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Foreign direct investment and the ease of doing business

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**Foreign Direct Investment and
The Ease of Doing Business**

Adrian Corcoran and Robert Gillanders, University College Dublin,

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Foreign Direct Investment and The Ease of Doing Business*

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Abstract

This paper examines the effect that a country's business regulatory environment has on the amount of foreign direct investment it attracts. We use the World Bank's *Ease of Doing Business* ranking to capture the costs that firms face when operating in a country. Several interesting results emerge. Firstly, the Doing Business rank is highly significant when included in a standard empirical FDI model estimated on data averaged over the period 2004-2009. Secondly, the significance of the overall Doing Business is driven by the *Ease of Trading Across Borders* component. We argue that this is a more intuitively appealing proxy for trade costs than the often used openness variable. The relationship does not seem to exist for the World's poorest region, Sub-Saharan Africa, or for the OECD. Finally, we find no evidence that the ease of doing business of nearby countries has an effect on the FDI that a country gets in general. However, in terms of attracting FDI from the US, it helps to be near countries with good trade regulation and bad regulation in other respects.

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Keywords: Foreign Direct Investment, Business Regulation

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1 Introduction

This paper uses a relatively new data resource to examine a relatively old issue: the effect that favourable business regulation in general, and in the realm of international trade in particular, has on how much Foreign Direct Investment (FDI) a country attracts. The recent claim by the World Bank that “the factors driving investment decisions by multinational corporations are changing...with a focus on stable and predictable business environments” (*Investing Across Borders 2010*, page *v*) motivates this study. The World Bank’s status as a key actor in the world of development means that such claims are likely to carry substantial weight. In addition, unlike many of the FDI determinants that have been found to be significant in the literature, the business environment can be affected by government policy and arguably rather quickly at that.¹

The measure of the business environment we use is the World Bank’s *Ease of Doing Business* ranking. We will define this measure in detail below, but the following statement explains the philosophy of the Doing Business project and also hints at a policy prescription:

A fundamental premise of Doing Business is that economic activity requires good rules – rules that establish and clarify property rights and reduce the cost of resolving disputes; rules that increase the predictability of economic interactions and provide contractual partners with certainty and protection against abuse. The objective is regulations designed to be efficient, accessible to all and simple in their implementation. *Doing Business Report 2011*, page 12.

This quote coupled with the preceding one makes it clear that there is a pronounced push to deregulate. This policy prescription has been borne out in other spheres. Researchers have found benefits associated with improvements in both the overall ease of doing business and its components. For example, Djankov, McLiesh and Ramalho (2006) and Gillanders and Whelan (2010) present evidence that the ease of doing business is good for growth and development while Djankov, Freund and Pham (2010a) find a significant effect of time delays on trade.

Our key questions in this paper are simple. Firstly, is the ease of doing business in a country associated with more FDI for that country? Further, can we point to a particular set or sets of regulations as being key? We find that the overall ease of doing business is a statistically significant determinant of FDI and that the ease of trading across borders is the driving factor.

¹Though as Breen and Gillanders (2011) find that corruption is the driving force behind the ease of doing business it may not be that easy.

FDI is a much studied phenomenon by both empirically and theoretically minded economists. A large literature exists that points to a host of factors that countries that attract higher levels of FDI possess (on average). These factors include taxes (e.g. Djankov, Ganser, McLiesh, Ramalho and Shleifer (2010b)), political risk and stability (e.g. Lucas (1993); Gastanaga, Nugent and Pashamova (1998); Busse and Hefeker (2007)), human capital (e.g. Carr, Markusen and Maskus (2001)), exchange rates (e.g. Froot and Stein (1991); Blonigen (1997)) and spatial considerations (Blonigen, Davies, Waddell and Naughton (2007)).²

Lucas (1993) is the earliest attempt to examine the effects of the business environment on FDI that we are aware of. He finds that dummy variables capturing large changes in a country's organisation are significant but acknowledges that it is difficult to know exactly what such variables are capturing. Gastanaga, Nugent and Pashamova (1998) use a 0-4 index of bureaucratic delay and find some evidence that it matters. However, their measure is only available for 22 countries and does not take account of the range of factors that the Doing Business variable does. The later critique can also be leveled at the finding of Busse and Hefeker (2007) of a significant coefficient on a 0-12 index that measures the institutional strength and quality of the bureaucracy.

The Doing Business data has been used to look at the effect of the business environment and regulation on FDI. Lawless (2009) finds that the tax complexity components of Doing Business have a significant effect on the existence of FDI but little effect on the level. Blonigen and Piger (2011) employ Bayesian Model Averaging (BMA) to sift through the mass of potential FDI determinants. They find that the four Doing Business variables that they include have a low inclusion probability. These four variables are the time it takes to enforce contracts, register property, start a business and resolve insolvency. As we will see, they do not employ the vast majority of the business environment information available to them and the indicators that they do use are not those that one might expect to influence FDI the most, those pertaining to international trade. The finding of a similar BMA study, Eicher, Helfman and Lenkoski (2011), that a generic host bureaucratic quality variable is a robust determinant gives us further reason to believe that the measures used in Blonigen and Piger (2011) are too restrictive a subset. Our paper therefore can be seen as building on these studies in that we use a richer measure of the regulatory environment and separate the effect of the ease of trading across borders from the general ease of doing business.

Another recent paper with relevance to our work is Jayasuriya (2011). Jayasuriya's work, which is concurrent with our own, establishes that higher Doing Business rankings attract more FDI and provides some evidence that some of the indicators matter while others do not. While our finding that a country's Doing Business rank influences the FDI it receives agrees with Jayasuriya (2011), we present evidence that this effect is driven by the Trade Rank (TR) component. Our paper differs in approach as we will outline below and we also

²Blonigen (2005) provides a review of some of the more important papers in this literature up to 2005.

Table 1: The Correlation of Doing Business Rank Over Time

	<i>DB</i>	<i>DB</i> _{<i>t</i>-1}	<i>DB</i> _{<i>t</i>-2}	<i>DB</i> _{<i>t</i>-3}
<i>DB</i>	1.0000			
<i>DB</i> _{<i>t</i>-1}	0.9807	1.0000		
<i>DB</i> _{<i>t</i>-2}	0.9528	0.9763	1.0000	
<i>DB</i> _{<i>t</i>-3}	0.9135	0.9383	0.9588	1.0000

consider the role that other countries’ business environments play. We find that in terms of the total FDI that a country attracts it is a country’s ease of trading across borders that matters but that US FDI seems to respond to the business environment neighbourhood that a country finds itself in.

Thus our work is related to a long standing line of research in the empirical FDI literature that has seen a recent resurgence in interest. The remainder of the paper proceeds as follows. The next section outlines our empirical strategy. We then describe the datasets that we use. Section 4 presents the results and Section 5 concludes.

