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Foreign Direct Investment and Home Country Political Risk: The Case of Brazil

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Abstract

This paper looks into the factors that explain FDI in Brazil by country of origin. We collected a sample of 180 countries with and without FDI in Brazil. We use multiple estimation techniques and controls to isolate the effect of country political risk on outward foreign direct investment, and show that countries with lower level of political risk undertake more FDI in Brazil and that such negative relationship between risk and FDI is driven by features of the policy environment of home countries. Furthermore, we show that the aspect of the political/institutional environment that is most likely to be driving this negative relation between risk and investment into Brazil is related to the effectiveness of national governments. Our findings broaden the understanding of the puzzling influence of political risk on FDI observed in previous studies, correct for sampling and selection biases, and have substantive implications for policy-design to attract FDI.

JEL: F21; F3; C59

Keywords: Foreign Direct Investment; Political Risk; Tobit and Heckit Estimation

Introduction

One of the major concerns of policy-makers around the world is how to attract foreign direct investment (FDI). This task is particularly complex for emerging markets exhibiting high levels of political risk. Organizations such as the United Nations Conference on Trade and Development or the World Bank, among many others, have by now developed a large set of policy recommendations and services aimed at helping governments in this regard. Such recommendations are anchored in the burgeoning academic literature about the causes of FDI. The widely known internalization theory, developed by Buckley and Casson (1976), identified ownership and location advantages as the main reasons why firms undertake FDI. Locational determinants, in particular, have received well-deserved emphasis in the literature (Dunning 1979, 1998 and 2003). And among them, political and institutional features of host countries have played a central role, including factors located both at the domestic (regime type, policy-making institutions, human rights records, political instability, and fiscal regimes, for example)[1] and the international levels (trade agreements or membership in international organizations).[2] The study of FDI into Latin America is no exception to this pattern: levels of revolutionary and protest activity, restrictions upon human and social rights, levels of political competition and openness, and indicators of corruption and good governance have been shown at one time or another – in spite of lingering controversies – to be consequential from this point of view (Tuman and Emmert 2004; Biglaiser and DeRouen 2006; Montero 2008).

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[1] See, among many, Schneider and Frey (1985), Jun and Singh (1996), Henisz (2000), Jensen (2003), and Li and Resnick (2003).
[2] See Medvedev (2006), Kim (2007) or Büthe and Millner (2008)

One strand of this research on the political determinants of FDI has revolved around the notion of *political risk,* generically understood as the probability that a sovereign state will be unwilling or unable to guarantee a favorable business and investment environment, either because of policies pursued by the state (nationalizations, blocking of fund remittance, and other abrupt policy changes) or because of events outside its control (instability, social unrest, and other aspects of the political and social environment).[3] Empirical studies have for long shown that levels of political risk in host countries are highly consequential for FDI. Nigh (1986) and Nigh and Schollammer (1987) assess the influence of political risk by emphasizing conflict and cooperation among recipients and investors, and conclude that cooperation between nation states stimulates FDI. Butler and Joaquin (1998) show that multinationals require a higher rate of return to undertake FDI in politically risky countries. Bevan and Estrin (2004) and Janicki and Wunnava (2004) show that country risk has a significant impact on foreign investment decisions, while Le and Zak (2006) show that host country political risk promotes capital flight. In the case of Latin American countries, hypotheses related to the negative impact of variables related to political risk have been tested and confirmed in various studies (see, for example, Tuman and Emmert 2004 and Biglaiser and DeRouen 2006).[4]

One common feature of most of this research on political risk and FDI, however, is its focus on the *host* countries and why their risk levels may explain why some of them seem to be more attractive to investors than others. A rather different question concerns the attributes of countries-of-origin and how they may explain investment flows into

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[3] See Kobrin (1979) for a seminal discussion of the concept.
[4] See also Montero (2008), Tuman (2009) and Montero (2009) for a debate about the specific aspects of the political and institutional environment of host countries that affect investment in Latin America.

particular countries. Scholars focusing on Eastern Europe and Latin America, for example, have often remarked on how national differences between home countries may lead to different investment patterns (Hunya 2000; Tuman 2006; Tuman 2009; Montero 2009), but research on country-of-origin effects remains scarce (see Deichmann 2010 for a review of the empirical studies). Even scarcer are those studies that explicitly address the question of political risk in home countries, and why it may turn those countries' firms into more likely investors in a particular country. Such question has seldom been examined in the literature, and the few existing studies that address it have raised important theoretical and empirical puzzles.

First, the main theoretical argument advanced in these few studies is that firms in countries with higher levels of political risk should have greater incentives to invest abroad, to reduce the uncertainty in returns created by a hostile domestic environment. However, there are at least two reasons why that argument may fail to find empirical support. On the one hand, as Thomas and Grosse (2001) note, such argument was originally developed and tested in the study of the United States as the host country (Tallman 1988; Grosse and Trevino 1996), and is less plausible in cases where the host economies under study are themselves countries with higher levels of political risk than the U.S. On the other hand, as we will develop later, there are even reasons to believe that the relation between home country political risk and FDI might be opposite to the one which has been most frequently hypothesized, due to firms' greater access to capital and outward investment friendly policies in lower risk countries. Unsurprisingly, given these arguments, several contradictory findings coexist in studies of host countries other than the U.S. Thomas and Grosse (2001) find a positive effect of home country risk in FDI

into Mexico in one model specification, a result similar to that obtained by Zhao (2003) for China. Liu et al. (1997), however, fail to find empirical support for that hypothesis for the Chinese case, while Deichmann (2010) finds that, contrary to initial expectations, countries with lower (rather than higher) levels of corruption tend to invest more in the Czech Republic. Thus, although focusing on a single FDI destination crucially allows control for host country effects that might confound estimations of the effect of country-of-origin attributes, expanding our knowledge about the relationship between levels of political risk in the countries-of origin and FDI in a wider variety of host countries seems necessary in order to continue evaluating the generalizability of existing arguments and findings.

