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# **The Effect of Tax-Burdens on Foreign Direct Investment: A Cross-Sectional Look at Developing Economies**

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## **Abstract:**

This paper investigates the effect that certain aspects of the tax burden have on foreign direct investment in developing economies. Using data from 35 select countries, the paper uses an OLS regression model to determine the impact that various taxes, both on individuals and corporations, can have on FDI. The paper concludes that corporate tax rates are not a statistically significant factor for determining FDI inflows into a host country, but that indirect tax rates are. This is likely due to the use of ‘enterprise zones’, which offer favorable indirect tax rates to companies that choose to operate in a certain region of a host country.

JEL classification: F21, F23, H24, H25, C31

Keywords: Foreign direct investment, Capital taxation

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## 1.0 Introduction

Foreign Direct Investment has played a vital role in developing countries around the world. Poor countries often have low savings rates and thus, they must rely on FDI for the investment needed to lift them from the depths of poverty. Many nations use cuts in the corporate tax rates to encourage foreign firms to invest in their economy. This study aims to discern the effect that this corporate tax rate, as well as the value-added tax, has on the location of FDI. It tries to quantify exactly what impact that these tax rates have on the composition of FDI as a percentage of the host country's GDP. The connection has important implications for macroeconomic policy. Presumably, developing countries who could benefit from additional FDI would desire to have it constitute a significant portion of their GDP, at least until they have the sufficient savings to sustain domestic investment. As such, these countries often use corporate and other tax cuts to attract foreign capital. Whether or not these taxes have a significant impact on FDI largely impacts the merit of these tax cuts.

This study aims to fulfill two research objectives, one that is shared with many papers on the topic and one that is not. Primarily, it aims to determine whether or not corporate and indirect taxes play a significant role in attracting FDI to developing countries. Several papers on this topic have concluded that lower tax rates do in fact correlate with increased FDI inflows. However, these papers have focused primarily on developed countries, or developing countries in a specific region. The study of taxes and FDI with relation to developing countries as a whole is currently a void in the literature. This study aims to define whether or not taxes play a significant role in bringing capital to *developing* countries, countries which arguably need it most.

In addition to focusing solely on developing countries, this paper also aims to quantify the effects that indirect tax rates have on foreign direct investment. International firms such as KPMG have entire practices based on "advising on the indirect tax consequences of entering new markets,"<sup>1</sup> so it is likely that indirect tax rates are a significant factor in the investment decisions of multinational firms. This paper aims to go beyond the current literature and examine cross-sectionally how both corporate and indirect tax rates affect investment decisions.

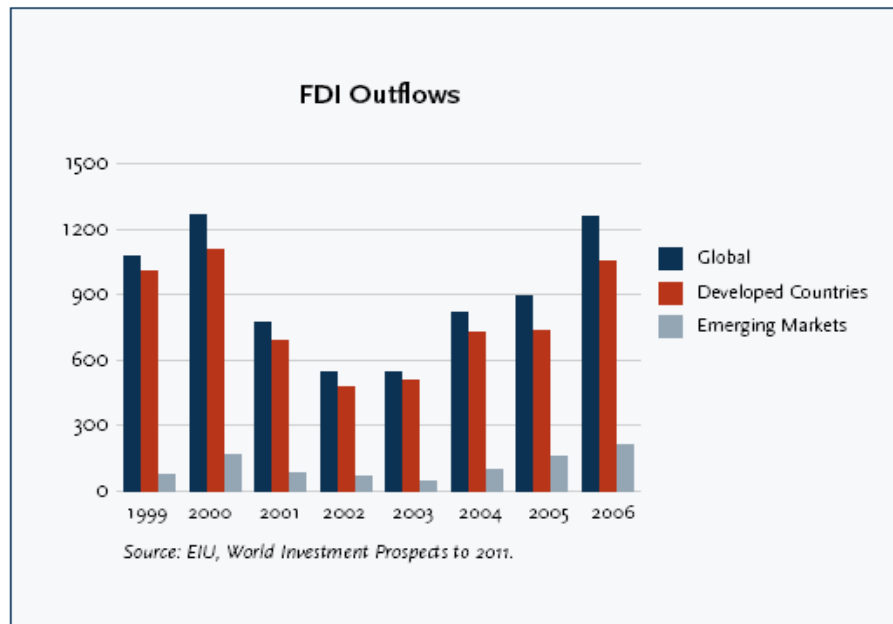
The rest of the paper is organized as follows: Section 2 discusses the trends of this research topic. Section 3 gives a concise literature review. Section 4 outlines the empirical model

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<sup>1</sup> <http://www.kpmg.com/Global/WhatWeDo/Tax/GlobalIndirectTax/Pages/default.aspx>

used. Section 5 presents and analyzes the empirical results. Lastly, section 6 follows with a conclusion.