2 Econometric Approach

2.1 Empirical Specification

The general form of our model is:

$$FDI_i = \alpha + \beta_1 DB_i + \mathbf{\Gamma X} + \epsilon_i \tag{1}$$

where FDI_i is a measure of FDI attracted by country i , α is an intercept term, DB_i is country i ’s ease of doing business rank or one or more of its components, \mathbf{X} contains the controls to be outlined below and ϵ_i a standard error term.

While much of the literature on the determinants of FDI has chosen to make use of fixed effects panel data estimators, the Doing Business data does not lend itself well to this approach. Table 1 shows that the Doing Business rank (DB) is highly correlated with its past values leaving little within variation to be exploited. This is also true of the trading across borders component (TR) and the Doing Business rank with the trade component stripped out (DBWT) as can be seen in tables 10 and 11 in the appendix. Therefore we adopt a pure cross-sectional approach.

This method differs fundamentally from that of Jayasuriya (2011). Jayasuriya uses panel data and estimates the model using a system GMM approach. We believe that the correlation structure of the data makes a cross-section approach superior though it does have some significant drawbacks that must be borne in mind throughout. The first is that that we cannot allow for unobserved heterogeneity. The second is the familiar problem of omitted variable bias. This is a particular cause for concern in the empirical FDI literature given the wide range of determinants that have been identified. We perform a number of sample splits to reduce such concerns. The final issue is endogeneity. While we cannot fully discount the possibility that higher levels of FDI lead to improvements in the ease of doing business, and the ease of trading across borders especially, we believe that the lack of change in DB over the time period under consideration allows us claim that this is not systematic.

3 Data

3.1 Doing Business

Descriptions of all the main variables used and their sources are given in Table 2. The World Bank’s Doing Business project provides us with our measures of the ease of doing business, in general and in relation to trading across borders. Doing Business is based on law and regulations, but also on administrative burdens. The data is based on both actual requirements and also what is observed in practice. Legal practitioners are relied upon for a large amount of the data as they experience the regulation on a regular basis. As the World Bank puts it, “(A) corporate lawyer registering 100-150 businesses a year will be more familiar with the process than an entrepreneur, who will register a business only once or maybe twice.”³ The result is a very objective measure of regulation which can be used by firms to access the ease of doing business in a country when deciding on locations for FDI.

We use the report published in 2010 which details the costs and regulatory requirements in 2009. The Doing Business report measures the difficulty, costs and time it would take a standardized mid-sized company to start the business, deal with construction permits, register property, get credit, pay taxes, import and export goods, enforce contracts and complete the bankruptcy process. It also measures the level of protection for investors. Each one of these components contains a number of indicators. For example, trading across borders includes the cost, time and number of documents required to export and separately import a standardized container of goods.⁴

The Doing Business report uses ranks to display the results, and as we are dealing with

³See <http://www.doingbusiness.org/methodology/> for the full methodology.

⁴Table 12 in the appendix contains details of the components of the Doing Business rank.

investment decisions which we hypothesise may be influenced by the Doing Business reports, we also use rankings throughout our estimation. A ranking of countries is created for each individual indicator, for example the cost of exporting, with 1 being the best. The rankings of all indicators of a component are averaged (for example the 6 indicators in trading across borders) and these averages are ranked. Finally, to create the overall doing business ranking, these component rankings are averaged and this average is ranked. In our analysis we separate out the trading across borders component from the rest of the Doing Business variable, we create a residual doing business rank by averaging the ranks of the remaining eight components and ranking that average. In all cases 1 is the best and 183 the worst. For example in the 2010 report Singapore is ranked 1 for overall doing business whereas The Central African Republic is ranked 183. Figure 4 in the appendix shows the ranks represented on a world map.

3.2 FDI Data

We have two sources for our dependent variable. Our first FDI data comes from the World Bank's World Development Indicators. It is net inflow of FDI to the host country (firms with at least 10% foreign ownership) in constant 2000 US\$. As detailed above we use a cross section approach. Therefore, we create stock variables for both our FDI data and control variables by summing over the period 2004 to 2009. This period is chosen for the stock as publication of the Doing Business reports began in 2004 and the end date for the stock is the last year of available FDI data. This data has good coverage but does not have information about the source of FDI. Figure 1 shows that our FDI stock variable fits well with observed patterns and anecdotal evidence with the USA being the single biggest recipient and the United Kingdom, Luxembourg, China and others attracting significant flows.⁵

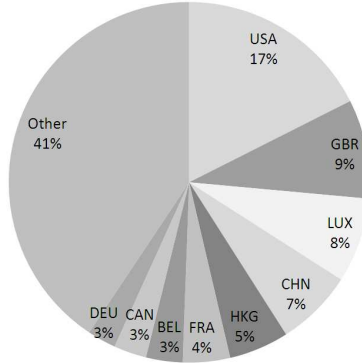
Our second set of FDI data comes from the U.S. Bureau of Economic Analysis (BEA). This data allows us to analyse bilateral investment decisions, as we know both the parent (the US) and the host country. The measure of FDI is sales of US affiliates in the host country which we convert to real US\$ using the chain-type price index for gross domestic investment.⁶ This data also provides us with the number of US companies in the host country. Similar to the WDI data, the BEA data is for US affiliates with at least 10% foreign ownership. The disadvantage of this data is that it is only US investments, so we are only dealing with investment decisions of US companies. When using the BEA data, we look at the period 2004 to 2008, ending a year earlier due to data limitations. In a number of cases in the BEA data some observations are "suppressed to avoid disclosure of data of individual companies."⁷ Because of this, a number of smaller countries have missing data for some but not all of the

⁵Figures 2 and 3 in the appendix show the WDI and BEA data represented on world maps.

⁶From the Economics Report to the President: www.gpoaccess.gov/eop/.

⁷See www.bea.gov

Figure 1: Breakdown of WDI FDI Stock Variable



5 years. For this reason, in our BEA estimations, in order to give us as large a sample as possible we take means of available observations rather than stocks. This is also the reason for the variation in the number of observations across sales and number of companies data.

3.3 Distance Weighted Business Environments

We look at competition between countries in business regulation by creating a measure of the surrounding regulatory environment. The competition faced by host country i is the distance weighted sum of all other countries' regulatory environment. We distance weight the Doing Business measure of each country's neighbours in an attempt to see how the business environment in neighbouring countries effects the amount of FDI country i receives. This variable is constructed by taking the sum of the doing business of all countries weighted by the inverse of the distance between i and j as detailed in Equation 2. The Doing Business of country i is excluded as this is included in the regressions as a separate variable.

$$SurroundingDB_i = \sum_{i \neq j} \frac{1}{distance_{i,j}} DoingBusiness_j \quad (2)$$

The same method is used to create *Sur Trade*, which represents the surrounding trade regulatory environment. In addition similar variables are created for the other components of Doing Business.

3.4 Other Variables

Market potential as used in Blonigen, Davies, Waddell and Naughton (2007) and others is a measure of the market for goods which is close to the host country. Market potential for host country i is the sum of inverse- distance weighted GDPs of all other countries in the world.