Second, extant studies of the effects of home countries' political risk on FDI have, in most cases, resorted to summary measures of such risk, as evaluated by consultant firms and country experts and made publicly available in specialized publications and reports. Such measures are extremely important when studying the impact of host countries' political risk on FDI, as they are precisely among the most likely sources of consequential information for decision-makers in firms. However, as Kobrin (1979) noted early on in this literature, such measures may conflate and confuse a variety of different non-economic factors, from the mere likelihood of interference of governments with business transactions to large-scale factors of instability in the political environment, such as the likelihood of political conflict, upheaval, violence, and political regime-change. In the existing literature on host country determinants of FDI, considerable effort has been made in "unpacking" political risk into its different components and in distinguishing it from other political factors that may in fact operate in directions opposite

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to those hypothesized concerning "risk", with several studies on Latin America serving as prominent examples of that effort (Tuman and Emmert 2004; Biglaiser and DeRouen 2006; Montero 2008). The same effort, however, has not been made concerning political risk in home countries. In this article, after estimating the effects of home country political risk as captured by a well-known summary measure, we try precisely to "unpack" that notion and to differentiate it from other aspects of the political environment.

Third, the existing studies dealing with the consequences of home country risk have mostly used panel designs and restricted their set of countries-of-origin to the Western nations or to the larger set of countries that have actually invested in a particular host country. Admittedly, the kind of approach used so far has the advantage of capturing the dynamical aspects of the investments. However, it contains a potentially crucial disadvantage: the use of data exclusively from the countries that have invested in a host country under examination creates a potential selection bias problem that may seriously affect the estimates. We address this problem by using cross-sectional data on 180 countries, including those with positive and those with zero FDI in Brazil. However, the presence of countries with zero FDI in Brazil renders the typical OLS estimates inadequate. We thus use Tobit and Heckit (and the associated Probit auxiliary regression) selection models to estimate the parameters. Although not impossible, the estimation of these types of models with panel data is a quite daunting task and the reliability of the estimates is questionable (e.g. see Hu 2002 and Nicoletti 2006).

In this article, we focus our analysis on the case of Brazil. As far as we know, this is a country that has never been approached from the perspective of a systematic test of

country-of-origin determinants of FDI. However, like China or Mexico, Brazil clearly stands out in the spectrum of countries attracting large amounts of FDI in recent years, having consistently captured, since the mid-1990s, more than 10% of the world's FDI flow to emerging markets, and becoming the recipient of about half of Latin America's inflow (UNCTAD, 2009b). And also like China and Mexico (and the Czech Republic), Brazil is an emerging market with levels of risk that allow us to test the generalizability of findings originally obtained in the study of a low-risk country such as the U.S.

Our findings show countries with lower – rather than higher – levels of political risk tend to invest more in Brazil, and that this effect takes place above and beyond that of other economic variables with which political risk is likely to be highly correlated, such as economic development. This finding is at odds not only with the results documented by Tallman (1988) and Grosse and Trevino (1996) regarding FDI into the U.S. but also with the results from Thomas and Grosse (2001) and Zhao (2003) for the emerging markets of Mexico and China. We thus show that their results showing a positive effect of political risk on FDI cannot be generalized when focusing in other host countries and when we use estimation techniques that are appropriate to deal with selection bias and the existence of home countries with zero investment into host countries. Furthermore, we show that the aspect of the political/institutional environment that is most likely to be driving this negative relation between risk and investment into Brazil is related to the *effectiveness of national governments*, i.e., with the quality of civil and public services, policy formulation, and government commitment to good policies. In other words, our findings also contribute to illuminate what has been a somewhat obscure

relationship between FDI and aggregate measures of political risk, collapsing dimensions that range from regime type and stability to the quality of domestic policies.

The rest of the paper is organized as follows. In section 2, we briefly describe the case of Brazil and importance of FDI in this emerging market. In Section 3 we define our hypotheses, the choice of variables, and the econometric approach. In section 4, we discuss empirical issues and present our econometric findings, both in terms of the relationship between host country risk – and other relevant control variables – and FDI and in terms of the particular component of the political and institutional environment driving such relationship. We summarize the study and its main conclusions in Section 5.

1. FDI in Brazil

Emerging markets that are more volatile than those in North America or Western Europe are now attracting considerable FDI. Over the last 20 years, there has been an almost tenfold increase in FDI in emerging markets. Brazil is one of the stellar performers among them. Foreign investment began to gain importance in Brazil in the late 19th century, especially through British investments in services such as railroad and maritime transportation. Later, the state took over the provision of many public services following unilateral government decisions or negotiation with foreign investors, and FDI only regained prominence after the Second World War, though without a marked bias from any particular country.

The crisis of the 1980s practically wiped Brazil off the FDI map. On average, the annual net inflow of FDI to the country dropped from US$ 2.3 billion between 1971 and 1981 to a mere US$ 357 million from 1982 to 1991. However, the 1990s, especially since

the middle of the decade, marked Brazil's return as a relevant destination of FDI among developing countries. Brazil received about US$ 2 billion a year in FDI between 1990 and 1995, which corresponded to 0.9% of the world's FDI flow and to 2.7% of the flow to developing countries. The FDI destined for Brazil in 1996 was five times higher than the annual average for the first half of the decade. That inflow to Brazil continued to grow until 2000, when it totaled US$ 32.8 billion. Even though it subsequently fell, foreign investment in Brazil in 2001 (US$ 21 billion) already amounted to 3% of the world total and 11% of that received by developing countries, and has since then recovered back to a record US$ 45 billion in 2008. And while the recent global economic financial and economic crisis has led to a contraction of about 50% in global FDI flows in the first half of 2009, Brazil was precisely one of the emerging markets where that drop was smallest, of about only 25%, compared to 49% globally and more than 30% on average in Latin America (see Kekic 2009).

