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ABSTRACT

Does Public Governance Always Matter? How Experience of Poor Institutional Quality Influences FDI to the South

This paper investigates whether the higher prevalence of South multinational enterprises (MNEs) in risky developing countries may be explained by the experience that they have acquired of poor institutional quality at home. We confirm the intuitions provided by our analytical model by empirically showing that the positive impact of good public governance on foreign direct investment (FDI) in a given host country is moderated significantly, and even in some cases eliminated or reversed, when MNEs have had prior experience of poor institutional quality at home. In contrast, MNEs with little experience are deterred much more by bad public governance conditions than could have been inferred from an unconditional estimation of the effects of public governance on FDI.

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Keywords: institutions, public governance and South-South FDI

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1 Introduction

The traditional stream of foreign direct investment (FDI) from the industrialised world (the "North") is gradually being supplemented by outward FDI undertaken by multinationals based in developing countries (the "South"). Although certainly not a new phenomenon, this "South-South" FDI has grown rapidly in recent years. Aykut and Ratha (2004) and UNCTAD (2006) estimate that one third to one half of total FDI inflows reported by developing countries came from other developing countries in the last decade. The fact that this share is frequently much higher in low-income countries and those with relatively risky investment environments (UNCTAD, 2006) suggests that South multinational enterprises (MNEs) may be less deterred by poor public governance conditions than those from the North. This hypothesis may appear surprising given the importance that the FDI literature attaches to good public governance.[1] Nevertheless, a few empirical studies point in this direction. Cuervo-Cazurra (2006) finds that investors from countries with high levels of corruption are undeterred by foreign corruption. Indeed, they may even preferentially locate their activities in countries where corruption is widespread. This result is echoed by those of Cuervo-Cazurra and Genc (2008) who suggest that South MNEs are likely to be more prevalent among the largest foreign firms in those developing countries characterised by poor institutions. The argument underlying both studies is that South MNEs, having acquired the ability to operate in poor institutional environments at home, have a competitive edge over their North counterparts in risky developing countries. This relationship, between experience of poor institutional quality and sensitivity to host country's public governance, has yet to be rigorously modeled and tested.

The purpose of this paper is to make a first step towards filling this gap. We start by setting out a simple analytical model of FDI location in which the location choice of an MNE is influenced by its experience with poor institutional quality at home. A firm that has faced institutional difficulties in its home country may have developed the skills which render similar problems overseas less problematic for it relative to a firm that has never operated in such a setting. Our simulations illustrate how a South MNE is less deterred by country risk abroad than a North MNE and may even choose a different location in order to earn a higher return in the more risky country. We then turn to our empirical analysis to investigate whether these outcomes emerge in the real economy. We systematically and robustly show that the quality of a host country's public governance exerts a significant positive impact

[1] Wei (2000), Daude and Stein (2007), Benassy-Quere, Coupet, and Mayer (2007) and Azémar and Desbordes (2009) find, among other studies, a strong statistical and substantial positive impact of good public governance on FDI.

on FDI only when MNEs have had little experience of poor institutional quality at home. We further establish that the magnitude of the impact of public governance and the minimum level of experience above which good governance no longer exert a statistically significant effect on FDI vary according to the sector in which an MNE operates. We also find that, while MNEs have generally become more tolerant of poor public governance, the positive impact of good public governance on FDI has become larger for those MNEs that have little experience of poor institutional quality. Finally, in some cases, good public governance exerts a negative and statistically significant impact on FDI from countries with high experience of poor domestic institutional quality. Overall these results suggest that South MNEs are much more likely to invest in risky countries than North MNEs. The former may even deliberately choose to locate in a risky but potentially profitable environment if their competitive advantage mostly resides in their resilience in the face of risk.

The remainder of the paper is organised as follows: section 2 details our theoretical model, which makes explicit how a source country's experience of risk can impact on the expected profitability of FDI. In section 3 we describe the data used in our empirical analysis and motivate our econometric approach. Section 4 presents and interprets our detailed results and section 5 concludes.

2 A simple analytical model

We develop a simple model of foreign direct investment (FDI) in which a multinational enterprise (MNE), based in source country s, considers which country to choose as the host for its production facilities. The source will make its choice based upon a comparison of the expected present value of profits from production in each potential host country, taking into account institutional quality in both source and host nations. We initially consider the situation in which there is no risk to investment.

We assume that the FDI is horizontal in nature, in that the firm invests in host country h in order to produce and supply products to the local region, as opposed to being exported to the source country.[2] Suppose that there are n countries in the region and these will serve as the markets for the products of the MNE. The firm is assumed to be able to segement its markets. Let the per-capita demand in country i for good x, produced exclusively by the MNE, be

$$x_i = \frac{a - q_i}{b},$$

[2]This is for analytical convenience and the case of vertical FDI can be readily examined in a similar framework.

where q_i is the producer price of the good in country i and a and b are positive parameters. There is an "iceberg" trade cost on shipments of goods such that only a proportion $t_{hi} \leq 1$ of the good is delivered to the host country. Let $t_{hh} = 1$, that is, there are no costs of delivery to domestic consumers. The monopoly profits of a firm located in country i are

$$\Pi_h = \sum_{i=1}^{n} \pi_{hi} = \frac{1}{4} \sum_{i=1}^{n} \frac{\rho_i \left(at_{hi} - w_h\right)^2}{bt_{hi}}, \tag{1}$$

where ρ_i is the share of the region's population residing in country i while w_h is the marginal cost of production in country h. Assume that the host country does not impose any taxes on the operations of the MNE's plant in its country.[3]

We simplify the analysis at this stage by assuming that all markets in the region are the same size and the same distance from the production facility in country h. Thus

$$\rho_i = \rho \equiv 1/n, \; t_{hi} = t_{h,} \; \forall i.$$

In this case, expression (1) for profits arising from production in country h can be simplified to

$$\Pi_h = \frac{\left(at_h - w_h\right)^2}{4bt_h}. \tag{2}$$

Suppose that the MNE were considering locating its plant in either of two countries 1 or 2. It will compare the profits arising from production in the two locations. Define the "geographical advantage" of locating in country 1 as

$$\Gamma_{12} \equiv \Pi_1 - \Pi_2 = \frac{1}{4b} \left[2a \left(w_2 - w_1\right) + a^2 \left(t_1 - t_2\right) + \left(\frac{w_1^2}{t_1} - \frac{w_2^2}{t_2} \right) \right]. \tag{3}$$

Thus potential-host country 1 has an advantage over its rival destination if it has lower marginal costs of production or if its costs of shipping to other markets are less than those from country 2.

The investment made by the MNE is expected to be productive and last into the future, in which case the firm will look at the present value of the expected stream of current and future profits. Assume, for now, that there is no risk involved in the FDI and that the plant will continue to produce

[3] Our interest in this paper is on production costs and institutional quality as determinants of the location of production. Consequently we ignore issues of corporate tax setting and the impact of any tax competition between potential hosts of the FDI.

indefinitely. The present value of the expressions in (2) and (3) are

$$PV\left(\Pi_h\right) = \frac{\Pi_h}{1-\delta},\ h = 1, 2 \tag{4}$$

$$PV\left(\Gamma_{12}\right) = \frac{\Pi_1 - \Pi_2}{1-\delta}, \tag{5}$$

where δ is the discount rate.

2.1 Institutional risk

The life of the MNE's overseas plant may be cut short for many reasons. We focus on problems with respect to the institutions in the host country. We suppose that there is a risk r_h in every period that the production facility in host country h will cease to return a profit to its owners in source country s. This may arise because of some catastrophic breakdown in the host country's economy such that the firm is unable to continue producing or production may continue but ownership of the firm is expropriated by the host country's government, etc. This risk, if it differs between source countries, will figure in the MNE's calculations as to its preferred production location.

A major interest in this research exercise is determining whether the source country's previous experience with institutional risk at home influences its perceptions of the risk inherent in investing in other nations. It may be the case that a firm, having faced institutional difficulties in its home country, will have developed skills that render similar problems overseas less problematic relative to investors from other nations who have never been exposed to such risks. We define σ_{sh} as the subjective probability, from the point of view of investing country s, that FDI in country h will continue to yield its profits in the current period. This can be modelled as

$$\sigma_{sh} \equiv 1 - \left(1 - e_s^{\alpha}\right) r_h, \tag{6}$$

where e_s is the source country's experience of past, domestic, institutional risk, $e_s < 1$ and $\alpha > 0$. This subjective probability effectively modifies the firm's intertemporal discount rate, in that it now perceives that the flow of profits from the FDI might come to a halt at some point, now or in the future. If the potential-host nation is risk free ($r_h = 0$), then the firm's experience of dealing with poor institutions is irrelevant.

It may also be the case that the source country continues to have institutional problems of its own

and these might have an influence on the expected returns to FDI relative to those that might be earned on domestic investment. Let c_s be the contemporaneous, domestic institutional risk and let ε_{sh} be the impact that this has on the relative return to FDI from country s to country h, where

$$\varepsilon_{sh} = 1 + \beta c_s - \gamma r_h. \tag{7}$$

We anticipate that $\gamma > 0$, that is the case where relatively poorer quality institutions in the host makes FDI less attractive. In addition to this, the actual quality of institutions in the source country may have an effect. If $\beta > 0$, source-country institutional risk makes FDI more attractive, while $\beta < 0$ reflects the case where home difficulties make FDI more difficult, perhaps due to the cost of paying bribes to local officials or problems in safely repatriating profits from overseas ventures.

