0.009205	0.77
Corruption Perception Index	254	6.135472	2.437442	1.9	10
Infrastructure Ranking	254	26.5	13.34722	1	48

References

- Altshuler, Rosanne, Harry Grubert, and T. Scott Newlon, 2001, "Has U.S. Investment Become More Sensitive to Tax Rates?" in: James R. Hines, Jr. (editor), International Taxation and Multinational Activity, University of Chicago Press, 9-32.
- Asiedu, Elizabeth. 2002. "On the Determinants of Foreign Direct Investment in Developing Countries: Is Africa Different?" *World Development* 30:1, pp. 107-119.
- Auerbach, Alan J. and Kevin Hassett. (1993) "Taxation and Foreign Direct Investment in the United States: A Reconsideration of the Evidence," in Alberto Giovannini, R. Glenn Hubbard, and Joel Slemrod (eds.) Studies in International Taxation. Chicago: University of Chicago Press, 119-44.
- Boskin, Michael J. and William G. Gale. 1987. "New Results on the Effects of Tax Policy on the International Location of Investment." In The effects of taxation on capital accumulation, 1987, pp. 201-19, A National Bureau of Economic Research Project Report Chicago and London: University of Chicago Press.
- Cheng, Leonard and Yum Kwan. 2000. "What are the determinants of the location of foreign direct investment? The Chinese experience." *Journal of International Economics*. 51: 379-400.
- Cummins, Jason G. and R. Glenn Hubbard. 1995. "The Tax Sensitivity of Foreign Direct Investment: Evidence from Firm-Level Panel Data." In Martin Feldstein, James R. Hines Jr., and R. Glenn Hubbard eds. The Effect of Taxation on Multinational Corporations. Chicago: University of Chicago Press.
- Dollar, David, Mary Hallward-Driemeier, and Taye Mengistae. 2004. "Investment Climate and International Integration." Development Economics, World Bank. The World Bank, Policy Research Working Paper Series: 3323.
<http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN019818.pdf>
- Edwards, Sebastian. 1990. "Capital Flows, Foreign Direct Investment, and Debt-Equity Swaps in Developing Countries." NBER working paper #3497.
- Grubert, Harry and John Mutti. 1991. "Financial Flows versus Capital Spending: Alternative Measures of U.S.-Canadian Investment and Trade in the Analysis of Taxes." *Review of Economics and Statistics*, 73, 285-293.
- Hartman, David G. 1984. "Tax Policy and Foreign Direct Investment in the United States." *National Tax Journal*, 37, 475-87.
- Hines, James R., Jr. 1996. "Altered States: Taxes and the Location of Foreign Direct Investment In America." *American Economic Review* 86: 1076-1094.
- Hines, James R., Jr. and Eric M. Rice. 1994. "Fiscal Paradise: Foreign Tax Havens and American Business." *Quarterly Journal of Economics*, February 1994, v. 109, iss. 1, pp. 149-82.
- Kumar, Nagesh. 2001. "Infrastructure Availability, Foreign Direct Investment Inflows and Their Export-orientation: A Cross-Country Exploration." Research and Information System for Developing Countries, New Delhi, November 2001
- Lipsey, Robert. 2002. "Home and Host Country Effects of FDI." NBER Working Paper #9293.
- Loree, David W. and Stephen E. Guisinger. 1995. "Policy and non-policy determinants of U.S. equity foreign direct investments." *Journal of International Business Studies*. 26:2, pp. 281-299.
- Markusen, James R. 1991. "First Mover Advantages, Blockaded Entry, and the Economics of Uneven Development," in Elhanan Helpman and Assaf Razin (editors), *International Trade and Trade Policy*, MIT Press: Cambridge, 245-269.
- Oates, Wallace. 1999. "An Essay on Fiscal Federalism." 1999. *Journal of Economic Literature*, Vol. 37, No. 3., pp. 1120-1149.
- Ondrich, Jan, and Michael Wasilenko. 1993. "Foreign Direct Investment in the United States: Issues, Magnitudes, and Location Choice of New Manufacturing Plants." Kalamazoo, Mich.: W. E. Upjohn Institute for Employment Research, pp. ix, 159.
- Tiebout, Charles. 1956. "A pure theory of local expenditures." *Journal of Political Economy*. 64: 416-424.
- Wei, Shang-Jin. 2000a. "How Taxing is Corruption on International Investors?" *Review of Economics and Statistics*. 82 (1): 1-11.
- Wei, Shang-Jin. 2000b. "Local Corruption and Global Capital Flows." *Brookings Paper on Economic Activity*. 2: 303-354.

- Wheeler, David and Ashoka Mody. 1992. "International Investment Location Decisions: The Case of U.S. Firms." *Journal of International Economics*. 33: 57-76.
- Young, Kan H. 1988. "The Effects of Taxes and Rates of Return on Foreign Direct Investment in the United States." *National Tax Journal*, March 1988, v. 41, iss. 1, pp. 109-21.