Brazil holds a portfolio of diversified interests in geographical terms, but there seems to be, at least since the mid-1990s, a marked concentration from the advanced industrial economies. According to 1995 data on FDI stock, the US consolidated itself as Brazil's leading investor over the years, accounting for 28% of the total FDI stock, followed by Germany (10.8%), Japan (9.6%) and Switzerland (6.6%). At the time, the European Union as a whole was responsible for about one third of total stock. In 2001, a mere eleven countries accounted for about 90% of foreign investment in Brazil: the US continued to predominate with 25%, followed by Spain with 15%, France with 11%, Netherlands with 10%, Portugal with 9%, Germany with 6% and Japan with 5%, while Canada, Italy, Luxembourg and the United Kingdom had a 2% share. That overall share

for the major 11 countries has since dwindled a little, dropping to 75% in 2005, but has remained mostly stable until today. Even a case like Mexico, which was the origin of 8% of all foreign investment in Brazil in 2005, has since then dropped to lower shares, reaching no more than 0.5% in 2008.[5] Thus, from a purely descriptive point of view, it does seem clear that the lion share of FDI inflows remains solidly the responsibility of firms from low-risk countries. However, whether home country political risk is indeed a factor in explaining Brazilian FDI inflows requires a multivariate approach. We explain the details of that approach, the basic research hypotheses and the data employed in the following section.

2. Hypotheses, Data and Method

2.1 Political risk and FDI

The main goal of this paper is to assess the influence of home country political risk on FDI. Both Tallman (1988) and Grosse and Trevino (1996) concluded that, *ceteris paribus*, investors from riskier countries are more likely to invest in the United States, a low-risk country. The rationale can be simply expressed. As Tallman puts it, while "increased conflict at home results in a national environment that threatens private investment (…), a cooperative home country political environment improves conditions for domestic investment and thus tends to reduce the incentives for overseas direct investment" (Tallman 1988: 220). However, Brazil has obviously rather different characteristics from the US. Although there have been marked improvements in terms of the stability of the political and macroeconomic environment in most Latin American

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[5] Source: Central Bank of Brazil. Available at: http://www.bcb.gov.br/?INVEDIR

countries, Brazil still ranked 69th in Euromoney's 2005 country risk index, below countries like Egypt and Kazakhstan, and 20 places below Mexico. By 2008, it had climbed to the 60th place, while Mexico ranked at 54th and Chile at 40th. In any case, Brazil can hardly be considered a safe haven from the FDI point of view.

This leads us to contradictory expectations about the way in which home country risk might affect FDI into Brazil. It is certainly conceivable that firms operating in countries with higher internal political instability have, ceteris paribus, higher incentives to internationalize, as they seek to escape domestic instability. However, it is also possible that this reasoning applies much less clearly to the case of higher risk and developing host economies such as Mexico, China or Brazil that it does to the case of the U.S. First, as Thomas and Grosse (2001) point out, in these cases, "political risk at home may not encourage firms to look at another risky country for FDI and local production" (2001: 66). Thus, the hypothesized positive relationship between risk at home and FDI is disturbed by the possibility that returns to foreign investment are also endangered if potential host countries themselves exhibit, contrary to the U.S., high levels of political instability. Second, calculations concerning risks when investing in developing economies are likely to be different from those involved in investing and richer and developed countries. For example, as Albuquerque (2003) notes, one potentially relevant aspect of investing in emerging markets - such as, say, Mexico, China, or Brazil - is that developing countries are likely to be much more dependent on the multinational companies themselves to obtain the human capital, technology, advertising and marketing resources, and other intangible assets required to maximize returns on investments. Therefore, as these assets are largely inalienable, they give firms in home countries a

higher risk sharing advantage than they would if investment took place in more developed countries.

Besides, there are reasons to believe that the relationship between risk and FDI may be not only disturbed when looking at host emerging markets but even reversed altogether. Low risk at home can be seen as something that removes obstacles and create incentives to foreign investment. Firms operating in countries with high levels of risk are likely to have less capital to invest. At the most fundamental level, country risk ratings indicate the likelihood that a country will default on debts, and thus firms in countries where risk is perceived to be higher will face greater credit spreads (Eichengreen and Mody 2000) and greater difficulties in accessing world debt markets. In contrast, firms operating in lower risk countries will have more access to those markets and to the risk capital they need to fund FDI. Furthermore, to the extent that "political risk" captures (the lack of) good governance and of a stable market-friendly policy environment, firms in lower risk countries may even enjoy greater political support to their business expansion overseas, in the form of reduced restrictions to the establishment of subsidiaries or even of explicit financial, diplomatic, and informational support. It is probably not by chance that, overall, in spite of the lingering discussion about the benefits of FDI to home economies, the prevailing view among developed nations has become that the benefits of outward investment tend to outweigh costs, resulting in explicit government policies generally favorable to such outward investment (Kokko 2006).

Thus, on the basis of the existing literature, empirical findings (positive, negative, and no effects) and theoretical arguments, our expectations about the impact of home

country risk and FDI are contradictory, and it is unclear what we should find in terms of the relationship between the two variables:

> H.1: The relation between home country political risk and FDI is
>
> unclear.