Table 2: Description of Main Variables

Variable	Description	Source
Controls		
Ln(GDP)	Natural logarithm GDP sum 2004-2009 constant 2000 US\$	WDI
Ln(Population)	Natural logarithm of population	WDI
Ln(Area)	Natural logarithm of land area of country in square kilometres	CEPII
Ln(Skill Level)	Natural logarithm of expected years of education of those in school	UNESCO
Land Locked	1 if country is land locked, 0 otherwise	CEPII
Island	1 if country is an island, 0 otherwise	Constructed
Ln(Dist Equator)	Natural logarithm of distance in kilometres between country and the equator	Constructed.
Ln(Market Potential)	Natural logarithm of distance weighted sum of global GDPs	Constructed
Customs Burden	Burden of customs procedure, 1=extremely inefficient, 7=extremely efficient	WEF
Exports	Exports of goods and services constant 2000 US\$	WDI
Imports	Imports of goods and services constant 2000 US\$	WDI
WDI - Section		
Ln(FDI Stock)	Natural logarithm of FDI net inflow stock 2004-2009 constant 2000 US\$	WDI
BEA - Section		
Ln(Sales)	Natural logarithm of mean sales of US affiliates constant 2000 US\$	BEA
Ln(Number)	Natural logarithm of the mean number of US affiliates	BEA
Ln(Services)	Natural logarithm of mean sales of US affiliates in the services sector constant 2000 US\$	BEA
Distance	Distance between the capital of the US and the capital of j	CEPII
Doing Business		
Doing Business	Overall doing business rank	WB
Starting	Starting a business rank	WB
Construction	Dealing with construction permits rank	WB
Property	Registering property rank	WB
Credit	Getting credit rank	WB
Investment	Protecting investors rank	WB
Tax	Rates and administrative burden in paying taxes, ranked	WB
Trade Rank	Procedural requirements for exporting and importing, ranked	WB
Enforcement	Efficiency of contract enforcement, ranked	WB
Closing	Procedural and administrative efficiency of bankruptcy, ranked	WB
Doing Business without trade	Overall doing business rank without trade component	Constructed
Surrounding Doing Business	Distance weighted doing business ranks of other countries	Constructed
Surrounding Trade	Distance weighted trade ranks of other countries	Constructed

WDI: World Development Indicators, World Bank. WB: World Bank Doing Business reports. BEA: US Bureau of Economic Analysis.

WEF: The World Economic Forum. CEPII: Centre d'Etudes Prospectives et d'Informations Internationales. UNESCO: UNESCO Institute for Statistics. LN: Natural Log.

The GDP of country i is excluded from market potential as this is included separately to estimate the effect of the host's GDP. If you are close to a country with large GDP, and hence large potential markets for your goods then this will be a large number. If the FDI is export platform then this coefficient will be positive.

$$SurroundingMarketPotential_i = \sum_{i \neq j} \frac{1}{distance_{i,j}} GDP_j \quad (3)$$

In line with Blonigen, Davies, Waddell and Naughton (2007) and many others we use the inverse of openness as our initial measure of trade costs before moving on to the measures we get from the Doing Business. This trade costs variable is constructed by taking the natural log of GDP divided by the sum of exports and imports.

Following Carr, Markusen and Maskus (2001) it has become standard to account for knowledge capital or skill level in the host country in some way. Our proxy for knowledge capital is years of education. We use data from the UNESCO Institute for Statistics (used in the construction of the Human development index) which is the expected years of education for those currently in schooling.⁸

As a robustness check we use an alternative measure of trade costs. The burden of customs procedure from the World Economic Forum's Executive Opinion Survey. It ranges from 1 which is extremely inefficient to 7 which is extremely efficient. For the BEA data we know the source (the US) and the host, so we can control for the distance between capital cities. For the WDI data we do not know the source, here we use distance from the equator as a measure of the position of the country. Other controls as detailed in Table 2 are population, area and dummies indicating whether the country is either landlocked or an island.⁹

⁸For robustness, we also use the Barro-Lee measure which is arguably a better proxy as it measures the average years of schooling of the population. However, it leaves us with a slightly smaller sample size. The results do not change and are available on request.

⁹Including the World Bank's measures of institutional quality, Rule of Law and Control of Corruption, does not change our results and are not included in our reported results.

4 Results

4.1 WDI Results

Table 3 presents our main results using the WDI FDI data. Column 1 is a standard FDI regression in that we use the inverse of openness as our measure of trade costs. In this specification only openness and the size of the domestic market emerge as significant determinants of FDI. Column 2 uses the ease of doing business rank (DB) as our trade costs variable. It too is significant as is GDP. However with this modification, market potential is also significant. Theory does not provide a firm theoretical justification for including openness. The significance of market potential as well as the change in signs of our island and landlocked dummies (though they are not significant) suggests that the regression in Column 2 is more in keeping with theory than that in Column 1. However, some of this difference can be explained by our larger sample. When we run the specification of Column 2 on the sample available in Column 1, market potential is only significant at 10%. The important thing to note is that Doing Business is highly significant and meaningful in an economic sense. Roughly, every two ranks is worth an additional 1% in terms of FDI.

As we have outlined above, the Doing Business rank is made up of several sub-rankings that are in turn determined by many individual variables. Some of these are likely to be more relevant to FDI decisions than others. The most intuitively appealing of these is the ease of trading across borders rank (TR). Firms will usually have to import some raw materials and firms planning on catering to markets outside the host country should care about the ease of exporting. Columns 3 and 4 of Table 3 show that TR is significant in its own right and also that it seems to possess all of the explanatory power of the overall DB variable (i.e. the doing business variable with the trade component stripped out, DBWT, is insignificant). This suggests that, on average, the only regulations (out of those considered by the Doing Business project) that foreign firms are interested in are those pertaining to international trade. The final two columns show that this finding is robust to a change in our measure of how easy it is to trade across borders (or trade costs). These regressions use the World Economic Forum's index of how burdensome customs procedures are in a country. This runs from 1 (extremely inefficient) to 7 (extremely efficient). As these regressions yield much the same results as those from columns 3 and 4, we can have some confidence that our conclusions are robust and not a quirk of the Doing Business data.