Drawing these elements together, from (4), (6), and (7), we can write the expected present value of the profit stream arising from FDI to be

$$EPV_s\left(\Pi_h\right) = \frac{\sigma_{sh}\varepsilon_{sh}\Pi_h}{1-\delta\sigma_{sh}}. \tag{8}$$

The partial derivatives of (8) are

$$\begin{aligned}
\frac{dEPV_s\left(\Pi_h\right)}{dr_h} &= -\left[\frac{1-e_s^{\alpha}}{\sigma_{sh}\left(1-\delta\sigma_{sh}\right)} + \frac{\gamma}{\varepsilon_{sh}}\right] EPV_s(\Pi_h) < 0, \\
\frac{dEPV_s\left(\Pi_h\right)}{de_s} &= \frac{\alpha e_s^{\alpha-1} r_j}{\sigma_{sh}\left(1-\delta\sigma_{sh}\right)} EPV_s(\Pi_h) > 0, \\
\frac{dEPV_s\left(\Pi_h\right)}{dc_s} &= \frac{\beta+\gamma}{\varepsilon_{sh}} EPV_s(\Pi_h) \lesseqgtr 0.
\end{aligned}$$

Thus poorer institutions in the potential host country make the expected return from FDI in that location less attractive. The greater the source country's experience of poor institutions at home, the better able it is to cope with risk to its FDI. Finally, the effect of contemporaneous risk in the source country is ambiguous, depending upon the sign of $(\beta + \gamma)$.

2.2 Two sources and two potential hosts

Now consider the characteristics of two firms from different source countries, A and B, making their choices between the two potential host countries, 1 and 2, as to where to invest. Each firm will consider the expected present values of the two locations and the firms from country s will choose 1

over 2 if

$$EPV_s\left(\Gamma_{12}\right) = \frac{\sigma_{s1}\varepsilon_{s1}\Pi_1}{1-\delta\sigma_{s1}} - \frac{\sigma_{s2}\varepsilon_{s2}\Pi_2}{1-\delta\sigma_{s2}} > 0,\ s = A, B. \tag{9}$$

Rewriting expression (9) for each firm yields

$$\begin{aligned} EPV_A\left(\Gamma_{12}\right) &= \frac{1-\left(1-e_A^{\alpha}\right)r_1}{(1-\delta)+\delta(1-e_A^{\alpha})r_1}\left[1+\beta c_A+\gamma\left(c_A-r_1\right)\right]\Pi_1 \\ &\quad -\frac{1-\left(1-e_A^{\alpha}\right)r_2}{(1-\delta)+\delta(1-e_A^{\alpha})r_2}\left[1+\beta c_A+\gamma\left(c_A-r_2\right)\right]\Pi_2, \\ EPV_B\left(\Gamma_{12}\right) &= \frac{1-\left(1-e_B^{\alpha}\right)r_1}{(1-\delta)+\delta(1-e_B^{\alpha})r_1}\left[1+\beta c_B+\gamma\left(c_B-r_1\right)\right]\Pi_1 \\ &\quad -\frac{1-\left(1-e_B^{\alpha}\right)r_2}{(1-\delta)+\delta(1-e_B^{\alpha})r_2}\left[1+\beta c_B+\gamma\left(c_B-r_2\right)\right]\Pi_2. \end{aligned} \tag{10}$$

As we have already established, experience of poor institutional quality is helpful when investing in countries that themselves have poor institutions but such experience is of no use for FDI in risk-free host countries. Thus there is the potential for countries that are presently identical, but with different histories, to perceive potential investment returns differently when the hosts differ in their institutional quality. Suppose, for example, that both source countries currently have unimpeachable institutions, that is $c_B = c_A = 0$, while the two potential hosts differ in that country 1 is completely safe but FDI in country 2 carries some risk, that is $r_2 > r_1 = 0$. But let us further assume that country B has had a more turbulent past than has rock-solid country A, that is $e_B > e_A = 0$. We can then re-write (10) as

$$\begin{aligned} EPV_A\left(\Gamma_{12}\right) &= \frac{\Pi_1}{(1-\delta)} - \frac{\left(1-r_2\right)\left(1-\gamma r_2\right)\Pi_2}{(1-\delta)+\delta r_2}, \\ EPV_B\left(\Gamma_{12}\right) &= \frac{\Pi_1}{(1-\delta)} - \frac{\left[1-\left(1-e_B^{\alpha}\right)r_2\right]\left(1-\gamma r_2\right)\Pi_2}{(1-\delta)+\delta(1-e_B^{\alpha})r_2}. \end{aligned} \tag{11a}$$

The experience that the firm from country B has with poor institutions makes it better able to deal with current problems in country 2, such that it may choose to invest in that location if the profitability of a plant located there is sufficiently large to offset the increased risk of closure. This characterisation of the four countries might be consistent with countries A and 1 being from the "North" while countries B and 2 are from the "South".

2.2.1 Numerical simulations

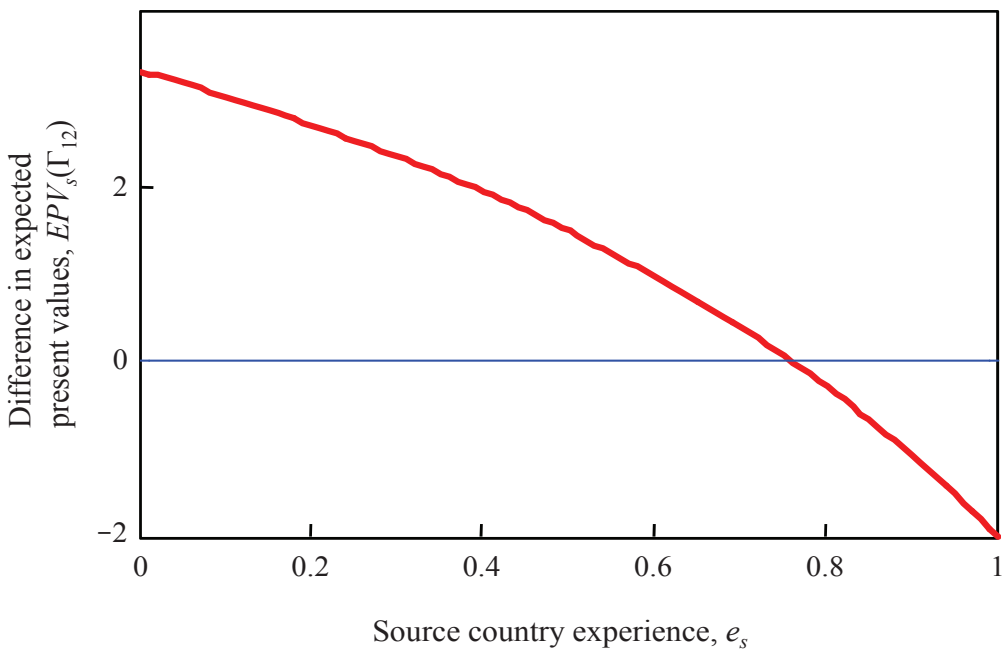
In accordance with the assumptions made regarding the institutional experiences of the four countries in question, we calculate the circumstances under which a MNE from a given source country would

choose FDI in the lower profit, risk-free host over investing in the riskier, but potentially more profitable, nation. For simplicity, we initially suppress any remaining elements of contemporaneous risk in the source country by assuming that $\gamma = 0$. As we have no prior as to the value of α, we assume that it is equal to unity. The parameter values for the potential host countries are as follows

$$r_1 = 0 \qquad \Pi_1 = 0.8$$
$$r_2 = 0.1 \quad \Pi_2 = 1$$

Consider how varying the experience with risk on the part of the firm changes the relative attractiveness of the two locations. This is illustrated in Figure 1 which traces $EPV_s\left(\Gamma_{12}\right)$ as the experience acquired in the source country changes. When $EPV_s\left(\Gamma_{12}\right) < 0$, the higher return in host country 2 more than offsets the greater risk associated with investing in that country.

Figure 1: Experience of risk and the perceived difference in investment return

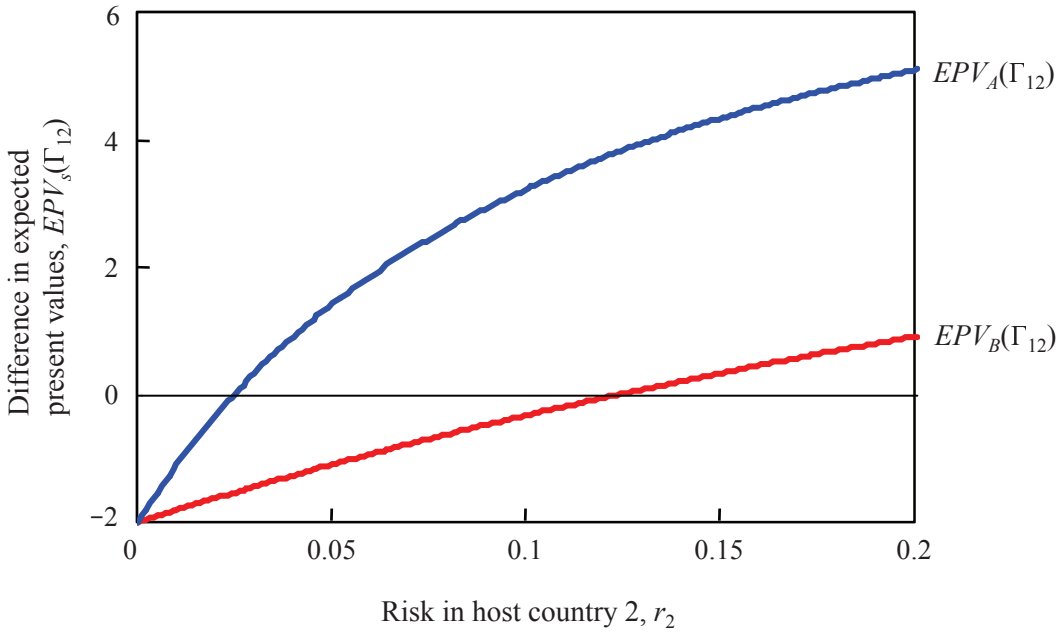


The more experience a firm has of dealing with investment risk, the better able it is to deal with a poorer institutional framework in the higher return, host country.