We analyze the impact of home country political risk on FDI resorting to two main data sources. The dependent variable, FDI in Brazil by country of origin in US dollars, is made available by the Central Bank of Brazil (*Banco Central do Brasil*), and is measured, for 2005, for 180 countries in the world. For political risk, we use the *Euromoney* country risk index, also for 2005.[6] The main advantage of this index is that it is available for all the countries in our dataset. The index is a sum of several specific risks (like political risk, economic performance, credit ratings, etc, with pair wise correlations above 0.90). Using more than one would introduce obvious multicollinearity problems. We thus focus on the specific political risk index. The index's value ranges from 0 to 25, and it is built in such a way that higher values correspond to lower country risk levels. While we tried other measures of risk in the model, the statistically most significant one was the political risk (even more than the economic performance risk). Other than that, the results were very similar.

3.2 Other hypotheses and variables

The remaining variables - all measured for 2005 for the 180 countries under examination (see the appendix for a list of countries) - employed in the model are used as controls. First, the larger the economic size of a country, the larger the number and the

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[6] See Cosset and Roy (1991) for a study of the *Euromoney* country risk ratings, as well as of another rating (*Institutional Investor*) also used in the literature on home country risk (Liu et al. 1998).

size of the domestic firms that can invest abroad (Markusen, 1990). Naturally, under this basic and broadly supported "market size" hypothesis, we expect the relation between the size of the domestic market and FDI into Brazil to be positive. We include two variables that serve as proxies for the economic size of a country: gross domestic product (GDP) and total accumulated direct investment abroad (DIA). GDP is a good measure of the domestic economic dimension of the home country, and with DIA, we expect to measure the international presence of each country. We used the UNCTAD database to collect data on GDP and DIA.

> H.2: The relation between economic output of the domestic
>
> country and FDI into Brazil will be positive.

It also seems reasonable to assume that FDI would be greater for wealthier economies. Economically developed countries with wealthier domestic markets are able to generate more capital for risky investments, are endowed with greater resources and capacities and thus more apt to internationalize. We therefore expect the wealth of the domestic market to affect the amount of manufacturing investment abroad (Vernon, 1966), a finding confirmed by Tallman's (1988) study of FDI inflows in the United States (albeit Grosse and Trevino 1996 find no effects of GDP *per capita*). GDP *per capita* is used as a proxy for the wealth of a country.[7] We use the UNCTAD database as our source.

> H.3: The relation between domestic wealth and FDI in Brazil will
>
> be positive.

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[7] We also considered the Human Development Index (HDI), which is a broader measure of the development of a country, but the results are very similar and, therefore, not reported for the sake of brevity.

Firms that invest in foreign markets are said to be at a disadvantage *vis-à-vis* local firms due to scarcer knowledge of the local business conditions (Grinblatt and Keloharju, 2001). Cultural proximity reduces the disadvantage of foreign firms operating abroad in other words and diminishes the cost of adapting to the local business conditions. Thus, countries with greater cultural proximity to Brazil should be more likely to invest. Unfortunately, indices of cultural proximity that have been used in other studies (Kogut and Singh 1988) are not available for more than 70 countries. For this reason, we constructed cultural distance proxies through dummies for language. The native language in Brazil is Portuguese. We divided the languages between Portuguese, Spanish, English and others, because the first two are very similar and English is the most spoken second language, and conceive Portuguese and Spanish languages as capturing greater cultural proximity with Brazil.[8] We collected information for these variables in the CIA World Factbook.

> H.4: The relation between cultural proximity and FDI in Brazil
>
> will be positive.

The geographical distance between the home country and Brazil can also influence the decision to invest, due to the lower cost of monitoring foreign affiliates and establishing operations in nearby countries. To measure the distance between Brazil and another country, we consider the distance in kilometers between countries' capitals. We used software developed by Byers (2003) to estimate these distances.

> H.5: The relation between geographical distance and FDI in
>
> Brazil will be negative.

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[8] We also constructed proxy variables based on religion. As Brazil is largely Catholic, we divided religion into three groups: Catholic, other Christians and other religions. However, these variables proved statistically insignificant in all estimations and therefore we excluded them from the analysis.

International trade and foreign investment are often viewed as complementary (Balassa, 1985). Following the results of previous studies, we expect higher exports to Brazil to be linked to higher levels of FDI. To measure bilateral trade, we add the value of exports and imports of each country with Brazil. Data is available at the Ministry for Development, Industry and International Trade of Brazil (*Ministério do Desenvolvimento, Indústria e Comércio Exterior*).

> H.6: The relation between bilateral trade (home country and Brazil) and FDI in Brazil will be positive.

Table 1 Descriptive statistics of the main variables in the data set

	Mean	Median	Maximum	Minimum	Std. Dev.	Obs.	Unit	Source
FDI	109	0.0	4,644	0	480.4	184	10^6 US Dollars	Central Bank of Brazil
Political Risk	12.1	10.9	25	0	6.5	184	Index	Euromoney
GDP pc	9,646	2,795	80,062	101.4	15,060	184	10^3 US Dollars	UNCTAD
Portuguese	0.032	0	1	0	0.18	184	Binary	CIA - The World Factbook
Spanish	0.114	0	1	0	0.32	184	Binary	CIA - The World Factbook
English	0.273	0	1	0	0.45	184	Binary	CIA - The World Factbook
Distance	9,505	9,401	18,803	1,461	4,178	183	Kilometers	Byers (2003)
Trade	4.78E+08	1.53E+07	1.605E+10	0	1.55E+09	184	US Dollars	Government of Brasil
GDP	240,956	15,089	12,484,364	70.98	1,046,568	183	10^6 US Dollars	UNCTAD
DIA	4,528	7.45	142,925	-33.171	17,816	181	10^6 US Dollars	UNCTAD

3.3 Research methodology

We estimate a model that is a function of the stated variables:

$$FDI = F \begin{pmatrix} Political\ Risk(\pm), GDP(+), DIA(+), GDPpc(+), Portuguese(+), \\ Spanish(+), English(+), Capital\ distance(-), Bilateral\ Trade(-) \end{pmatrix}$$

About one hundred countries included in our dataset have not invested in Brazil. This means that, in our analysis, we include potential foreign investors in Brazil, instead

of considering only countries with positive investments. Tallman (1988), Grosse and Trevino (1996), Liu et al. (1997), Thomas and Grosse (2001), and Zhao (2003) have used in their datasets only countries that have invested in the host country under study. Therefore, it is possible that sample selection bias is affecting their results. However, the inclusion of countries with no FDI renders the typical OLS estimates inadequate. If we eliminate the countries with zero investment in Brazil, the OLS estimates will be inconsistent (see for example Greene, 2008). We need therefore a different estimation strategy.