## 2.0 Trends



**Figure 2- 1: FDI Flows, 1999-2006**

For the past ten years, foreign direct investment has been on the upswing in certain regions of the world. This stream of investment has taken several different forms. Firms in highly developed countries such as the United States continue to look for ways to improve their financial performance, and one of these ways is to cut labor costs. The abundance of cheap labor in developing countries has led to a flood of outsourcing in the past decade. Much of this outsourcing results in FDI in other countries, often in the form of factories or other physical capital. Other times, multinational corporations looking to diversify or expand seek to acquire controlling shares of foreign companies. These acquisitions are another source of FDI for developing countries. An increase in overseas operations, as well as increased investment in other companies outside the home nation has characterized the business climate of the twenty-first century. FDI was at a peak in 2000, and experienced steady decline in the next few years. This was likely due to the September 11 attacks, which induced fear in many international investors. Despite this setback, the global economy made a recovery, and FDI continued to grow after reaching a low in 2003. FDI flows finally reached their 2000 levels again in 2006, and we

expect to see increasing FDI in the years to come. Figure 2-1 on the previous page shows the amount of global FDI from 1999 to 2006.

One can see from Figure 2-1 that FDI flows to developing countries are a relatively small portion of the overall foreign investment. Nevertheless, foreign direct investment is an important source of capital for developing countries. It is crucial in boosting their economy and their domestic savings are often not enough to support investment without it. Because of this, many countries are increasingly opening their borders to support FDI. One of the ways in which countries are differentiating themselves from their neighbors to attract FDI is through the corporate tax rate. Multinational corporations looking to minimize their overall tax burden are often willing to shift operations to countries with lower corporate rates, and as the economy becomes more globalized, this tax rate is becoming more of a potential competitive advantage. A survey by the accounting firm KPMG, which tracked corporate tax rates in 86 countries from 1993 to 2006, found that “the survey has recorded a consistent and dramatic reduction in corporate tax rates over that 14-year period.”<sup>2</sup> Figure 2-2 shows the overall downward trend that global competition has had on corporate tax rates:

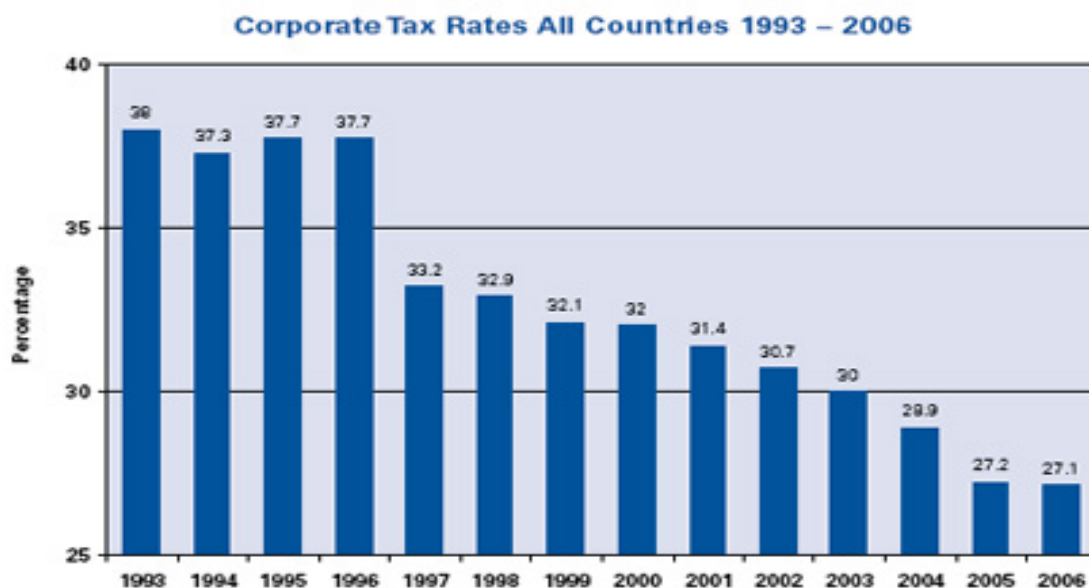


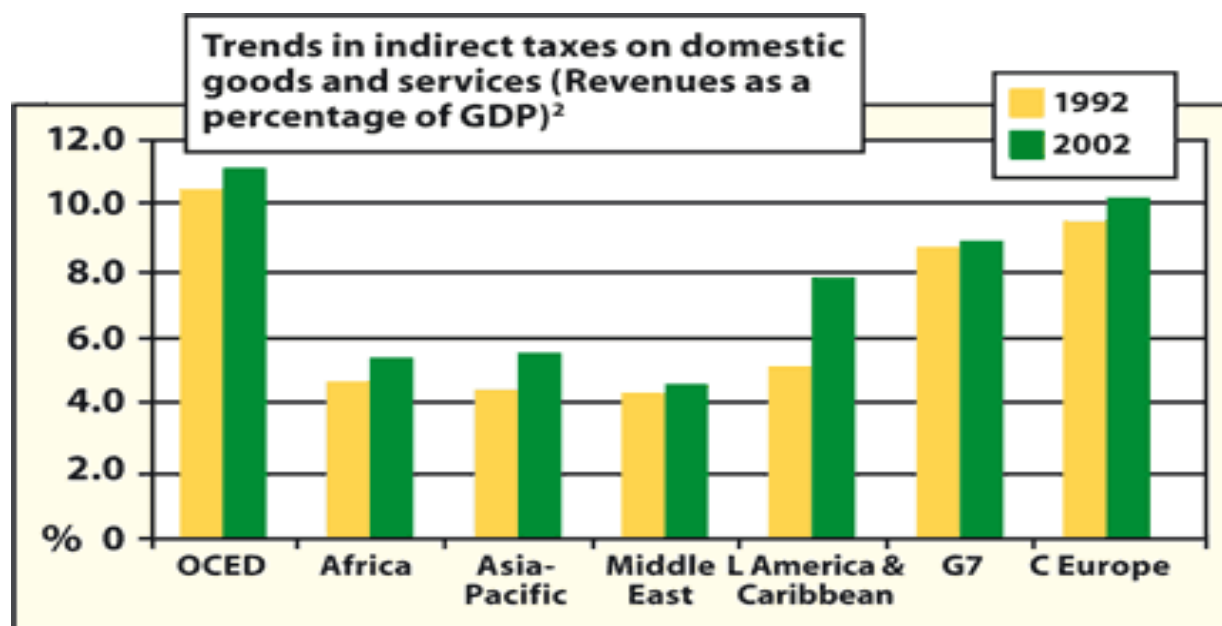
Figure 2-2: Average Corporate Tax Rate, 1993-2006

Source: [www.thetaxfoundation.org](http://www.thetaxfoundation.org)

<sup>2</sup> <http://www.taxfoundation.org/blog/show/1978.html>

Global competition for increasingly mobile capital has undoubtedly driven down corporate tax rates. But the corporate tax rate is just one of several taxes that could potentially influence the location decision of multinational firms. This paper also aims to discern the effect that the value-added tax (or sales tax in some countries) has on the FDI inflows in a particular country.

Another trend that we seek to analyze for the purpose of this paper is that of indirect taxes. Since the paper seeks to identify both corporate and indirect tax rates as factors in investment decisions, it is prudent to examine the global trend for indirect taxes in addition to the trend in corporate taxes.



**Figure 2-3: Indirect Taxes by Region, 1992 and 2002**

Source: <http://www.newint.org/features/2008/10/01/facts-tax>

As one can infer from the graph above, indirect tax rates have not changed by nearly the same magnitude as corporate tax rates have. In fact, while corporate tax rates have declined substantially over this period, indirect tax rates have increased in all the surveyed regions. This makes sense economically, as many countries have likely resorted to increasing indirect tax rates to offset declining corporate tax revenues. However, it implies that countries are not likely using indirect tax rates as a competitive advantage for attracting foreign investment, as they are with corporate rates. Countries likely do not view indirect taxes as a significant factor for investment, and thus are very willing to substitute indirect taxes for corporate taxes. However, although not

adjusted on a competitive basis, multinational firms may still consider indirect taxes a factor for their investment decisions. This study aims to find whether or not that is true.