Effectively, the MNE with more experience of host-country institutional problems is more willing to invest in that country relative to placing its FDI in the safer host that has a lower return. We can illustrate the cases under which each MNE may choose a different host for its investment. In Figure 2,

country B is assumed to have an experience coefficient of $e_B = 0.8$ while country A has none. Host country 1 is risk-free, while the risk parameter for the potentially higher return host country, 2, ranges from zero to $r_2 = 0.2$.

Figure 2: Benefits of investing in country 1 given risk in country 2



The lower line represents $EPV_B(\Gamma_{12})$ while the upper line shows $EPV_A(\Gamma_{12})$. When country 2 is as safe as its rival location for FDI, both firms will choose to invest there to take advantage of the higher profitability. The benefits for both firms from investing in country 2 begin to be eroded as that country's riskiness increases, but the impact will be more severe for the firm from country A with no experience of dealing with poor institutions. Thus higher risk in country 2 will eventually make its rival, country 1, the preferred location for the FDI of both firms. There will, however, be a range of levels of risk in country 2 at which the more experienced firm will choose to invest there, while the firm based in a nation with little experience of poor institutions will abandon country 2 for the security of investing in the less risky location of country 1.

3 Econometric model and data

We now turn to an examination of North-South and South-South FDI in order to determine whether the quality of public institutions (both past and present) influence investment decisions, as was suggested

in the previous section.

We consider FDI in developing countries where the data used are the total numbers of majority-owned foreign affiliates located in these host countries, as reported by the UNCTAD on the *Investment Map* website in November 2007.[4] The original source of the data is *The Global Reference Solution*, from Dun & Bradstreet. In terms of data limitations, useful information, such as the sales or the number of employees are frequently not reported and coverage and accuracy can vary with each country. Despite these caveats, the correlation coefficient between the number of U.S. majority-owned foreign affiliates reported in the data and that reported by the U.S. Bureau of Economic Analysis for 2006 is 0.90, suggesting that the picture provided by Dun & Bradstreet is fairly accurate. Table 1 indicates the main sources and hosts of South FDI. The top source and host countries tend to be the largest and the richest economies. The widespread presence of tax havens among source countries, e.g. British Virgin Islands or Panama, suggests that despite Dun & Bradstreet's efforts, data include "roundtripping" and "trans-shipping" FDI.[5] The "fundamental-based" outward FDI of some countries may be thus over- or under-stated. In terms of sectoral breakdown, a mere 1% of the foreign affiliates are located in the primary sector whereas the remainder are equally split between the secondary and tertiary sectors.

3.1 Public governance

Data on the current quality of countries' public governance come from Kaufmann, Kraay, and Mastruzzi (2008). They have evaluated six dimensions of public governance for the period 1996-2007, on the basis of polls of experts or surveys of businessmen/citizens. These are (i) Voice and Accountability (VA), (ii) Political Stability (PS), (iii) Government Effectiveness (GE), (iv) Regulatory Quality (RQ), (v) Rule of Law (RL) and Control of Corruption (CC). VA and PS attempt to capture the process by which those in authority are selected and replaced, GE and RQ are related to the ability of the government to formulate and implement sound policies, while RL and CC assess the respect of citizens and the state for the institutions which govern their interactions. These indicators have been widely used in the FDI literature, e.g. Globerman and Shapiro (2003) or Daude and Stein (2007), and

[4] `http://www.investmentmap.org/invmap/index.aspx?prg=1`. Information is provided on foreign affiliates located in developing countries and economies in transition that do not belong to the European Union. Hence, only determinants of North-South and South-South FDI are investigated.

[5] In the first case, different treatments of foreign and domestic investors encourage the latter to channel their funds into special purpose entities (SPEs) abroad in order to subsequently repatriate them in the form of incentive-eligible FDI. In the second case, funds channeled into SPEs in offshore financial centres are redirected to other countries, leading to strong divergences between the source country of the FDI and the ultimate beneficiary owner.

Table 1: Sources and destinations of South FDI

Number of foreign affiliates							
Main source countries				Main host countries, by source			
South		North		South		North	
Mauritius	23	Norway	282	Chile	27	Viet Nam	260
Poland	26	Belgium	311	Barbados^{*th}	30	Croatia	300
Venezuela	27	Cayman Islands^{*th}	311	Nicaragua	35	Ecuador	314
Costa Rica	35	Portugal	406	Thailand	36	Uruguay	315
Guatemala	37	Australia	412	El Salvador	37	Egypt	410
Turkey	39	Finland	531	Philippines	38	Peru	420
China	39	Luxembourgth	531	Guatemala	41	Ukraine	449
Saudi Arabia	42	Austria	532	India	45	Panamath	459
Indonesia	43	British Virgin Islands^{*th}	706	Bolivia	49	Morocco	460
Thailand	46	Denmark	746	Ecuador	50	South Africa	640
Russian Federation	52	Bermuda^{*th}	792	Costa Rica	50	Philippines	654
Trinidad and Tobago	54	Taiwan Province of China	851	Malaysia	53	Colombia	838
Czech Republic	73	Canada	860	Turkey	62	Venezuela	863
Colombia	84	Sweden	1303	Ukraine	73	Indonesia	914
South Africa	89	Italy	1522	Uruguay	76	Chile	993
Barbados^{*th}	114	Singaporeth	1556	Panamath	80	Thailand	1068
India	154	Spain	2416	Colombia	87	Turkey	1355
Uruguay	162	Switzerlandth	2762	Peru	88	Republic of Korea	1793
Malaysia	207	Netherlands	3839	Venezuela	100	Russian Federation	2000
Argentina	212	United Kingdom	4616	Indonesia	115	Malaysia	2362
Chile	265	Hong Kong, Chinath	4652	Russian Federation	115	India	2372
Panamath	292	France	6077	Mexico	144	Argentina	3215
Brazil	305	Germany	7535	Argentina	456	Mexico	10018
Mexico	317	Japan	10586	Brazil	667	Brazil	18023
Republic of Korea	787	United States	20267	China	710	China	19128
Total	**3887**		**75487**				

Notes: South: developing country according to World Bank classification (low and middle income countries). North: developed country according to World Bank classification (high income countries).*: country not included in the estimation sample due to data limitations.th: tax haven countries. Data sources: UNCTAD and Dun & Bradstreet.

are available for most countries in the world. Data have been averaged over the 2000-2004; data for most other control variables are only available until the year 2004 and, overall, taking averages may reduce the influence of short-run fluctuations or measurement errors. Summary statistics are given in table 2.

Table 2: Public governance: summary statistics

Variable	Mean	Std deviation	Min	Max
Host VA	-0.40	0.75	-1.81	1.05
Host PS	-0.42	0.84	-2.27	0.97
Host GE	-0.43	0.61	-1.76	1.24
Host RQ	-0.41	0.66	-2.00	1.43
Host RL	-0.50	0.66	-1.83	1.18
Host CC	-0.46	0.60	-1.64	1.39
Source VA	-0.06	0.95	-1.81	1.65
Source PS	-0.10	0.95	-2.27	1.59
Source GE	-0.00	0.99	-1.76	2.19
Source RQ	-0.01	0.94	-2.00	1.95
Source RL	-0.08	0.97	-1.83	1.96
Source CC	-0.03	1.00	-1.64	2.42

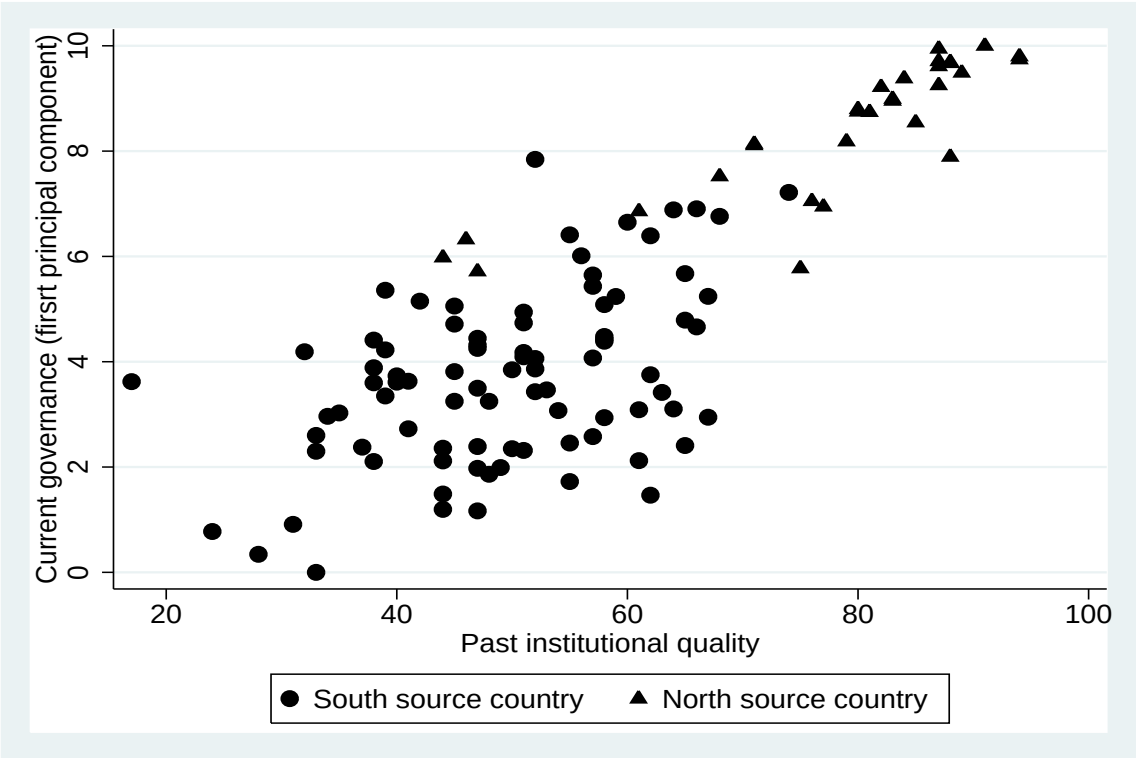
Note: Values averaged over the 2000-2004 period. Data source: Kaufmann, Kraay, and Mastruzzi (2008).