We can think of FDI as a two-step decision. First, firms decide whether to invest in Brazil or not. Then, if they decide to invest, they have to decide on the size of FDI. We model the decision with Heckman (1979)'s selection model. The Heckman sample selection model can be summarized as follows:

$$
\begin{cases}
z_i = 1 & if \ z_i^* > 0 \\
z_i = 0 & if \ z_i^* \leq 0 \\
z_i^* = w_i \gamma + e_i & \\
y_i = x_i \beta + u_i & observed \ only \ if \ z_i^* > 0
\end{cases}
\tag{1}
$$

where z_i^* is the latent dependent variable. If positive, there is investment ($z = 1$), if negative, there is no investment ($z = 0$). w_i is the vector of the independent variables that influence the decision of whether to invest in Brazil, γ is the vector of coefficients, and the e_i's are assumed to be independently normally distributed. If $z = 1$, then the last equation determines how much is invested.

The idea behind equation (1), is that firms first decide if they want to invest in Brazil $(z = 1)$ or not $(z = 0)$. We use a Probit model to estimate this step. Then, only if they decide to invest, they decide on the size (y).

We also consider an alternative approach: the Tobit model (Tobin 1958), which can be described as follows:

$$\begin{cases} y_i^* = x_i\beta + u_i \\ y_i = y_i^* & if\ y_i^* > 0, \\ y_i = 0 & if\ y_i^* \leq 0 \end{cases} \tag{2}$$

where y_i^* is the latent dependent variable, y_i is the observed dependent variable, x_i is the vector of the independent variables, β is the vector of coefficients, and the u_i's are assumed to be independently normally distributed.

Whereas the Tobit was designed to deal with estimation bias associated with censoring, the Heckit - is a response to sample selection bias. The two models have different motivations. The rationale behind equation (2) is that firms choose how much to invest in Brazil (y^*), but choices below zero are censored, because it is not possible to invest less than nothing. Therefore, we do not observe $y < 0.$

Overall, we estimate three different models: a Probit model, a Heckit model, which uses the Probit results to deal with the sample selection bias, and the Tobit model.

3. Findings

4.1 Main Results

We report the Tobit, Heckit and the Probit auxiliary selection model in Table 2. We can see that the estimations are remarkably similar, giving us additional confidence about the results. Our "market size" variables – GDP and DIA – have, as expected, positive and comfortably significant effects. GDP *per capita* is not statistically significant, contradicting Tallman (1988) but replicating Grosse and Trevino's (1996) negative finding. Contrary to expectations, the estimated coefficient of bilateral trade is, albeit positive, statistically not significant. Variables measuring distance have the expected signs: Portuguese and Spanish speaking countries have a greater propensity to invest in Brazil; and geographic distance appears with the expected sign, although the estimated coefficient is statistically significant at 10% level only if we consider a one-tailed test. This may occur because Brazil's neighboring countries speak Spanish, and the Spanish language dummy may therefore be capturing part of its effect. In general, the results of previous studies (Grosse and Trevino 1996; Thomas and Grosse 2001; and for cultural distance, Liu et al. 1997) are confirmed in this respect: the cultural and geographic proximity of the countries increases the propensity to invest abroad.

Noting that our control variables behave generally as expected, we can focus on our core finding. That finding is that the estimated coefficient of political risk is positive and statistically very significant. Recall that, in the *Euromoney* political risk index, higher values correspond to lower levels of political risk. This means that, substantively, our basic finding is that countries with lower risk levels tend to invest more into Brazil. The magnitude of the effect is large and important: a one standard deviation positive change

in the political risk index ─ equivalent, for example, to the difference between a country like Bulgaria and a country like South Korea on the 2005 data – is associated to an increase in US$ 210 million in foreign investment. This finding contrasts with most of the existing literature on the effects of home country political risk in FDI flows, and lends credibility to the notion that the relationship between the two variables is different when we move from low risk developed host countries to high risk host emerging markets. Firms in high risk countries may look at lower risk countries as safer havens, but it is in lower risk countries that we find firms more willing and able to invest in emerging higher risk markets.

Table 2 ─ Regression results on FDI in Brazil[9]

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[9] If we had used Huber/White Standard errors to account for the possibility of heteroscedasticity, the results would be very similar. The only relevant differences would be for 'Portuguese', which would become even more significant, for 'DIA' and 'Dist', both of which would become marginally significant at 10%. The same is true for Table 3, which we present in the next sub-section.

	Tobit	Heckit	Probit selection
Country Political Risk	32.3 (3.17)***	31.8 (3.14)***	0.084 (3.08)***
GDP	2.9e-04 (4.86)***	0.0003 (4.82)***	7.69e-07 (4.28)***
DIA	0.0085 (4.69)***	0.0085 (4.63)***	2e-05 (4.02)***
GDP *per capita*	0.0003 (0.08)	0.0004 (0.12)	1.14e-06 (0.12)
Portuguese	382.6 (2.06)**	379.9 (2.04)**	1.01 (2.04)**
Spanish	406.4 (3.21)***	393.1 (3.12)***	1.04 (3.02)
English	125.3 (1.42)	115.6 (1.29)	0.31 (1.29)
Distance	-0.017 (-1.50)	-0.017 (-1.48)	-4e-05 (-1.48)
Exports to and from Brazil	3.8e-08 (0.95)	3.93e-08 (0.97)	1.04e-10 (0.96)
Constant	-679.4 (-4.09)***	-673.9 (-4.22)***	-1.78 (-3.75)***

z-statistics between parentheses
* indicates statistical significance at the 10% level, ** at the 5%, and *** at the 1%

4.2 Is multicollinearity a problem?

As we have discussed early on, it is not entirely clear what a summary index such as 'Country political risk' may really be capturing. One possible question is whether the effects of risk can be distinguished from the effects of being an advanced industrial economy, where political risk tends to be lower. In other words, it is possible that there is a multicollinearity problem between political risk and GDP pc.