Table 3: Main Results - WDI FDI Measure

	Dependent Variable Ln(FDI Stock)					
	(1)	(2)	(3)	(4)	(5)	(6)
Ln(GDP/Ex+Im)	-0.501*** (0.168)					
Doing Business		-0.00567*** (0.00213)				
Trade Rank			-0.00706*** (0.00231)	-0.00631*** (0.00234)		
DB (Without Trade)				-0.00245 (0.00200)		-0.00286 (0.00276)
Customs Burden					0.445*** (0.163)	0.379** (0.180)
Ln(Market Potential)	0.293 (0.242)	0.617** (0.250)	0.487** (0.233)	0.523** (0.233)	0.617** (0.276)	0.641** (0.279)
Ln(GDP)	0.945*** (0.113)	0.872*** (0.124)	0.853*** (0.122)	0.826*** (0.126)	0.728*** (0.166)	0.705*** (0.174)
Ln(Population)	-0.176 (0.118)	-0.189 (0.134)	-0.200 (0.126)	-0.176 (0.132)	0.0302 (0.202)	0.0460 (0.209)
Ln(Area)	0.0377 (0.0725)	0.0631 (0.0774)	0.0940 (0.0816)	0.0961 (0.0808)	0.0683 (0.0892)	0.0691 (0.0894)
Ln(Skill Level)	-0.533 (0.451)	-0.408 (0.375)	-0.200 (0.346)	-0.330 (0.354)	0.324 (0.604)	0.158 (0.586)
Land Locked	0.00601 (0.227)	-0.272 (0.246)	0.0123 (0.257)	-0.0582 (0.270)	-0.134 (0.290)	-0.190 (0.314)
Island	0.00964 (0.288)	-0.0141 (0.276)	-0.0868 (0.263)	-0.0836 (0.261)	0.156 (0.293)	0.161 (0.292)
Ln(Dist Equator)	0.135 (0.0923)	0.0158 (0.0967)	0.0452 (0.0947)	0.0271 (0.0929)	0.0700 (0.118)	0.0552 (0.115)
Constant	-3.413 (5.328)	-8.732 (5.374)	-5.999 (4.965)	-6.057 (4.963)	-13.15** (6.385)	-12.44* (6.610)
Observations	128	162	162	162	120	120
R^2	0.848	0.839	0.842	0.844	0.802	0.804

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.

While it makes intuitive sense for TR to be a major motivating force (or even *the* motivating force) behind the significance of the overall Doing Business variable, the wealth of information available to us makes it prudent to check the other components. Table 4 allows all the Doing Business components to enter the specification as distinct variables. Though some emerge as significant when entered as the sole DB variable (columns 2-10), only TR passes the conventional level of significance when all are included simultaneously. This is further evidence that it is trade regulation, or the costs associated with such, which matters on average in terms of attracting FDI.¹⁰ Jayasuriya (2011) does something similar by picking out the “relevant” indicators from the Doing Business dataset. We think our approach of using the sub-ranks as opposed to individual indicators is preferable as we do not have to *a priori* identify the “relevant” indicators. The variables that emerge as somewhat significant in Jayasuriya’s paper are the time to enforce contracts and the cost of doing so. As can be seen from columns 1 and 9 of Table 4, our approach does not support this conclusion. This is not a strong clash of findings though as Jayasuriya finds significance at the 5% level only in regressions he identifies as being mis-specified. He also finds that the time to import indicator is significant at the 10% level.

Firms that are choosing an export base, regional base or have any other geographical reason, may care more about the ease of doing business relative to other countries in the area than the overall ranking of a potential host. For example, say that a firm needs to have a base in West Africa. Given that restriction, the business environment of other countries and how far away they are could be a relevant factor. In other words, a distance weighted measure of the doing business *competition* faced by each country. This is similar in spirit and construction to the market potential variable and its construction is outlined in Section 3.3 above. Table 5 shows that the distance weighted DBWT and TR of other countries seems to play no role in determining the amount of FDI that a country receives on average.¹¹ However, we shall see in the next section that the story is quite different when we focus on FDI from the United States of America.¹²

¹⁰The lack of significance of the tax component may seem surprising, especially given that it contains information on tax rates. However, Lawless (2009) shows that tax considerations have an effect on the decision to send FDI but not the level once a firm is in a country.

¹¹This holds for all sub-components. Results available on request.

¹²When we include the distance weighted Doing Business variables, market potential is no longer significant. This is true throughout and worth noting as perhaps these variables are capturing something that is closely related to market potential. Gillanders and Whelan (2010) presents results that the ease of doing business is a highly significant determinant of GDP per capita. If the ease of doing business is, on average, determining GDP then our surrounding doing business variables and market potential variable may be dampening each other’s estimated effect.

Table 4: Components of Doing Business - WDI FDI Measure
Dependent Variable Ln(FDI Stock)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Starting Rank	-0.00249 (0.00209)	-0.00383** (0.00178)								
Construction Rank	0.00155 (0.00169)		2.12e-05 (0.00157)							
Property Rank	0.00189 (0.00207)			-0.000870 (0.00172)						
Credit Rank	-0.00364* (0.00206)				-0.00448** (0.00218)					
Investment Rank	0.000652 (0.00206)					-0.00210 (0.00167)				
Tax Rank	-0.000809 (0.00167)						-0.00156 (0.00153)			
Trade Rank	-0.00613*** (0.00229)							-0.00706*** (0.00231)		
Enforcement Rank	-0.00250 (0.00209)								-0.00320* (0.00174)	
Closing Rank	0.00132 (0.00173)									-0.000419 (0.00168)
Ln(Market Potential)	0.521** (0.224)	0.569** (0.242)	0.562** (0.250)	0.569** (0.247)	0.617** (0.251)	0.619** (0.241)	0.601** (0.249)	0.487** (0.233)	0.564** (0.244)	0.564** (0.250)
Ln(GDP)	0.846*** (0.121)	0.949*** (0.113)	0.968*** (0.121)	0.962*** (0.119)	0.909*** (0.126)	0.955*** (0.114)	0.941*** (0.114)	0.853*** (0.122)	0.946*** (0.110)	0.959*** (0.121)
Ln(Population)	-0.228* (0.130)	-0.245* (0.129)	-0.256* (0.138)	-0.251* (0.132)	-0.243* (0.130)	-0.257** (0.129)	-0.228* (0.128)	-0.200 (0.126)	-0.242* (0.123)	-0.249* (0.133)
Ln(Area)	0.117 (0.0815)	0.0547 (0.0760)	0.0394 (0.0787)	0.0376 (0.0788)	0.0585 (0.0787)	0.0483 (0.0770)	0.0479 (0.0769)	0.0940 (0.0816)	0.0397 (0.0745)	0.0393 (0.0786)
Ln(Skill Level)	-0.463 (0.375)	-0.301 (0.356)	-0.121 (0.382)	-0.163 (0.374)	-0.344 (0.384)	-0.219 (0.412)	-0.126 (0.375)	-0.200 (0.346)	-0.308 (0.401)	-0.130 (0.382)
Land Locked	-0.0920 (0.266)	-0.257 (0.248)	-0.215 (0.247)	-0.236 (0.253)	-0.268 (0.258)	-0.203 (0.248)	-0.240 (0.244)	0.0123 (0.257)	-0.279 (0.238)	-0.219 (0.245)
Island	-0.0511 (0.283)	-0.0694 (0.264)	-0.00799 (0.287)	-0.00242 (0.285)	0.0459 (0.289)	-0.0426 (0.288)	-0.0164 (0.286)	-0.0868 (0.263)	0.00982 (0.283)	-0.00361 (0.289)
Ln(Dist Equator)	-0.0104 (0.0993)	0.0189 (0.100)	0.0624 (0.102)	0.0563 (0.0986)	0.0398 (0.101)	0.0465 (0.0958)	0.0555 (0.0988)	0.0452 (0.0947)	0.0329 (0.0997)	0.0607 (0.101)
Constant	-5.369 (4.812)	-8.867* (5.231)	-9.769* (5.436)	-9.648* (5.493)	-9.061* (5.436)	-10.36* (5.323)	-10.36* (5.400)	-5.999 (4.965)	-8.674* (5.214)	-9.633* (5.405)
Observations	162	162	162	162	162	162	162	162	162	162
R^2	0.851	0.838	0.833	0.833	0.838	0.834	0.833	0.842	0.836	0.833

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.