### 3.0 Literature Review

The empirical research on this topic comes to a general consensus that corporate income taxes have a statistically significant effect on foreign direct investment, whether at the state level or the country level. Gropp and Kostial (2000) argue that tax regimes, including corporate tax rates, significantly affect FDI inflows for a foreign country. They also note the trend that the competitive market for FDI causes countries to systematically lower their corporate tax rates and thus erode the tax base. Bellak et. al (2007) also agree that changes in the corporate tax rate are negatively correlated with FDI inflows. They also say that changes in the tax rate become less effective at attracting FDI as a nation's infrastructure becomes more developed. Desai and Hines Jr. (2001) were rare in that they also studied the effect of taxes other than the corporate income tax. "Taxes other than income taxes significantly affect the pattern of income production by multinational firms by altering their investment and transfer-pricing incentives. (Desai and Hines Jr, 2001)" They also said that governments are likely competing actively for FDI using their other tax rates as differentiation. Mooij and Ederveen (2001) took the analysis a step further and calculated that a 1% change in corporate income tax rate corresponds to 3.3% decrease in FDI inflows. They also argue that marginal or average tax rates have more of an impact on investment decisions than the statutory base rate does. Cummins and Hubbard (1994) further discredit the notion that taxes do not affect international investment decisions. In fact, the authors argue, "Tax parameters influence foreign direct investment in precisely the ways indicated by neoclassical models." Hines Jr. (1993) was unique in that it looked at investment decisions for individual U.S. states. It found that the same patterns found in country-level data held true for states, pointing out that high corporate income tax rates had a negative effect on a state's investment flows from other states. Egger et. Al (2007) had findings consistent with most empirical studies, in that "Unilateral tax rates significantly affect the production and location decisions of multinational firms." However, the paper goes on further to explain that bilateral tax rates (the tax rate of the host country in relation to the investing country) are also very significant for investment decisions. Overall, the general consensus is that corporate income tax rates do in fact have a statistically significant effect on foreign investment decisions.

## 4.0 Data and Empirical Methodology

### 4.1 Definition of Variables

$$FDI_{\%GDP} = \beta_0 + \beta_1 FDI + \beta_2 GDPCAPITA + \beta_3 CORPTAX + \beta_4 INDIRECTTAX + \beta_5 PROJGROWTH + \beta_6 INFLATION + \beta_7 OPENNESS$$

This empirical model is based on one used by Gropp and Kostial (2000) where Ordinary-Least Squares (OLS) regression model used to determine the impact of seven variables on a country's FDI to GDP ratio. In this empirical model, FDI represents the flow of funds from all foreign countries to a particular host country in the year 2007. The transfer of funds to foreign affiliates takes one of three forms: equity capital, inter-company debt, and reinvested earnings. The definition of FDI in this paper is consistent with the IMF definition of FDI flows. FDI as a percentage of GDP is used rather than the absolute value of GDP inflows. This is so that the coefficient of the independent variables does not change with the scale of the country being considered. This is necessary because of the cross-sectional nature of the data. For example, if the absolute value was being used, the regression might show that a 1% change in the corporate income tax rate changes FDI by \$500 million. This doesn't make sense in a country like Ecuador, where the total FDI for the year was only \$178 million. For this reason, FDI as a percentage of GDP is used.

Independent variables consist of seven variables obtained from various sources. Appendix A provides data source, descriptions, and expected signs for the variables. The FDI of the host country is used to control for economies that already have substantial investment. These countries have proven stable and profitable for FDI and thus are likely to attract more. GDP per capita is used for a similar reason, to control for larger countries that have more market opportunities and are thus likely to attract FDI. CORPTAX is the first focal variable of the study. It measures the corporate tax rate that the host country imposes on corporations. The rate levied on income accrued to foreign corporations is used, if it differs from the domestic rate. INDIRECTTAX is the tax rate levied on purchases or consumption within the host country, either a sales or a value-added tax. Tax data was obtained from Deloitte International Tax Source. PROJGROWTH is the projected growth rate in the country's economy for the 2008, the year following the investment year. This data was obtained from the IMF's World Economic Outlook Database, October 2007. INFLATION is lagged one year, and it is included to show the presumably negative effect that rampant inflation has on the outlook of investors. OPENNESS is



measured by imports and exports as a percentage of GDP. It is included to control for the fact that countries considered more “open” are inherently more appealing for foreign direct investment. Data for GDP, Inflation, and trade was obtained from the IMF’s World Economic Outlook Database, October 2007.