In Table 3, we display the correlation matrix between the independent variables. The correlations suggest the possibility of linear dependence between some variables. For example, political risk is indeed highly correlated (.79) with GDP *per capita*. This is particularly relevant because we want to assess the explanatory power of the political risk and to be sure that effects of other variables do not contaminate the estimated

coefficients. To be sure, linear dependence between the independent variables leads to an increase in the standard errors, which can lead to incorrect non-rejections of the null hypothesis. In other words, the statistical relevance of "political risk" is not in question. However, it is remains worth to examine whether there is linear dependence between the variables and the extent to which it might be affecting the results.

Table 3 ─ Independent variables correlation matrix

	Political Risk	GDP pc	Portuguese	Spanish	English	Distance	Exports to and from Brazil	GDP	DIA
Political Risk	100								
GDP pc	79.1	100							
Portuguese	-7	-7.7	100						
Spanish	-8.5	-10.6	-6.9	100					
English	5.9	7	-11.7	-19	100				
Distance	14.8	6.7	-14.5	-43.4	-7.5	100			
Exports to and from Brazil	30	25	-5.1	7.7	0.5	-1.5	100		
GDP	33.2	30	-3.8	-4	6.7	4.1	87.8	100	
DIA	42.1	41	-4.5	-3.6	-7.8	2.7	18	17.9	100

If the independent variables are linearly dependent, at least one of the eigenvalues of the matrix X^TX will be zero. If it is not perfect, small eigenvalues indicate strong linear dependence. To assess the severity of this problem, we used the condition index test (Belsley, 1991), which involves the standardization of the explanatory variables to unit variance and the computation of the eigenvalues of the standardized X^TX. The condition index is given by $\sqrt{\lambda_{max}/\lambda_{min}}$, where $\lambda_{max}(\lambda_{min})$ is the highest (lowest) eigenvalue. As a rule of thumb, Kennedy (2008) considers that there is evidence in favor of linear

dependence between the variables if the index is above 30. Greene (2008) suggests that values above 20 may indicate such dependence. However, computation of the condition index of our model reveals a value of 9.16. These values are far below the suggested lower boundaries, indicating that linear dependence is not a serious problem.

An alternative approach is to regress each independent variable against all the others and then use the R^2 of this auxiliary regression to compute the variance inflation factor (*VIF*). As a rule, Kennedy (2010) argues that there is evidence that linear dependence is a problem if *VIF* > 10 When we computed the *VIF* for each independent variable, the highest value we observed was 4.76. Again, the evidence suggests that linear dependence is not affecting the results.

Finally, note that the main consequences of linear dependence is the high sensibility of the estimators to small changes in the sample size, or the chosen variables. However, in a previous version of this paper, we only had 113 countries (70 countries less) and our data referred to the year of 2001. The results were the same: political risk was statistically significant while the estimated coefficients for GDP *per capita* were not statistically significant.

4.3 Unpacking political risk

Another interesting question concerns which of the possible non-economic components of the home country political risk is most relevant for FDI. As we have seen early on, summary measures of political risk conceivably conflate different aspects of the institutional, political, and policy environment in a particular country. One of them pertains to the level of stability in the institutional environment, i.e, the absence of threats

to regime and governmental stability that might seriously destabilize operations by firms, the aspect that tended to be emphasized in the seminal studies focusing on home country political risk (Tallman 1988; Grosse and Trevino 1996). Other potentially relevant aspects concern governance, especially as it may help creating a policy environment favorable to business and investment. This may include, for example, dimensions such as corruption (Deichmann 2010), the enforcement of contracts and property rights, and the quality of policy formulation and implementation. Finally, regime type – i.e., democracy – may also be related to the concept of political risk. Which of these dimensions is most consequential for the empirical relationship we have observed in Table 2?

To answer that question, we gathered several variables that capture different potential dimensions of political risk. One of our major concerns, of course, was to obtain measures of the aforementioned concepts for the largest possible number of cases – including countries with positive and zero levels of FDI into Brazil - in order to avoid the selection bias problems common in the extant literature. Thus, the first two variables measure regime type. We use data from Cheibub et al. (2010) to measure "Democracy" (coded for 2005), distinguishing countries where the executive and the legislature are chosen directly by popular election (or at least indirectly in the case of the executive), more than one party competes in the election, and alternation in power has taken place (1) from all remaining cases (0). For the same generic purpose, we also used the variable "Polity" from the Polity IV 1800-2009 dataset (Marshall and Jaggers 2009), which ranges from -10 (Autocratic) to 10 (Democratic), capturing the constraints faced by the executive, the degree of competition and openness in executive recruitment, and political competition in a regime. We also use country "Polity" measures for 2005.

In order to capture aspects related to political stability and quality of governance, we turn to the World Bank Worldwide Governance Indicators (Kaufmann et al. 2009). Six different variables are available for a large number of countries, all of them standardized to range from -2.5 to 2.5. "Voice and accountability" captures a concept with similarities to that of regime type, i.e., the extent to which citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. "Political Stability" captures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means. "Government effectiveness" is a measure of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. "Regulatory quality" is related to the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. "Rule of law" relates to the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. And "Control of Corruption" captures perceptions of the extent to which public power is exercised for private gain. All these measures were obtained for 2005. For almost all variables described above, we have at least 180 country observations. The exception is "Polity", on which we have measures for 155 countries.