Table 5: Distance Weighted Doing Business - WDI FDI Measure
Dependent Variable Ln(FDI Stock)

	(1)	(2)	(3)
Doing Business	-0.00596*** (0.00215)		
Trade Rank		-0.00724*** (0.00229)	-0.00634*** (0.00234)
DB (Without Trade)			-0.00302 (0.00211)
Surrounding Doing Business	0.0764 (0.0893)		
Surrounding Trade		0.0578 (0.0928)	-0.199 (0.261)
Sur DB without trade			0.281 (0.246)
Ln(Market Potential)	0.522* (0.267)	0.413* (0.248)	0.395 (0.250)
Ln(GDP)	0.879*** (0.123)	0.858*** (0.121)	0.831*** (0.125)
Ln(Population)	-0.195 (0.135)	-0.207 (0.126)	-0.173 (0.132)
Ln(Area)	0.0761 (0.0860)	0.105 (0.0907)	0.107 (0.0891)
Ln(Skill Level)	-0.342 (0.409)	-0.154 (0.376)	-0.237 (0.382)
Land Locked	-0.257 (0.242)	0.0123 (0.258)	0.0264 (0.270)
Island	0.0694 (0.308)	-0.0255 (0.297)	0.00315 (0.296)
Ln(Dist Equator)	0.0214 (0.0960)	0.0459 (0.0943)	0.0491 (0.100)
Constant	-7.238 (5.539)	-4.800 (5.096)	-4.032 (5.165)
Observations	162	162	162
R^2	0.840	0.843	0.846

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.

The next two tables split the sample into different groups. We have a rather large sample size overall (by macro standards), however some of the groups get quite small. In these cases one must bear the usual disclaimers regarding small sample regressions in mind. The first split is motivated by Blonigen and Wang (2005) who show that the pooling of wealthy and poor countries in empirical FDI studies is inadvisable. The second split is along lines of dependence on natural resources.

In Table 6 we present the results obtained from running our two main specifications on groups defined by Sub-Saharan Africa (SSA), the OECD and the rest of the world. The results are interesting in that they show that in the top and bottom income groups the quality of the business environment does not seem to play a role.¹³ In the rest of the world both DB and TR are significant factors. The R^2 in this group is also substantially higher than in the other two groups suggesting that there may be some significant factor or factors at play in these groups that we are not controlling for.

In addition, the quality of the surrounding regulatory environment is a significant factor. The signs of the coefficients on the surrounding variables are different though they are of similar magnitude. The interpretation of variables such as these can be difficult. As lower numbers in the ranking variables are better and countries farther away get a smaller weight (the inverse of distance), the negative coefficient implies that the better the TR neighbourhood a country finds itself in, the more FDI it will attract. The opposite is true for distance weighted DBWT. This suggests a clustering effect for TR and a competition effect for the remainder of the business environment.

The policy implications of these results are worth noting. In the very poorest region of the world, better business environments are not associated with greater levels of FDI. Moreover, we do not find evidence that these countries can benefit from collaborating to improve the overall ease of doing business or ease of trading across borders. This is also true of the richest group of countries. In the rest of the world, countries may reap benefits from improving their own ease of trading across borders and also that of their neighbours, though they should strive to be *the* regional exemplar of business friendliness in other regards.

One reason for a lack of an effect of regulation in SSA could be that FDI is attracted to SSA for different reasons than in other regions. Similar to our results, Asiedu (2002) finds that infrastructure and return on investment are determinants of FDI in non-SSA countries but have no effect on FDI in SSA. Asiedu (2006) shows that natural resources are a significant determinant of FDI in sub-Saharan Africa. This could explain the different results we see for SSA.

Thus, Table 7 splits the sample into two groups; countries that are highly dependent on

¹³Jayasuriya (2011) similarly shows that the overall DB rank does not matter in an unidentified group of developing countries.

Table 6: Sample Splits - Geographical - WDI FDI Measure
Dependent Variable Ln(FDI Stock)

	(1) Sub-Saharan Africa	(2) Sub-Saharan Africa	(3) OECD	(4) OECD	(5) Rest of World	(6) Rest of World
Trade Rank	-0.00900 (0.00619)	-0.00871 (0.00620)	-0.0103 (0.00771)	-0.0108 (0.00828)	-0.00639** (0.00299)	-0.00663** (0.00288)
DB (Without Trade)	-0.00484 (0.00469)	-0.00354 (0.00468)	0.00663 (0.00869)	0.00807 (0.0103)	-0.00428* (0.00244)	-0.00582** (0.00245)
Surrounding Trade		-0.462 (0.824)		-0.266 (0.438)		-0.863** (0.420)
Sur DB without trade		-0.0771 (0.683)		0.219 (0.499)		0.955** (0.374)
Ln(Market Potential)	1.808 (1.099)	2.518 (1.924)	0.709 (0.549)	0.735 (0.578)	0.334 (0.349)	0.0917 (0.386)
Ln(GDP)	0.873*** (0.227)	0.902*** (0.254)	0.999** (0.362)	0.984** (0.379)	0.724*** (0.207)	0.647*** (0.216)
Ln(Population)	-0.348* (0.181)	-0.267 (0.211)	-0.679 (0.434)	-0.655 (0.431)	0.0866 (0.207)	0.193 (0.234)
Ln(Area)	0.334** (0.154)	0.233 (0.171)	0.274* (0.151)	0.270 (0.204)	-0.0102 (0.0970)	-0.00441 (0.108)
Ln(Skill Level)	0.101 (0.513)	0.347 (0.623)	-4.413* (2.523)	-4.390* (2.521)	1.152 (0.752)	1.455* (0.825)
Land Locked	-0.202 (0.481)	-0.235 (0.545)	0.805 (0.551)	0.941 (0.710)	-0.323 (0.389)	-0.204 (0.417)
Island	0.199 (0.532)	-0.683 (0.966)	0.727 (0.813)	0.714 (0.859)	-0.0863 (0.331)	-0.0239 (0.335)
Ln(Dist Equator)	0.0798 (0.188)	0.0407 (0.181)	-0.658 (0.742)	-0.499 (0.779)	0.125 (0.115)	0.206* (0.113)
Constant	-36.21 (25.87)	-50.90 (43.10)	4.466 (13.19)	3.387 (13.38)	-5.989 (8.154)	-1.602 (8.934)
Observations	44	44	33	33	85	85
R^2	0.711	0.725	0.674	0.677	0.830	0.842

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.

natural resources and those that are not. In the non-dependent sample, the ease of trading across borders is highly significant while the other aspects of the business environment are not. The opposite is the case in the other group, where the surrounding variables are also significant and signed as was the case in the RoW sample.