## **4.2 Data**

The data to determine the above variables was obtained from various sources. The data for FDI inflows to the sampled countries was obtained from the United Nations Conference on Trade and Development (UNCTAD) web site, specifically the FDISTAT program. Data for GDP, projected growth, and inflation were obtained from the International Monetary Fund’s World Economic Outlook reports from various years. GDP for 2007 and inflation rates from 2005 were obtained from the October 2008 reports, and projected growth for 2007 was obtained from the October 2006 report. The October 2006 report was chosen because the 2007 growth rate projected at the end of 2006 would have been consistent with the projections firms would use to estimate growth in various countries, from which they could potentially choose as a location for investment. Corporate and indirect tax data for most countries was obtained from Deloitte’s International Tax Source database, at <http://www.dits.deloitte.com/Default.aspx>.

## **5.0 Empirical Results**

This paper uses an Ordinary-Least Squares (OLS) model to determine the correlation between a country’s foreign direct investment inflows and its corporate and indirect tax rates. Table 1 shows the results from this model. Contrary to what was expected, corporate taxes are not a statistically significant factor for FDI composition in developing nations. The model does show some linkage between corporate taxes and FDI, but not enough to be statistically significant. Indirect taxes, though, are indeed statistically significant. However, we expected that the indirect taxes would carry a negative sign for the coefficient, but instead the results show indirect taxes are positively correlated. This could be due to the fact that countries with higher overall indirect rates are better able to offer foreign businesses incentives to locate in so called ‘enterprise’ zones. These are certain areas, designated by the host country, which have much lower indirect tax rates (sales or VAT) than the rest of the country. The fact that the indirect tax rate shows a positive coefficient could indicate that countries actively soliciting FDI have a higher national indirect rate but make better use of enterprise zones. Overall, the data shows that every 1% increase in the indirect tax rate corresponds to a 0.43% increase in the FDI/GDP ratio.

Another possible explanation for the positive coefficient is the relation between corporate and indirect tax rates. If a country is using indirect tax rates to lure foreign investment, it is likely that they are competing on a corporate tax basis as well. This means that as countries slash their corporate tax rates to lure investment (reflected by a negative coefficient in our model), they might increase indirect tax rates to offset the revenue loss. This possible strategy explains both the negative coefficient for corporate taxes and the positive coefficient for indirect taxes. However, although it explains the correlation between indirect tax rates and FDI, it does not necessarily explain the causation. The data does not indicate whether the FDI is actively drawn by indirect tax adjustments, or if the higher indirect tax rates are simply a reaction to reductions in other taxes.

In addition to the focal points of corporate and indirect taxes, this study also analyzed a number of control variables to better understand what drives foreign investment decisions, as well as to avoid any omitted-variable bias. These variables did not prove statistically significant, with the exception of openness, which was significant down to the 1% level. For the selected sample, a 1% increase in openness corresponded to a 0.532% increase in the FDI/GDP ratio. Considering openness reached as high as 386% percent in this sample, this shows the power that maintaining open trade can have for attracting investment. The projected growth rate of the country showed some linkage, but not enough to be statistically significant. This indicates that for a developing country, the most important factors that correlate with foreign investment inflows are indirect tax rates and openness, closely followed by corporate tax rates and projected growth.

**Table 1 – Regression Results**

Variable	Coefficient	Standard Error	t-Statistic	Probability
INDIRECTTAX	0.431319**	0.168550	2.559002	0.0183
CORPTAX	-0.126026	0.131126	-0.961107	0.3474
OPENNESS	0.05327276***	0.01835575	0.02902238	0.0085
PROJGROWTH	0.689471	0.515859	1.336551	0.1957
INFLATION	0.072827	0.183438	0.397011	0.6954
GDPCAPITA	-.0000970	0.000165	-0.587125	0.5634
FDI2007	-.0000379	0.000048	-0.845875	0.4072
C	-5.768501	6.275358	-0.919231	0.3684

\*, \*\*, and \*\*\* indicates significance at the 10%, 5%, and 1% level, respectively.