In Table 3, we show the correlations between these variables and "Political risk" and reestimations of the model previously presented in Table 2, with two differences. First, we drop GDP pc, which he have already shown to be unrelated to FDI. Second, we

add each of the variables described above and observe what this inclusion does to the coefficient and statistical significance attached to the variable "Political Risk".[10]

Note, first, that there are four variables that are very strongly correlated with political risk. Those are not the ones related either with regime type or political stability, but rather those most related to regime performance and governance: Control of Corruption, Rule of Law, Regulatory Quality, and Government Effectiveness.

When each of the eight variables is added to the model, we find that the results are quite robust to the introduction of these new variables. None of them is statistically significant in any model and in all cases – except one, political risk remains significant (at least at 10% level).

The one exception is, however, very informative. When one includes a measure for 'Government Effectiveness', then both that variable and 'political risk' become individually statistically non-significant, while they are jointly highly significant: this means that the aspect of political risk that is probably most relevant to explain FDI in Brazil is strongly correlated to government effectiveness, i.e., the firms' policy environment in terms of the quality of the state apparatus and policy formulation and implementation.

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[10] We only report the results for the Tobit estimation, because the Heckit delivers very similar results. Reporting the latter would not add relevant information.

Table 3 ─ Tobit regression results with several measures of political risk

	Democracy (corr = 0.4)	Voice and Accountability (corr = 0.77)	Political Stability (corr = 0.71)	Regulatory Quality (corr = 0.92)	Rule of Law (corr = 0.91)	Control of Corruption (corr = 0.90)	Polity (corr = 0.44)	Government Effectiveness (corr = 0.94)
Country Political Risk	31.5***	23.0**	37.9***	31.9*	26.1*	26.9*	35.0***	13.0
GDP	3E-04***	3E-04***	3E-04***	3E-04***	3E-04***	3E-04***	3E-04***	3E-04***
DIA	0.009***	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***
Political risk indicator	**52.6**	**82.3**	**-48.2**	**7.36**	**48.6**	**41.0**	**8.3**	**133.95**
Portuguese	386.7**	356.4*	410.0**	382.0**	382.0**	381.2**	408.9*	385.5**
Spanish	400.9***	400.7***	406.8***	405.3***	417.2***	411.7***	378.3**	417.9***
English	126.3	94.5	147.5	123.4	113.0	114.3	72.3	99.3
Distance	-0.014	-0.013	-0.017*	-0.017*	-0.016	-0.016	-0.020	-0.014
Exports to and from Brazil	3.83E-08	3.79E-08	3.74E-08	3.78E-08	3.74E-08	3.75E-08	4.10E-08	3.23E-08
Constant	-725***	-587***	-752***	-672***	-602***	-618***	-728***	-456**

* indicates statistical significance at the 10% level, ** at the 5%, and *** at the 1%
Corr = correlation between each variable and political risk

5. Conclusions

Existing studies on the influence of political risk on FDI have focused on both low-risk developed nations (United States) and higher-risk developing countries (China, Mexico, or the Czech Republic). In most cases, however, samples have been limited to countries with positive investment flows into the countries under analysis. In this paper, we assess the influence of home country political risk on FDI into a high-risk country such as Brazil but, unlike previous studies, we use data on a large set of 180 countries,

including 100 non-investors, and multiple estimation techniques, such as the Probit, Tobit and Heckit models, which are appropriate to isolate the influence of home country political risk both on the decision to invest and on the size of FDI flows into Brazil.

Our findings, controlling for domestic output, size of the market, language, geographic distance, and bilateral trade, reveal that higher levels of home country political risk are conducive to lower levels of FDI into Brazil. These findings are at odds with most studies that focused on the effect of home country risk on foreign investment. We also found that the main component of political risk that seems to be driving the negative relationship between risk and FDI into Brazil is related neither to regime type nor to political stability, but rather to the quality of policy formulation and implementation.

Why the different results from most previous studies? On the one hand, there are potential methodological reasons behind these findings. By considering a wider sample of potential investors, including non-investors, we have addressed potential selection bias problems in previous studies. Our results are highly significant and the Tobit and Heckit (and the associated selection Probit) estimations delivered, essentially, the same results, increasing our confidence in the findings. On the other hand, it is certainly reasonable to think that this result may be explained by the different risk profiles and other factors that may differentiate cases such as the U.S. from host countries that are higher risk emerging markets. Even for firms in high-risk countries, investing in emerging markets that are high-risk themselves is not necessarily an optimal strategy, while firms in developed nations might be interested in exploring the risk sharing advantage that derives from the lack of intangible assets in emerging markets. Furthermore, we argued, firms in lower

risk countries should be more able to access capital markets and to enjoy the benefits of a policy environment more favorable to foreign investment. The results seem to support our speculations.