We conclude that policy advice suggesting that all countries improve their ease of doing business is not refined enough. Our results indicate that on average it is advisable to focus efforts on improving the ease of trading across borders but that even this is too general. Different environments and circumstances may require substantially different policy changes.

Table 7: Sample Splits - Natural Resource Dependence - WDI FDI Measure
 Dependent Variable Ln(FDI Stock)

	(1)	(2)
	> 10% of GNI	<= 10% of GNI
Trade Rank	-0.00260 (0.00443)	-0.00440** (0.00209)
DB (Without Trade)	-0.0145*** (0.00416)	0.000993 (0.00234)
Surrounding Trade	-1.249** (0.572)	0.105 (0.217)
Sur DB without trade	1.563*** (0.563)	-0.0384 (0.195)
Ln(Market Potential)	-0.965** (0.432)	0.397 (0.241)
Ln(GDP)	0.374* (0.185)	1.064*** (0.126)
Ln(Population)	0.118 (0.203)	-0.368** (0.149)
Ln(Area)	0.391** (0.177)	0.0316 (0.0855)
Ln(Skill Level)	0.499 (0.566)	-0.234 (0.385)
Land Locked	-0.697 (0.462)	0.0846 (0.295)
Island	0.971 (0.724)	-0.180 (0.298)
Ln(Dist Equator)	0.297** (0.125)	-0.109 (0.120)
Constant	26.72*** (8.931)	-5.561 (4.942)
Observations	42	120
R^2	0.828	0.891

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.

4.2 BEA Results

So far we have been examining the total FDI that a country receives and have paid no attention to where it originates. In this section we focus on US outbound FDI as this is one of the major worldwide flows and there is a commonly used dataset available as outlined above. It also allows us to take account of the distance between the recipient and parent as is common in recent work in this area. The dataset also has two somewhat different variables that can serve as proxies for FDI activity and allows us to look at the services sector where one might expect different factors to matter.

The results in this section are at times rather different from those above. It is therefore important to note that this does not imply that one set of results is wrong. Firms from different countries may care about different factors. This section should be seen as a further test of the generality of the policy advice that improving the ease of doing business (or at

least the ranking given by the World Bank) will attract more FDI. We have seen that in general this is true. Now we wish to see if it holds for FDI from the United States.

In Table 8 we use affiliate sales, a common proxy for FDI, as our dependent variable.¹⁴ We can see that the average association established for FDI in general does not hold for FDI from the USA. Neither the overall DB variable nor the TR component are significant. Population is significant whereas it was not before. Distance between the US capital and the host's is also significant, though this is a different measure of distance to that used in the previous section. Nevertheless, these results suggest that this is a different relationship not just in terms of the ease of doing business. In our WDI results market potential was positive pointing to an export platform story. Using the BEA data, market potential is negative and significant, which, while puzzling, is common in the literature when using this data.¹⁵ When we allow our variables capturing the surrounding regulatory environment to enter the specification, the surrounding ease of trading across borders variable is significant and signed as it was in the case of our rest of the world and highly resource dependent samples.

As before, in Table 8 columns 5 to 7 we split the sample into groups Sub-Saharan Africa, OECD and the rest of the world. In the full sample only surrounding trade mattered and a similar result is obtained for the OECD. However, for the Sub-Saharan Africa split, none of our business regulation variables matter. Interestingly, when you exclude the high and low income regions of SSA and the OECD, trade rank returns as a significant factor similar to the WDI results. In the OECD and rest of world splits surrounding TR is negative pointing to a clustering effect on trade regulation - being in a cluster of countries with good trade regulation helps you attract more US FDI. Whereas surrounding DBWT is positive and significant suggesting a competition effect when it comes to business regulation other than trade.

Our second measure of US FDI activity yields results much more in keeping with our main results. Table 9 uses the number of firms that are classified as operating using FDI from the USA. While the overall DB variable is insignificant, TR is significant at the 5% level. Once again, the surrounding TR variable is significant. The implication of these results is that to attract FDI from the USA, countries focus on improving the regional (or local) ease of trading across borders.

When we look at just countries in SSA (Column 5) we find that TR and surrounding TR is no longer a factor in determining the number of companies present in the host county. The results from an OECD and rest of world split are consistent with the full sample.¹⁶

¹⁴When using assets of US affiliates in the host country rather than sales as our proxy for US FDI, we get results which are broadly similar. With the exception that the surrounding DBWT is positive and significant and in the sample split which excludes the OECD and SSA DBWT is negative and significant

¹⁵For example, Blonigen, Davies, Waddell and Naughton (2007).

¹⁶Splitting the BEA sample by natural resource dependency in a similar vein to Table 7 we find (when

Table 8: BEA Data I

	Dependent Variable Ln(Sales)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Full Sample			Sub-Saharan Africa	OECD	Rest of World
Doing Business	0.000114 (0.00416)						
Trade Rank		-0.00571 (0.00406)	-0.00670 (0.00490)	-0.00530 (0.00489)	-0.0159 (0.0389)	-0.01000 (0.00921)	-0.00924* (0.00525)
DB (Without Trade)			0.00268 (0.00468)	0.00243 (0.00460)	0.0248 (0.0173)	0.00392 (0.00706)	-0.00272 (0.00610)
Surrounding Trade				-1.214** (0.610)	-3.294 (4.525)	-1.182*** (0.384)	-2.301*** (0.692)
Sur DB without trade				0.993 (0.639)	1.348 (4.038)	0.896* (0.451)	1.809** (0.719)
Ln(Market Potential)	-1.075*** (0.400)	-1.171*** (0.401)	-1.183*** (0.403)	-0.597 (0.477)	-0.565 (10.43)	0.656 (0.544)	-0.348 (0.652)
Ln(GDP)	1.741*** (0.209)	1.654*** (0.229)	1.677*** (0.218)	1.642*** (0.217)	1.701* (0.921)	1.007** (0.399)	1.485*** (0.160)
Ln(Population)	-0.568*** (0.215)	-0.526** (0.219)	-0.542** (0.213)	-0.506** (0.219)	-0.0683 (0.636)	0.248 (0.444)	-0.429** (0.165)
Ln(Area)	-0.0736 (0.130)	-0.0345 (0.126)	-0.0418 (0.125)	-0.0501 (0.126)	-0.310 (0.670)	-0.0317 (0.196)	0.0314 (0.136)
Ln(Skill Level)	-0.978 (0.954)	-1.180 (0.899)	-1.031 (0.946)	-0.856 (1.002)	1.571 (2.133)	1.507 (1.857)	-1.044 (1.043)
Land Locked	0.206 (0.513)	0.387 (0.517)	0.456 (0.499)	0.703 (0.496)	-0.373 (1.677)	1.626** (0.572)	0.879 (0.742)
Island	-0.502 (0.482)	-0.581 (0.484)	-0.589 (0.484)	-0.676 (0.454)	-8.765* (4.236)	0.249 (0.933)	-0.378 (0.373)
Ln(Distance)	-1.158*** (0.221)	-1.195*** (0.216)	-1.186*** (0.218)	-0.808*** (0.245)	4.827 (7.175)	-0.342 (0.354)	-0.845** (0.318)
Constant	17.68* (9.886)	22.15** (10.10)	21.58** (10.25)	5.581 (10.93)	-49.52 (274.3)	-30.00* (14.94)	3.910 (15.76)
Observations	125	125	125	125	24	33	68
R^2	0.793	0.796	0.796	0.806	0.681	0.865	0.834

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.