We use two alternative measures of source countries' past institutional quality to proxy for MNEs' experience of operating institutional risk. The first and primary measure is the average *International Country Risk Guide* (ICRG) Political Risk rating for the period 1983-1990, which aggregates numerical evaluations of twelve dimensions of political risk.[6] The indicator ranges from 0 (high political risk) to 100 (no political risk). Given the strong correlation between institutional quality and total factor productivity (TFP) (see Hall and Jones (1999) and (Barseghyan, 2008)), the second measure is the logarithm of the average TFP for the years 1980 and 1990, as computed by Baier, Dwyer, and Tamura (2006). Values for these two measures are given in table 3. Asterisks indicate the values for which TFP is certainly inflated by the exploitation of natural resources.[7] Both indicators are closely correlated ($r \simeq 0.56$) and they show that, two decades ago, a median developing country was much

[6]These dimensions are (1) government stability, (2) socioeconomic conditions, (3) investment profile, (4) internal conflict, (5) external conflict, (6) corruption, (7) military in politics, (8) religion in politics, (9) law and order, (10) ethnic tensions, (11) democratic accountability, (12) bureaucracy quality. See `http://www.prsgroup.com/`

[7]Natural resources rich countries are defined as countries for which fuel exports represents more than 50% of their total exports and/or share of mining industry in GDP was greater than 10% circa 1988. Data come from the Global Development Network Growth Database (`http://go.worldbank.org/ZSQKYFU6J0` and Hall and Jones (1999).

Figure 3: Past and current institutional quality of source countries



Notes: The measure of past institutional quality is the average ICRG political risk rating over the period 1983-1990. South: developing country. North: developed country. Data sources: Kaufmann, Kraay, and Mastruzzi (2008) and ICRG/PRS.

more risky than a developed country. As illustrated by figure 3, source countries' past institutional quality is not necessarily indicative of current domestic institutional quality, suggesting that experience of risk, corresponding to low past institutional quality, could not readily be inferred from the latter.

3.2 Econometric model and control variables

Given the nature of our dependent variable, we adopt a count data model.[8] We need to tackle two issues: overdispersion and excess of zeros.

Turning first to the issue of overdispersion, count data are usually assumed to have a Poisson distribution, constraining the conditional variance to be equal to the conditional mean. However, this assumption of equidispersion is very restrictive and violated in our empirical application. To the contrary, overdispersion occurs, that is the conditional variance is greater than the conditional mean.

[8]For a comprehensive exposition of count data models, see Cameron and Trivedi (1998) and Winkelmann (2008).

Table 3: Measures of source countries' past institutional quality

Country	Log Average TFP 1980-1990	Average ICRG score 1983-1990	Country	Log Average TFP 1980-1990	Average ICRG score 1983-1990	Country	Log Average TFP 1980-1990	Average ICRG score 1983-1990
Albania	4.0	64	El Salvador	4.8	32	Lao People's Democratic Republic	4.5	
Algeria	5.0*	61	Estonia	4.7		Latvia	4.8	
Angola	4.4*	44	Ethiopia	4.1	33	Lebanon		17
Argentina	5.1	57	Fiji	5.2		Lesotho	4.3	
Armenia	4.6		Finland	5.3	91	Liberia	4.2	28
Australia	5.5	82	France	5.6	79	Lithuania	4.6	
Austria	5.4	87	Gabon	5.0*	62	Luxembourg		94
Azerbaijan	4.6		Gambia	5.0	51	Madagascar	5.2	58
Bangladesh	4.9	33	Georgia	4.6		Malawi	3.9	52
Belarus	4.7		Germany	5.4	83	Malaysia	5.2*	65
Belgium	5.6	81	Ghana	4.1	47	Mali	4.6	38
Benin	4.8		Greece	5.2	61	Mauritania	4.5	
Bolivia	4.7	40	Guatemala	5.4	35	Mauritius	5.3	
Botswana	4.9*	66	Guinea	4.7	47	Mexico	5.5	66
Brazil	5.2	65	Guinea-Bissau	4.2	44	Mongolia		59
Brunei Darussalam		75	Guyana	4.4	39	Morocco	5.4	47
Bulgaria	4.7	67	Haiti	4.5	31	Mozambique	4.9	45
Burkina Faso	4.2	50	Honduras	4.8	39	Namibia	5.1*	39
Burundi	4.3		Hong Kong. China	5.5	68	Nepal	4.8	
Cambodia	4.5		Hungary	4.9	74	Netherlands	5.4	89
Cameroon	4.7	50	Iceland		87	New Zealand	5.3	87
Canada	5.5	84	India	4.2	47	Nicaragua	4.7	38
Central African Republic	4.2		Indonesia	4.7*	44	Niger	4.3	54
Chad	4.6		Iran. Islamic Republic of	5.4*	34	Nigeria	4.6*	44
Chile	5.2*	52	Iraq	5.7*	33	Norway	5.4	88
China	4.0	63	Ireland	5.3	80	Oman	6.1*	56
Colombia	5.1	57	Israel	5.4	44	Pakistan	4.9	38
Congo	4.8*	55	Italy	5.5	77	Panama	4.9	45
Costa Rica	5.0	64	Jamaica	4.6	58	Papua New Guinea	4.6*	61
Cote d'Ivoire	4.8	62	Japan	5.2	88	Paraguay	4.8	51
Czech Republic	4.7	68	Jordan	5.5	45	Peru	4.8	40
Denmark	5.2	87	Kazakhstan	4.6		Philippines	4.5	41
Dominican Republic	4.9	51	Kenya	4.0	55	Poland	4.8	55
Ecuador	5.1	58	Kuwait	5.8*	47	Portugal	5.2	71
Egypt	5.2	47	Kyrgyzstan	4.5		Republic of Korea	5.0	62

Table continues next page...

Country	Log Average TFP 1980-1990	Average ICRG score 1983-1990	Country	Log Average TFP 1980-1990	Average ICRG score 1983-1990	Country	Log Average TFP 1980-1990	Average ICRG score 1983-1990
Republic of Moldova	4.6		Sweden	5.4	88	United Republic of Tanzania	4.1	53
Romania	4.1	51	Switzerland	5.5	94	United States	5.6	85
Russian Federation	4.9	67	Syrian Arab Republic	5.7	41	Uruguay	5.1	60
Rwanda	4.5		Taiwan Province of China	5.3	76	Uzbekistan	4.4	
Saudi Arabia*	6.7	52	Tajikistan	4.3		Venezuela*	5.4	65
Senegal	4.4	58	Thailand	4.7	58	Viet Nam	4.4	48
Sierra Leone	5.3	48	Togo	4.0	47	Yemen	5.3	49
Singapore	5.3	80	Trinidad and Tobago*	5.7	57	Zambia*	4.0	45
Slovakia	4.5		Tunisia	5.2	51	Zimbabwe	4.2	47
South Africa*	4.9	57	Turkey	5.0	52			
Spain	5.5	71	Uganda	5.1	37			
Sri Lanka	4.6	38	Ukraine	4.6		Median developed	5.4	83
Sudan	4.5	24	United Arab Emirates*	6.1	46	Median developing	4.7	51
Suriname		42	United Kingdom	5.4	83			

Note: *: Natural resources rich countries. Data sources: Baier, Dwyer, and Tamura (2006) and ICRG/PRS.

This overdispersion can be seen as reflecting heterogeneity among observations which is not captured by the regressors. In these circumstances, a Poisson regression model would estimate consistently the parameter values but underestimate the true standard errors.