The substantive implications of these findings are potentially quite relevant. First, they provide a new insight into the factors that drive investment into Brazil, one of the major magnets of foreign investment in the world's emerging markets in recent years. They do so by contributing to the yet scarce literature on country-of-origin factors of FDI, precisely in a context – Latin America – where calls for attention to the systematic study of these factors have been frequently made (Tuman 2006 and 2009; Montero 2009). Finally, our findings have important implications for policy-makers. Certainly, from the point of view of policy-makers in potential host countries, political risk in home countries is even less amenable to chance by political fiat than risk in their own contexts. However, studies and recommendations in the area of investment facilitation strategies (UNCTAD 2009a; Ortega and Griffin 2009) have tended to neglect the issue of "targeting", i.e., selecting which potential home countries have the kind of structural features that turn their firms into larger investors. Investment facilitation strategies in Brazil have also suffered from a lack of a strategy designating "target-countries" where efforts in promotion and facilitation were more likely to succeed (Sakurai 2004), but there are recent signs of chance, such as the creation of APEX-Brasil, a governmental-agency in charge of attracting international investment. In 2009, APEX worked with a budget of more than US$ 260 million, and devoted close to US$ 30 million just in missions and

workshops taking place in 13 "priority markets".[11] Thus, in the global competition for foreign investment, governments devote considerable financial and political resources to the tools of economic diplomacy, as well as to the establishment of investment and trade promotion agencies and their overseas offices. Knowing which countries are more likely to invest in a particular country can be of potentially critical importance for governments engaged in a pro-active and "targeting" stance in what concerns investment promotion and facilitation.

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[11] "Apex-Brasil increases resources provided to investment and exports promotion in 2009", 18th December 2008, available at: http://www.apexbrasil.com.br/portal_apex/publicacao/engine.wsp?tmp.area=149&tmp.texto=4965.

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Appendix

Country	FDI 2005	Country	FDI 2005	Country	FDI 2005
United States	4,644.16	Malta	0.08	Korea North	0.00
Netherlands	3,207.92	Poland	0.06	Kyrgyz Republic	0.00
Mexico	1,661.18	Kuwait	0.06	Laos	0.00
France	1,458.41	Guatemala	0.06	Latvia	0.00
Canada	1,435.32	Bulgaria	0.05	Lesotho	0.00
Germany	1,269.32	Nigeria	0.05	Lithuania	0.00
Spain	1,220.43	Dominican Republic	0.05	Macau	0.00
Australia	926.04	Romania	0.05	Macedonia (FYR)	0.00
Japan	779.08	Mozambique	0.05	Madagascar	0.00
Belgium	685.58	Slovenia	0.04	Malawi	0.00
Italy	345.68	Libya	0.03	Malaysia	0.00
Switzerland	341.54	Thailand	0.02	Maldives	0.00
Portugal	334.62	Trinidad & Tobago	0.00	Mali	0.00
Denmark	239.88	Afghanistan	0.00	Mauritania	0.00
Uruguay	169.21	Albania	0.00	Micronesia (Fed. States)	0.00
Korea South	168.01	Algeria	0.00	Moldova	0.00
Panama	165.56	Armenia	0.00	Mongolia	0.00
United Kingdom	153.26	Azerbaijan	0.00	Morocco	0.00
Luxembourg	139.10	Bahrain	0.00	Myanmar	0.00
Ireland	125.11	Bangladesh	0.00	Namibia	0.00
Argentina	112.23	Belarus	0.00	Nepal	0.00
Chile	102.68	Benin	0.00	New Caledonia	0.00
Bahamas	87.83	Bhutan	0.00	Nicaragua	0.00
New Zealand	48.13	Bosnia and Herzegovina	0.00	Niger	0.00
Norway	43.16	Botswana	0.00	Oman	0.00
Singapore	42.30	Brunei	0.00	Pakistan	0.00
Bermuda	38.92	Burkina Faso	0.00	Papua New Guinea	0.00
Sweden	32.91	Burundi	0.00	Philippines	0.00
Hong Kong	17.45	Cambodia	0.00	Qatar	0.00
India	7.91	Cameroon	0.00	Rwanda	0.00
China	7.56	Central African Republic	0.00	Samoa	0.00
Barbados	6.85	Chad	0.00	Sao Tome & Principe	0.00
Finland	6.56	Congo	0.00	Saudi Arabia	0.00
Austria	6.07	Côte d'Ivoire	0.00	Senegal	0.00
Venezuela	5.56	Croatia	0.00	Serbia and Montenegro	0.00
Taiwan	3.69	Dem. Rep. of the Congo (Zaire)	0.00	Sierra Leone	0.00
South Africa	3.69	Djibouti	0.00	Slovak Republic	0.00
Israel	3.24	Dominica	0.00	Solomon Islands	0.00
Bolivia	2.09	El Salvador	0.00	Somalia	0.00
Ecuador	1.82	Equatorial Guinea	0.00	Sri Lanka	0.00
Greece	1.64	Eritrea	0.00	St Lucia	0.00
Colombia	1.58	Estonia	0.00	St Vincent & the Grenadines	0.00
Mauritius	1.57	Ethiopia	0.00	Sudan	0.00

Paraguay	1.40	Fiji	0.00	Suriname	0.00
Marshall Islands	1.39	Gabon	0.00	Swaziland	0.00
Peru	1.04	Gambia	0.00	Syria	0.00
Lebanon	0.98	Georgia	0.00	Tajikistan	0.00
Costa Rica	0.82	Ghana	0.00	Tanzania	0.00
Antigua and Barbuda	0.45	Grenada	0.00	Togo	0.00
Russia	0.43	Guinea	0.00	Tonga	0.00
Angola	0.43	Guinea-Bissau	0.00	Tunisia	0.00
Liberia	0.41	Guyana	0.00	Turkmenistan	0.00
Czech Republic	0.32	Haiti	0.00	Uganda	0.00
Jordan	0.29	Honduras	0.00	Ukraine	0.00
Belize	0.24	Hungary	0.00	Uzbekistan	0.00
Cape Verde	0.15	Iceland	0.00	Vanuatu	0.00
Turkey	0.15	Indonesia	0.00	Vietnam	0.00
Cuba	0.14	Iran	0.00	Yemen	0.00
Cyprus	0.11	Iraq	0.00	Zambia	0.00
United Arab Emirates	0.11	Jamaica	0.00	Zimbabwe	0.00
Egypt	0.11	Kazakhstan	0.00		
Seychelles	0.10	Kenya	0.00		

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