R-squared                    0.594225

Adjusted R-squared        0.458967

## 6.0 Conclusion

The results of this model draw conclusions that are substantially different than what the literature would predict. Most of the literature concluded that the corporate tax rates are a significant factor for international investment decisions. However, this paper concludes that for these countries, corporate tax rates are not a statistically significant factor in determining FDI inflows. However, the paper concludes that indirect tax rates are a significant factor for determining FDI in developing countries – a similar finding to that of Desai and Hines Jr. (2001). We also find that a developing country's level of openness is very important for determining FDI inflows. The major implication made by this paper is that international corporations consider different factors when investing in developing nations than they do when considering developed nations. Developed countries are generally stable, have low, predictable growth rates, and are very open to trade. Thus, when investing in developed countries, firms are likely to look more at

corporate tax rates, which can have a significant factor on their total profits. This idea is backed by the majority of the literature on this topic. However, this paper provides some insight into the decision factors for investment in developing nations. The model indicates that the two most important factors for determining FDI inflows in a given country are indirect tax rates and openness. Openness is immediately intuitive, as firms are likely to invest in countries that make it easy to trade and do business internationally. The correlation between indirect tax rates and FDI, however, is not quite as apparent. It is possible that countries with higher indirect tax rates are those who levy high value-added taxes nationwide but make effective use of enterprise zones to lure foreign investment. This would explain the puzzling positive correlation between indirect tax rates and FDI as a percent of GDP.

## **6.1 Policy Implications**

The findings in this paper have considerable implications for economic policy. It finds that corporate tax rates are not statistically significant for determining the proportion of FDI inflows into a country. Developing countries often rely on foreign investment to sustain capital expansion that their domestic population is unable to support on its own. Economic theory would indicate that corporate tax rates would be a significant decision factor; the fact that it isn't has implications for the economic strategy of developing nations. Instead, the paper suggests that these countries should focus first on making their country as open to trade as possible, as this has a huge impact on FDI (5% of GDP for every 1% increase in openness). Also, the paper suggests that countries may be able to raise their overall indirect tax rates, and offer businesses incentives via enterprise zones. This allows governments to have greater flexibility in making certain locations seem attractive for investment, and the data suggests that it is an effective strategy.

**Appendix A: Variable Descriptions**

Acronym	Description	Data Source	Expected Sign (+/-)
FDI%GDP	Foreign Direct Investment as a percentage of the host country's GDP in 2007	See sources for "FDI" and "GDPCAPITA"	
FDI	Foreign Direct Investment inflow to the host country in 2007, expressed in United States dollars	United Nations Conference on Trade and Development (UNCTAD) web site – "FDISTAT"	+
GDPCAPITA	Gross Domestic Product per capita in the host country in 2007, expressed in United States dollars	Data for GDP and GDP per capita obtained from the IMF's World Economic Outlook Reports	+
CORPTAX	The statutory corporate income tax rate levied on foreign corporations in the host country in 2007. Expressed as a percentage.	Deloitte International Tax Source and <a href="http://www.doingbusiness.org">www.doingbusiness.org</a> for selected countries.	-
INDIRECTTAX	The indirect tax rate (either sales or value added, depending on which is used) in the host country in 2007. Expressed as a percentage.	Deloitte International Tax Source and <a href="http://www.doingbusiness.org">www.doingbusiness.org</a> for selected countries.	-
PROJGROWTH	Projected growth rate in the host country's gross domestic product in 2008. Expressed as a percentage.	IMF World Economic Outlook Reports	+
INFLATION	The inflation rate in the host country in 2005. Data is lagged two years to show delayed effects of inflation. Expressed as a percentage.	IMF WEO Reports	-
OPENNESS	A measure of the host country's openness to trade. Measured as total exports plus total imports, all over gross domestic product. Expressed as a percentage.	Trade Data obtained from Correlates of War Project Trade Data Set Codebook.	+

**Appendix B: Summary Statistics**

Variable	Observations	Mean	Std Dev	Min	Max
FDI%GDP	30	6.00	6.28	0.28	28.91
FDI	30	\$15,646	\$19,277	178	83521
GDPCapita	30	\$8,494	\$7,801	828.85	35,162.93
CorpTax	30	25.85	6.49	15	35
IndirectTax	30	14.55	5.76	0	22
ProjGrowth	30	5.57	1.60	2.7	10
Inflation	30	5.82	4.06	0.7	17.1
Openness	30	89.6400	70.0700	23.04	386.55

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