Analogous to the linear regression model, the effects of omitted factors independent of the observed variables can be captured via the inclusion of of a random component u in the exponential mean function $E(n_{shk}|x) = \exp(x'\beta)$ of a Poisson regression model :

$$\begin{aligned} E(n_{shm}|x,\nu) &= \exp(x'\beta + \nu) \\ E(n_{shm}|x,u) &= \exp(x'\beta)u \end{aligned} \tag{12}$$

where $u = exp(\nu)$, n_{shm} is the number of foreign affiliates and x is a vector of variables related to source countries s, host countries h, country pairs s-h and sectors m. If u is assumed to be independently gamma distributed, with mean 1 and variance σ^2: then (i) the conditional mean of the Poisson regression model is preserved as $E(n_{shm}|x) = \exp(x'\beta)$; while (ii) unobserved heterogeneity implies overdispersion since $Var(n_{shm}|x) = E(n_{shm}|x) + \sigma^2 E(n_{shm}|x)^2 > E(n_{shm}|x)$; and (iii) the distribution of the number of foreign affiliates is now assumed to follow a negative binomial (Poisson-gamma mixture) distribution and therefore a negative binomial regression model should be adopted.[9]

The second issue concerns the fact that our data are dominated by a much larger proportion of zeros than a Poisson distribution, or a negative binomial distribution, would predict. Indeed 95% of the observations are zeros, as a direct result of FDI being concentrated in a small number of South countries.[10] These "excess zeros" can be handled by relaxing the assumption that the zeros and the positives necessarily come from the same data-generating process. In that case, the count density $f_2(.)$ is supplemented by a binary process with density $f_1(.)$ and the zero-inflated model has the following density :

$$f(n_{shm}|x,z) = \begin{cases} f_1(0|z) + [1 - f_1(0|z)]f_2(0|x) & \text{if } n_{shm} = 0 \\ [1 - f_1(0|z)]f_2(n_{shk}|x) & \text{if } n_{shm} \geq 1 \end{cases}$$

And the conditional mean is now:

$$E(n_{shm}|x,z) = [1 - f_1(0|z)]\exp(x'\beta)u \tag{13}$$

[9]The negative binomial regression model reduces to the Poisson regression model as $\sigma^2 \to 0$.

[10]A Poisson distribution would predict a proportion of $e^{-1.25} = 0.29$, given that the mean value of the number of foreign affiliates is 1.25.

Zeros can occur in two ways: as a realisation of a binary process; and as a realisation of a count process when the binary random variable takes a value of one. The zero-inflated model can be interpreted as reflecting a two-stage decision process by MNEs. Firms from source country *s* first decide on which potential host countries *h* to reject for investment. Once this initial screening is done, the count outcome is the actual number of affiliates that they choose to establish in the remaining set of eligible host countries.[11] In our empirical application, the probability that FDI never occurs between two countries is determined through a logit binary model and the second part uses a negative binomial regression model. As is common in the literature, we also assume that the variables which influence the probability that a country will never be considered as a suitable location (z) are the same as those that determine the number of foreign affiliates (x). In addition to the public governance variables for the source and host countries, the vector of explanatory variables includes fifteen control variables, listed in table 4.[12] Their choice mainly reflects the widespread use in the FDI literature of gravity-type models.[13] As previously mentioned, for reasons of availability and accuracy, data have been averaged over the 2000-2004 period, with the exception of the *Doing Business* variables, for which data have been averaged over the 2004-2008 period.[14] A secondary sector dummy and a tertiary sector dummy are also included, with the primary sector being the base and omitted category.[15]

4 Results

Our initial results are given in table 5, for each public governance variable reflecting the current quality of public governance. The first column corresponds to the binary outcome model; a positive sign means that the corresponding regressor increases the probability that a South FDI never occurs between two countries. The second column corresponds to the count model; a positive sign means that the corresponding regressor increases the number of foreign affiliates located in a given host country. The third column gives the overall impact of each regressor on the number of foreign affiliates located in a given host country, taking into account that a variable may influence both the binary and count

[11] Note that despite being part of the final choice set, some countries may still fail to attract FDI.

[12] A tax haven dummy is included in order to control for the over-reporting of FDI originating from offshore financial centres/tax havens.

[13] As noted by Blonigen et al. (2007) "*the gravity model is arguably the most widely used empirical specification for FDI*" (p. 1309). Bergstrand and Egger (2007) and Head and Ries (2008) have recently provided theoretical rationales for estimating FDI gravity equations.

[14] Data published in yearly *Doing Business* reports are for the previous year.

[15] Industry classification is available on `http://www.investmentmap.org/invmap/industry_classification.aspx?prg=1`.

Table 4: Dependent and control variables

Variable	Expected sign	Definition	Source	Mean	Std. Dev.	Min
Foreign affiliates	Dependent	Number of foreign affiliates established in host country *h* and sector *k* by MNEs located in source country *s*	Dun & Bradstreet	1.25	36	0
Host GDP	+	Log gross domestic product (GDP) of the host country, in 2000 constant PPP $US	Heston, Summers, and Aten (2002)	16.94	2.01	12.34
Source GDP	+	Log gross domestic product (GDP) of the source country, in 2000 constant PPP $US		17.43	2.11	12.34
Host GDPPC	+	Log gross domestic product per capita of the host country, in 2000 constant PPP $US		8.08	0.94	6.11
Source GDPPC	+	Log gross domestic product per capita of the source country, in 2000 constant PPP $US		8.52	1.17	6.11
Distance	-	Log population-weighted bilateral distance between the source country and the host country, kms	CEPII Mayer and Zignago (2006)	8.76	0.73	4.55
Contiguity	+	Dummy set equal to 1 if the host country and the source country shares a common border		0.02	0.14	0.00
Common language	+	Dummy set equal to 1 if the host country and the source country shares a common language		0.16	0.37	0.00
Colony	+	Dummy set equal to 1 if the host country and the source country have ever had a colonial link		0.01	0.09	0.00
Landlock	-	Dummy set equal to 1 if the host country is landlocked		0.24	0.43	0.00
RTA	+	Dummy set equal to 1 if the host country and source country are involved in a regional trade agreement (RTA)	Rose (2004)	0.01	0.09	0.00
GSP	+	Dummy set equal to 1 if the host country and source country are involved in a generalised system of preferences program (GSP)		0.07	0.26	0.00
CU	+	Dummy set equal to 1 if the host country and source country are involved in a strict currency union (CU)		0.01	0.08	0.00
Tax haven	+	Dummy set equal to 1 if the source country is identified by the U.S. Department of Treasury as a tax haven	Hines and Rice (1994)	0.07	0.26	0.00
Δ corporate tax rates	+	Difference in the total tax rate in the host and source countries (% of commercial profit)	World Bank Doing Business*	-0.91	22.82	-176.80
Δ firing restrictions	+	Difference in the ease of firing workers in the host and source countries (0-100. easy to hard)		-2.33	31.48	-100.00

Notes: Income data have been averaged over the 2000-2004 period. *Doing Business* variables have been averaged over the 2004-2008 period. *: `http://www.doingbusiness.org/`

Table 5: Public governance and South FDI

	VA			**PS**			**GE**			**RQ**			**RL**			**CC**		
	Binary	Count	Effect	Binary	Count	Effect	Binary	Count	Effect	Binary	Count	Effect	Binary	Count	Effect	Binary	Count	Effect
Host VA	-0.41[b]	0.66[a]	**1.07**[a]															
	(0.20)	(0.19)	**(0.19)**															
Source VA	-0.73[a]	0.46[a]	**1.18**[a]															
	(0.14)	(0.14)	**(0.10)**															
Host PS				-0.17	0.37[a]	**0.53**[a]												
				(0.13)	(0.10)	**(0.16)**												
Source PS				-0.27[c]	0.27[b]	**0.55**[a]												
				(0.15)	(0.13)	**(0.11)**												
Host GE							-0.37[c]	0.15	**0.51**[b]									
							(0.21)	(0.16)	**(0.22)**									
Source GE							-1.32[a]	0.22[b]	**1.54**[a]									
							(0.14)	(0.11)	**(0.14)**									
Host RQ										-0.48[b]	0.33[c]	**0.81**[a]						
										(0.19)	(0.17)	**(0.22)**						
Source RQ										-1.15[a]	0.36[a]	**1.51**[a]						
										(0.15)	(0.11)	**(0.14)**						
Host RL													-0.07	-0.08	**-0.01**			
													(0.17)	(0.13)	**(0.17)**			
Source RL													-1.15[a]	0.24[b]	**1.39**[a]			
													(0.13)	(0.11)	**(0.12)**			
Host CC																0.11	0.17	**0.06**
																(0.20)	(0.13)	**(0.19)**
Source CC																-1.19[a]	0.14	**1.32**[a]
																(0.15)	(0.09)	**(0.15)**