Table 9: BEA Data II

	Dependent Variable Ln(Number of Companies)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Full Sample				Sub-Saharan Africa	OECD	Rest of World
Doing Business	0.000122 (0.00225)						
Trade Rank		-0.00557** (0.00235)	-0.00627** (0.00252)	-0.00547** (0.00252)	0.00835 (0.00677)	-0.0134* (0.00763)	-0.00652** (0.00258)
DB (Without Trade)			0.00214 (0.00226)	0.00224 (0.00230)	0.00318 (0.00770)	0.00740 (0.00681)	-0.00182 (0.00248)
Surrounding Trade				-0.583** (0.291)	-0.887 (1.827)	-0.735* (0.353)	-0.904** (0.382)
Sur DB without trade				0.329 (0.277)	0.327 (1.617)	0.527 (0.447)	0.473 (0.357)
Ln(Market Potential)	-0.819*** (0.241)	-0.922*** (0.243)	-0.916*** (0.245)	-0.470 (0.292)	-0.870 (3.092)	0.360 (0.482)	-0.785* (0.400)
Ln(GDP)	1.117*** (0.133)	1.024*** (0.141)	1.048*** (0.139)	1.035*** (0.137)	0.883* (0.449)	0.760** (0.358)	0.884*** (0.106)
Ln(Population)	-0.181 (0.138)	-0.133 (0.141)	-0.158 (0.138)	-0.159 (0.139)	-0.00204 (0.275)	0.195 (0.446)	-0.0286 (0.124)
Ln(Area)	-0.165** (0.0714)	-0.123* (0.0669)	-0.118* (0.0664)	-0.144** (0.0679)	-0.366 (0.238)	-0.0446 (0.203)	-0.114 (0.0685)
Ln(Skill Level)	0.267 (0.517)	0.195 (0.507)	0.294 (0.518)	0.127 (0.519)	0.640 (1.120)	1.633 (2.024)	0.528 (0.657)
Land Locked	0.378 (0.256)	0.557** (0.269)	0.616** (0.273)	0.662** (0.283)	-0.565 (0.814)	1.473*** (0.500)	0.412 (0.309)
Island	-0.00861 (0.262)	-0.0733 (0.254)	-0.0588 (0.252)	-0.277 (0.246)	-1.179 (1.442)	0.114 (0.702)	-0.133 (0.231)
Ln(Distance)	-0.864*** (0.130)	-0.910*** (0.127)	-0.892*** (0.130)	-0.680*** (0.143)	-0.500 (3.601)	-0.426 (0.329)	-0.899*** (0.156)
Constant	6.822 (6.008)	11.18* (6.081)	10.27 (6.253)	0.260 (6.922)	10.20 (86.58)	-25.19* (13.91)	10.35 (9.895)
Observations	149	149	149	149	36	33	80
R^2	0.811	0.818	0.819	0.831	0.467	0.830	0.873

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.

We will not try to identify one of these measures of FDI activity as the best or even better. Both have intuitive appeal and the results are not necessarily inconsistent. The first can be thought of reflecting the size of the average firm and the second the average number of firms. In this case, Table 8 says that the ease of trading across borders will not increase the size of the average FDI project but Table 9 tells us that it will increase the number of such firms (allowing for the loose use of causal language). This is a further refinement of the policy advice we have set out to evaluate and not an entirely dispiriting one for policy makers.

5 Conclusions

In this paper we have sought to empirically assess the assertion that better business regulatory environments, as defined by the World Bank's ease of doing business measure, will attract more foreign direct investment. Using data on a large proportion of the world's countries we found evidence that this was true on average. Going deeper, we found that most of this effect can be explained solely by how easy it is to trade across borders, with other components of doing business having little or no effect. The implications for policy are not entirely positive however as we found that the effect was not present in the world's poorest, and therefore most eager for FDI, region, Sub-Saharan Africa. Neither was it present for the OECD.

These results point to a global competition effect, how you rank in the world matters for FDI. However, when we looked at a more direct measure of regional competition using spatially weighted doing business measures we found no effect in the general case. Restricting the sample by excluding OECD and sub-Saharan countries did yield results on these spatially weighted variables. Being in a cluster of countries with good trade regulation improves a country's ability to attract FDI, while being in neighbourhood with bad general regulation (other than trade) reduces a country's ability to attract FDI.

In US outbound FDI data we found that the ease of trading across boarders influences the number of US companies a host country will attract, but does not influence total activity of those companies (as measured by sales or assets). For US companies the regional regulatory environment matters. US companies are attracted by clusters of countries with good trade regulation, but shy away from countries that find themselves in bad general regulatory neighbourhoods.

Overall the policy prescription of improving the ease of doing business in order to attract

the dependent variable is the number of companies) that the significance of the surrounding TR variable is driven by countries with high dependency on natural resources, whereas the significance of TR is driven by countries that depend less on natural resources. When sales is the dependent variable the result on surrounding TR is similarly driven by countries with a high dependency on natural resources.

FDI is deserving of a passing grade. That said, policy makers should be aware that this is not a one size fits all policy.

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Appendix

Table 10: The Correlation of Trade Rank Over Time

	TR	TR_{t-1}	TR_{t-2}	TR_{t-3}
TR	1.0000			
TR_{t-1}	0.9772	1.0000		
TR_{t-2}	0.8781	0.8846	1.0000	
TR_{t-3}	0.7718	0.7800	0.8526	1.0000

Table 11: The Correlation of “Residual” Doing Business Rank Over Time

	$DBWT$	$DBWT_{t-1}$	$DBWT_{t-2}$	$DBWT_{t-3}$
$DBWT$	1.0000			
$DBWT_{t-1}$	0.9796	1.0000		
$DBWT_{t-2}$	0.9415	0.9685	1.0000	
$DBWT_{t-3}$	0.9078	0.9302	0.9524	1.0000