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	VA			PS			GE			RQ			RL			CC		
	Binary	Count	Effect	Binary	Count	Effect	Binary	Count	Effect	Binary	Count	Effect	Binary	Count	Effect	Binary	Count	Effect
Host GDP	-0.34^a	0.79^a	1.13^a	-0.40^a	0.73^a	1.13^a	-0.38^a	0.69^a	1.07^a	-0.39^a	0.70^a	1.09^a	-0.37^a	0.69^a	1.06^a	-0.37^a	0.71^a	1.07^a
	(0.07)	(0.06)	(0.07)	(0.04)	(0.05)	(0.06)	(0.05)	(0.05)	(0.06)	(0.05)	(0.05)	(0.06)	(0.05)	(0.05)	(0.06)	(0.05)	(0.06)	(0.06)
Source GDP	-0.71^a	0.61^a	1.32^a	-0.71^a	0.61^a	1.32^a	-0.71^a	0.58^a	1.29^a	-0.74^a	0.58^a	1.32^a	-0.72^a	0.59^a	1.31^a	-0.76^a	0.58^a	1.33^a
	(0.05)	(0.03)	(0.05)	(0.05)	(0.04)	(0.04)	(0.05)	(0.04)	(0.05)	(0.05)	(0.03)	(0.05)	(0.05)	(0.03)	(0.05)	(0.06)	(0.04)	(0.06)
Host GDPPC	-0.23	-0.15	0.07	-0.06	0.10	0.16	-0.05	0.20	0.25	0.01	0.13	0.12	-0.19	0.30^b	0.49^a	-0.25	0.20	0.45^a
	(0.23)	(0.18)	(0.15)	(0.16)	(0.12)	(0.15)	(0.18)	(0.13)	(0.16)	(0.17)	(0.13)	(0.16)	(0.14)	(0.13)	(0.15)	(0.16)	(0.14)	(0.14)
Source GDPPC	-0.74^a	0.55^a	1.28^a	-1.19^a	0.45^b	1.64^a	-0.21	0.46^a	0.67^a	-0.43^b	0.44^b	0.86^a	-0.36^b	0.46^b	0.82^a	-0.21	0.51^a	0.72^a
	(0.20)	(0.18)	(0.12)	(0.20)	(0.18)	(0.16)	(0.17)	(0.16)	(0.14)	(0.19)	(0.17)	(0.14)	(0.18)	(0.18)	(0.14)	(0.16)	(0.16)	(0.15)
Distance	1.22^a	-0.42^a	-1.64^a	0.94^a	-0.40^a	-1.34^a	0.96^a	-0.43^a	-1.40^a	1.03^a	-0.41^a	-1.44^a	0.88^a	-0.43^a	-1.30^a	0.92^a	-0.43^a	-1.35^a
	(0.24)	(0.10)	(0.18)	(0.14)	(0.09)	(0.12)	(0.15)	(0.09)	(0.13)	(0.17)	(0.10)	(0.14)	(0.15)	(0.09)	(0.13)	(0.14)	(0.10)	(0.13)
Contiguity	-0.43	0.74^a	1.16^a	-0.44	0.85^a	1.29^a	-0.45	0.87^a	1.32^a	-0.41	0.81^a	1.23^a	-0.56	0.92^a	1.47^a	-0.40	0.83^a	1.23^a
	(0.44)	(0.23)	(0.34)	(0.39)	(0.21)	(0.33)	(0.39)	(0.22)	(0.32)	(0.40)	(0.21)	(0.32)	(0.40)	(0.21)	(0.33)	(0.36)	(0.21)	(0.30)
Common language	-1.11	0.91^c	2.01^a	-2.31^a	0.51^a	2.82^a	-2.37^a	0.51^a	2.87^a	-1.98^a	0.57^a	2.55^a	-2.49^a	0.50^a	2.98^a	-2.23^a	0.52^a	2.74^a
	(0.92)	(0.47)	(0.49)	(0.39)	(0.18)	(0.31)	(0.38)	(0.19)	(0.31)	(0.52)	(0.22)	(0.38)	(0.43)	(0.19)	(0.34)	(0.40)	(0.19)	(0.34)
Colony	-1.22	0.77^c	1.98^a	-0.66^b	1.13^a	1.79^a	-0.56	1.14^a	1.70^a	-0.76^c	1.08^a	1.84^a	-0.61^c	1.15^a	1.76^a	-0.61^c	1.16^a	1.77^a
	(0.99)	(0.42)	(0.61)	(0.32)	(0.20)	(0.26)	(0.34)	(0.20)	(0.29)	(0.41)	(0.24)	(0.30)	(0.36)	(0.20)	(0.29)	(0.33)	(0.20)	(0.28)
Landlocked	0.57	-0.29	-0.86^a	0.55^c	-0.45^c	-1.00^a	0.41	-0.54^b	-0.96^a	0.35	-0.50^b	-0.85^a	0.50	-0.52^b	-1.02^a	0.51	-0.50^b	-1.01^a
	(0.44)	(0.28)	(0.30)	(0.31)	(0.26)	(0.26)	(0.31)	(0.23)	(0.27)	(0.33)	(0.26)	(0.27)	(0.31)	(0.24)	(0.28)	(0.32)	(0.24)	(0.28)
RTA	-1.48^a	0.90^a	2.38^a	-1.77^a	1.04^a	2.81^a	-1.79^a	1.08^a	2.86^a	-1.67^a	1.08^a	2.74^a	-2.05^a	1.10^a	3.14^a	-1.95^a	1.09^a	3.04^a
	(0.42)	(0.20)	(0.40)	(0.36)	(0.22)	(0.36)	(0.37)	(0.22)	(0.36)	(0.40)	(0.22)	(0.37)	(0.38)	(0.21)	(0.38)	(0.35)	(0.21)	(0.36)
GSP	-0.86^a	0.51^a	1.37^a	-1.42^a	0.65^a	2.07^a	-0.91^a	0.76^a	1.67^a	-1.04^a	0.66^a	1.70^a	-0.98^a	0.75^a	1.73^a	-0.77^a	0.78^a	1.55^a
	(0.26)	(0.13)	(0.23)	(0.19)	(0.14)	(0.18)	(0.20)	(0.15)	(0.16)	(0.21)	(0.15)	(0.18)	(0.20)	(0.14)	(0.16)	(0.23)	(0.17)	(0.16)
CU	-0.84	2.01^b	2.85^a	0.06	2.15^b	2.09^a	-0.11	2.17^a	2.29^a	-0.26	2.12^b	2.38^a	-0.02	2.19^b	2.21^a	-0.21	1.98^a	2.20^a
	(1.06)	(0.86)	(0.81)	(1.09)	(0.98)	(0.80)	(0.77)	(0.84)	(0.71)	(0.81)	(0.85)	(0.71)	(0.78)	(0.86)	(0.72)	(0.72)	(0.77)	(0.69)
Tax haven	-1.41^a	0.85^a	2.25^a	-1.45^a	0.72^a	2.17^a	-1.49^b	0.69^a	2.18^a	-1.31^b	0.65^a	1.95^a	-1.46^a	0.73^a	2.19^a	-1.60	0.71^a	2.30^a
	(0.36)	(0.13)	(0.31)	(0.38)	(0.13)	(0.32)	(0.70)	(0.15)	(0.60)	(0.56)	(0.15)	(0.48)	(0.49)	(0.14)	(0.42)	(0.99)	(0.19)	(0.84)
Δ corporate tax rates	-0.00	0.01^b	0.01^b	-0.00	0.01^b	0.02^b	0.00	0.01^b	0.01	0.00	0.01^b	0.01	0.00	0.01^c	0.01	0.01	0.01^b	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Δ firing restrictions	-0.00	0.00	0.01^c	-0.00	0.01^b	0.01^b	0.00	0.01^a	0.01^b	-0.00	0.01^b	0.01^b	-0.00	0.01^a	0.01^a	-0.00	0.01^a	0.01^a
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Manufacturing dummy	-0.65	2.60^a	3.25^a	-0.92^a	2.42^a	3.34^a	-0.86^b	2.49^a	3.36^a	-0.82^b	2.49^a	3.31^a	-0.81^b	2.52^a	3.33^a	-0.80^c	2.52^a	3.31^a
	(0.55)	(0.30)	(0.42)	(0.36)	(0.25)	(0.35)	(0.40)	(0.26)	(0.38)	(0.42)	(0.28)	(0.37)	(0.41)	(0.27)	(0.38)	(0.43)	(0.27)	(0.39)
Service dummy	-1.40^a	3.08^a	4.47^a	-1.59^a	2.97^a	4.55^a	-1.60^a	3.03^a	4.62^a	-1.54^a	3.02^a	4.55^a	-1.54^a	3.05^a	4.58^a	-1.52^a	3.05^a	4.57^a
	(0.51)	(0.26)	(0.42)	(0.34)	(0.24)	(0.34)	(0.38)	(0.25)	(0.38)	(0.40)	(0.26)	(0.37)	(0.39)	(0.25)	(0.37)	(0.41)	(0.26)	(0.39)
Constant	20.67^a	-29.54^a		27.18^a	-29.49^a		18.22^a	-29.06^a		19.77^a	-28.60^a		21.30^a	-30.22^a		20.81^a	-29.64^a	
	(4.10)	(2.32)		(2.93)	(2.03)		(2.87)	(2.09)		(3.20)	(2.06)		(2.76)	(2.19)		(2.70)	(2.06)	
Observations	61008	61008	61008	61008	61008	61008	61008	61008	61008	61008	61008	61008	61008	61008	61008	61008	61008	61008
Non-Zeros		2835			2835			2835			2835			2835			2835	
Log-likelihood		-12816			-13022			-12953			-12939			-12990			-12972	

Notes: ^{a}, ^{b}, ^{c}denotes respectively significance at the 1, 5 and 10% level. Standard errors are in parentheses. All standard errors are heteroscedasticity- and autocorrelation-robust

processes. Coefficients are (semi-)elasticities, calculated using calculus methods and evaluated at the sample median. Across regressions, all control variables have the expected sign and are generally significant.

Turning to the governance variables, higher VA, PS, GE and RQ in both source and host countries increase South FDI. On the other hand, only improvements in RL and CC in the source country give rise to greater South FDI. Overall, from the perspective of the host country, RQ and VA are the strongest institutional determinants of FDI. Using the finite-difference method, based on changes in predicted conditional mean at the sample median, if Nigeria's VA was rated as high as that of South Africa or if India's RQ was rated as high as that of Thailand (the equivalent of a one point increase), the number of foreign affiliates located in these countries would increase by a factor of 2.96 and 2.30 respectively.

These results, which imply that the impact of a host country's current public governance on inward FDI is the same, whatever the source country, are in line with the findings of Benassy-Quere, Coupet, and Mayer (2007) and Daude and Stein (2007). The positive effects of better institutional quality on outward FDI also corroborate the results of Globerman and Shapiro (2002) and, in relation to our analytical model, suggest that β is negative.

In our analytical model, we argue that a source country's experience of poor institutions at home may influence its willingness to invest in risky locations. In particular, we would expect investors who have experienced poor domestic institutional quality to be less deterred by country risk abroad. We address this empirically. In table 6, each dimension of host country's public governance is interacted with measures of the institutional quality of the source country in the past. As previously mentioned, the measures are the ICRG political risk rating averaged over the 1983-1990 period and the logarithm of average TFP for the years 1980 and 1990. For ease of interpretation, given the relative complexity of the model, figures are used to illustrate both the statistical and economic significance of the effect of experience of poor domestic institutional quality on the sensitivity of foreign investors to host country's current governance conditions.

Following the simulation-based approach of King, Tomz, and Wittenberg (2000), in a first stage, 10000 simulations of the main and auxiliary parameters are drawn from a multivariate normal distribution with means equal to the vector of parameter estimates and variances equal to the variance-covariance matrix of parameter estimates. For each draw, the effect of a change in the value of the public governance variable on the value of the conditional mean, for a given value of the proxy of a

Table 6: The moderating influence of source country's experience of poor institutional quality

	VA	**PS**	**GE**	**RQ**	**RL**	**CC**
	Effect	Effect	Effect	Effect	Effect	Effect
Host governance	-0.50	-0.01	-1.66[a]	-0.58	-1.59[a]	-1.59[a]
	(0.63)	(0.40)	(0.50)	(0.55)	(0.47)	(0.49)
Source Past ICRG score	0.02[b]	0.04[a]	0.02[b]	0.02[b]	0.03[a]	0.03[a]
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Host governance X source past ICRG score	0.02[a]	0.01	0.03[a]	0.02[b]	0.02[a]	0.02[a]
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Observations	42909	42909	42909	42909	42909	42909
Non-Zeros	2772	2772	2772	2772	2772	2772
Log-likelihood	-12375	-12566	-12503	-12491	-12551	-12538

	VA	**PS**	**GE**	**RQ**	**RL**	**CC**
	Effect	Effect	Effect	Effect	Effect	Effect
Host governance	-4.27[b]	-3.08[b]	-8.60[a]	-5.42[a]	-6.18[a]	-7.05[a]
	(1.74)	(1.28)	(1.38)	(1.63)	(1.47)	(1.47)
Source past productivity	1.57[a]	1.70[a]	1.33[a]	1.21[a]	1.55[a]	1.40[a]
	(0.26)	(0.29)	(0.22)	(0.24)	(0.26)	(0.25)
Host governance X Source past productivity	1.03[a]	0.68[a]	1.74[a]	1.18[a]	1.17[a]	1.34[a]
	(0.34)	(0.25)	(0.27)	(0.31)	(0.29)	(0.29)
Observations	42537	42537	42537	42537	42537	42537
Non-Zeros	2564	2564	2564	2564	2564	2564
Log-likelihood	-11457	-11618	-11542	-11554	-11589	-11572

Notes: [a], [b], [c]denotes respectively significance at the 1, 5 and 10% level. Standard errors are in parentheses. All standard errors are heteroscedasticity- and autocorrelation-robust. Due to lower data coverage for the proxies of experience, about 18000 observations are lost, of which 99.70% are zeros. Coefficient estimates given in table 5 are virtually unchanged when the restricted sample is used.

source country's past institutional quality, is then evaluated at the sample median and expressed as a semi-elasticity. The reported semi-elasticity (bold line) in the figures is the average of the 10000 simulated effects while their 2.5 and 97.5 percentile values, respectively, provide the lower and upper bounds of a 95% confidence interval (dashed lines).[16] Source past institutional quality is on the horizontal axis, with a greater value implying less experience of poor institutional quality. Two vertical lines are also drawn in the figures. The first of these indicates the value of the measure of past institutional quality for a median "FDI-active" source South country while the second indicates the value of the measure of past institutional quality for a median "FDI-active" source North country.[17]

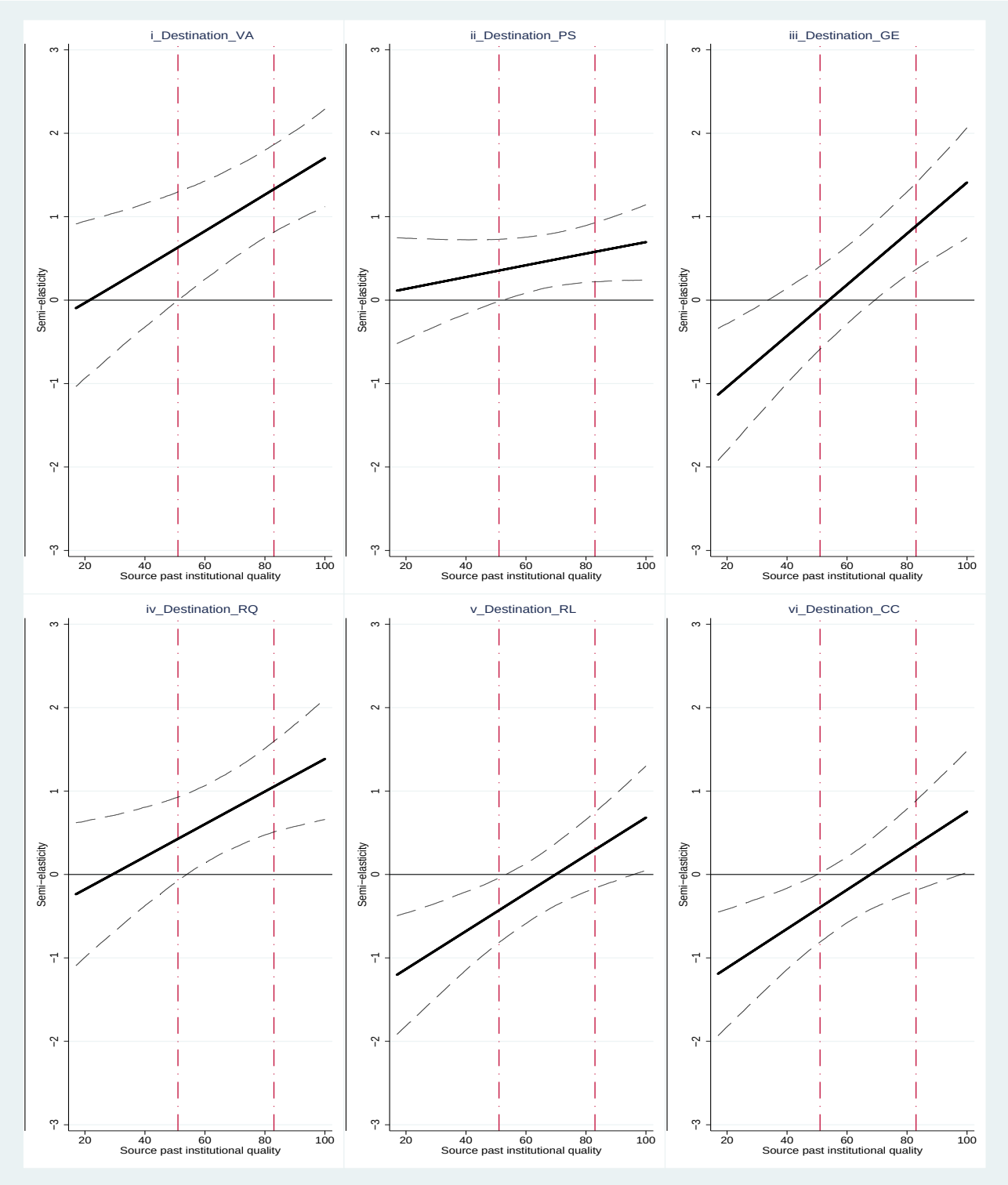
For figure 4, we used the average ICRG political risk rating over the period 1983-1990 as proxy for past institutional quality. Results using the logarithm of the average TFP for years 1980 and 1990 are very similar and are reported in the appendix. In each case, it is found that the quality of the host country's public governance exerts a statistically significant and substantial positive impact on FDI *only* when MNEs have had little experience of poor domestic institutional quality. Indeed, for a MNE located in a median FDI-active developed country, the economic impacts of the various dimensions of a host country's public governance tend to be stronger than those found in table 5. For instance, using the finite-difference method, a one point increase in VA would increase North-South FDI by a factor of about 3.8. On the other hand, for a MNE located in a median FDI-active developing country, the impact of a host country's public governance is small and statistically insignificant. Furthermore, in some cases and for MNEs with high experience of poor domestic institutional quality, public governance tend to exert a *negative* and statistically significant impact on FDI.

These findings strongly support our hypothesis that the sensitivity of firms to foreign risk is heterogenous, as it depends on their experience of risk in their source country. More broadly, they confirm our hypotheses that South MNEs are less deterred by risk than North MNEs. They may even deliberately choose to locate in a risky but potentially profitable environment if their competitive advantage mostly resides in their resilience in the face of risk.

[16] For ease of comparison with the effects presented in table 5, for which calculus methods are used, the effect of a very small change is calculated (standard deviation of the governance variable divided by 1000).

[17] By "FDI-active", we mean that firms from this source country have at least invested once abroad.