Table 12: Components of Doing Business

Measure	Unit
Starting a Business (a limited liability company)	
Procedures to legally start and operate a company	Number
Time required to complete each procedure	Days
Cost required to complete each procedure	% of income per capita
Paid-in minimum capital	% of income per capita
Dealing with construction permits - building a standard warehouse	
Procedures to legally build a warehouse	Number
Time required to complete each procedure	Days
Cost required to complete each procedure	% of income per capita
Registering property: transfer of property between two local companies	
Procedures to legally transfer title on immovable property	Number
Time required to complete each procedure	Days
Cost required to complete each procedure	% of property value
Getting credit: collateral rules and credit information	
Strength of legal rights index	index 0-10
- <i>Protection of rights of borrowers and lenders through collateral laws</i>	
- <i>Protection of secured creditors' rights through bankruptcy laws</i>	
Depth of credit information index	index 0-6
Protecting Investors - minority shareholder rights	
Extent of disclosure index	index 0-10
Extent of director liability index	index 0-10
Ease of shareholder suit index	index 0-10
Paying taxes - manufacturing company	
Tax payments for a manufacturing company	Number of payments
Time required to comply with 3 major taxes	Hours per year
Total tax rate	% of profit before tax
Trading Across Borders - standardized cargo, ocean transport	
Documents required to export and import	Number
Time required to export and import	Days
Cost required to export and imports	US\$ per container
Enforcing contracts - commercial dispute through the courts	
Procedures to enforce a contract through the courts	Number
Time required to complete procedures	Days
Cost required to complete procedures	% of claim
Resolving Insolvency	
Recovery rate for creditors	cents on the dollar

Doing Business contain other measures not mentioned here which are reported but not used in the calculation of ranks.

Measures for Trading Across Borders are reported separately for imports and exports.

Figure 2: Map of WDI FDI “Stock”, 2004 to 2009

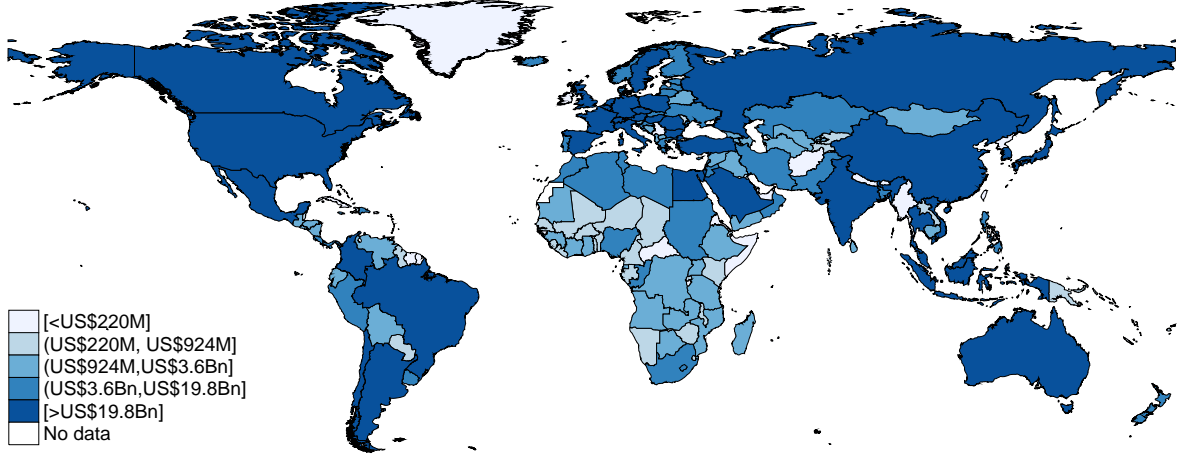


Figure 3: Map of BEA US FDI (Average Sales), 2004 to 2008

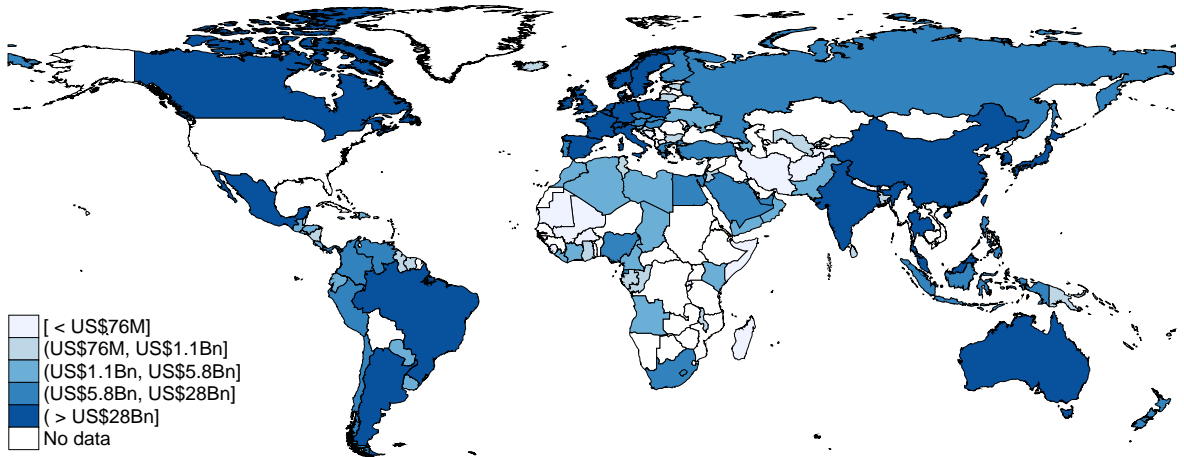
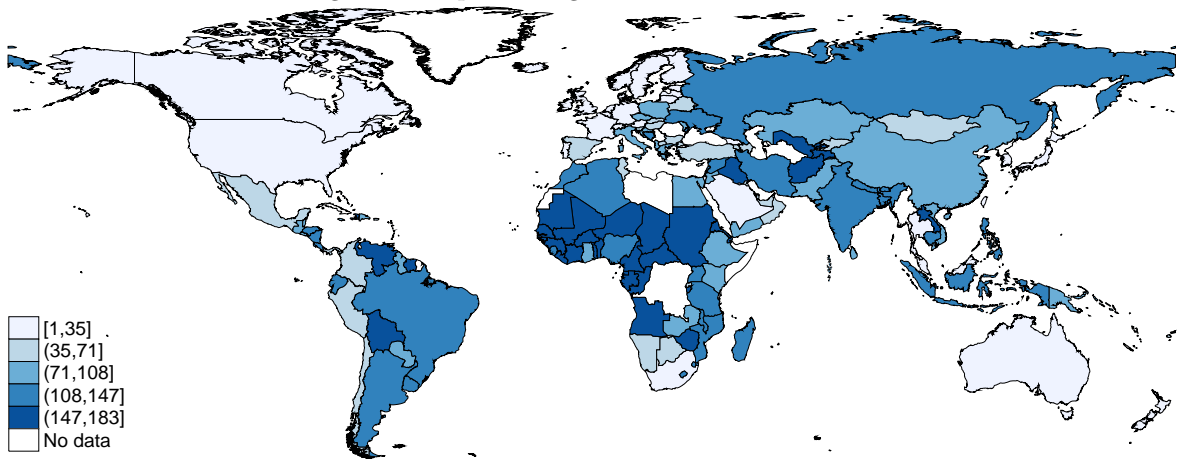


Figure 4: Map of Doing Business rank



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