Figure 4: The moderating influence of source country's experience of poor institutional quality



Notes: The measure of past institutional quality is the average ICRG political risk rating over the period 1983-1990. A higher value of past institutional quality is interpreted as lower experience of dealing with poor public governance. Dashed lines correspond to the upper and lower bounds of a 95% confidence interval. The value of the measure of past institutional quality for a median FDI-active source South country is indicated by the first vertical line, while the second indicates the value of the measure of past institutional quality for a median FDI-active source North country. The FDI active designation means that firms in a given source country have invested at least once abroad.

4.1 Extensions

4.1.1 Industry-specific sensitivity

There is virtually no empirical evidence on the determinants of FDI in the primary, secondary and tertiary sectors.[18] It is however likely that the sensitivity of foreign investors to public governance does not only depend on their experience of poor institutional quality but also on the sector in which they operate. At one end of the spectrum, MNEs motivated by the extraction of natural resources have very little choice with regard to the location of their foreign affiliates, given the uneven world distribution of subsoil assets, although they may still be deterred by the combination of very large sunk costs and the frequent occurrences of "obsolescing bargains" (Vernon, 1971) between the MNE and the host country, resulting in creeping expropriation. At the other extreme, greater location choice allows MNEs in the secondary sector, characterised by substantial sunk costs and/or international vertical integration, to choose relatively safe countries (Desbordes, 2007). The behaviour of MNEs in the service sector should lie between these two extremes. These industry-specific sensitivities are captured through interactions of the public governance terms with industry dummies. Figures 5 to 7 show that even though experience of poor domestic institutional quality continues to influence the location choice of MNEs, the sector of operation also plays an important part in their sensitivity to the quality of public governance. Figure 5 suggests that MNEs investing in the primary sector are more likely to tolerate poor public governance, as the experience threshold above which public governance no longer exerts a statistically significant and positive impact on FDI is much lower than for the other sectors. On the other hand, for MNEs with little experience of poor institutional quality, improvements in the quality of some public governance dimensions, such as VA or PS, have an equal or stronger positive impact on FDI than in other sectors. Figure 6 illustrates that both South and North MNEs in the secondary sector put a much greater emphasis on the quality of public governance than in other sectors: the experience threshold is higher and the semi-elasticity for a given level of experience is generally larger. In addition, for a median FDI-active developed country investing in this sector, the host country's RL and CC now matter. Finally, MNEs in the service sector are an intermediate case.

[18]The primary sector includes such activities as mining and extraction of crude petroleum and natural gas. The secondary sector includes such activities as manufacture of chemical products and manufacture of electric and electronic equipment. The tertiary sector includes such activities as wholesale and retail trade and financial intermediation.

Figure 5: Source country's experience with poor institutional quality and FDI in the primary sector

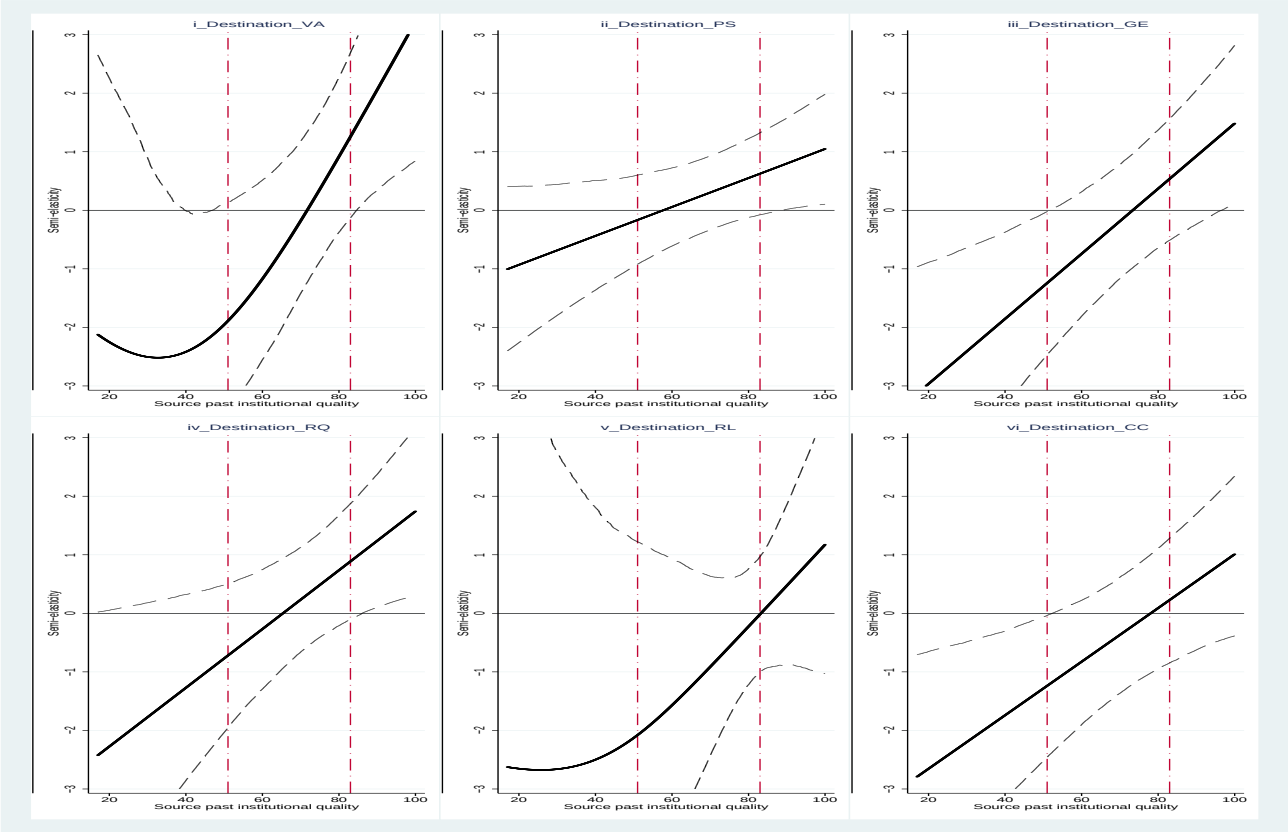


Figure 6: Source country's experience with poor institutional quality and FDI in the secondary sector

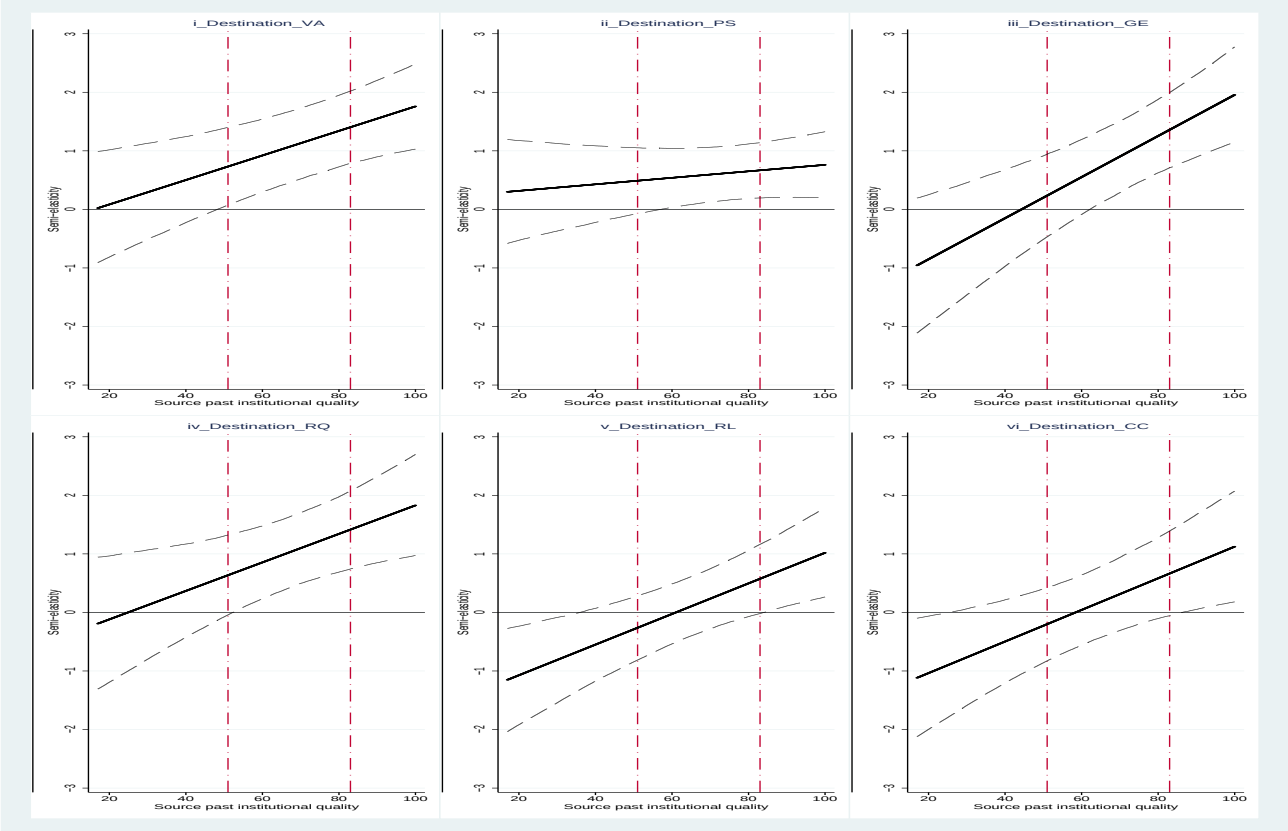
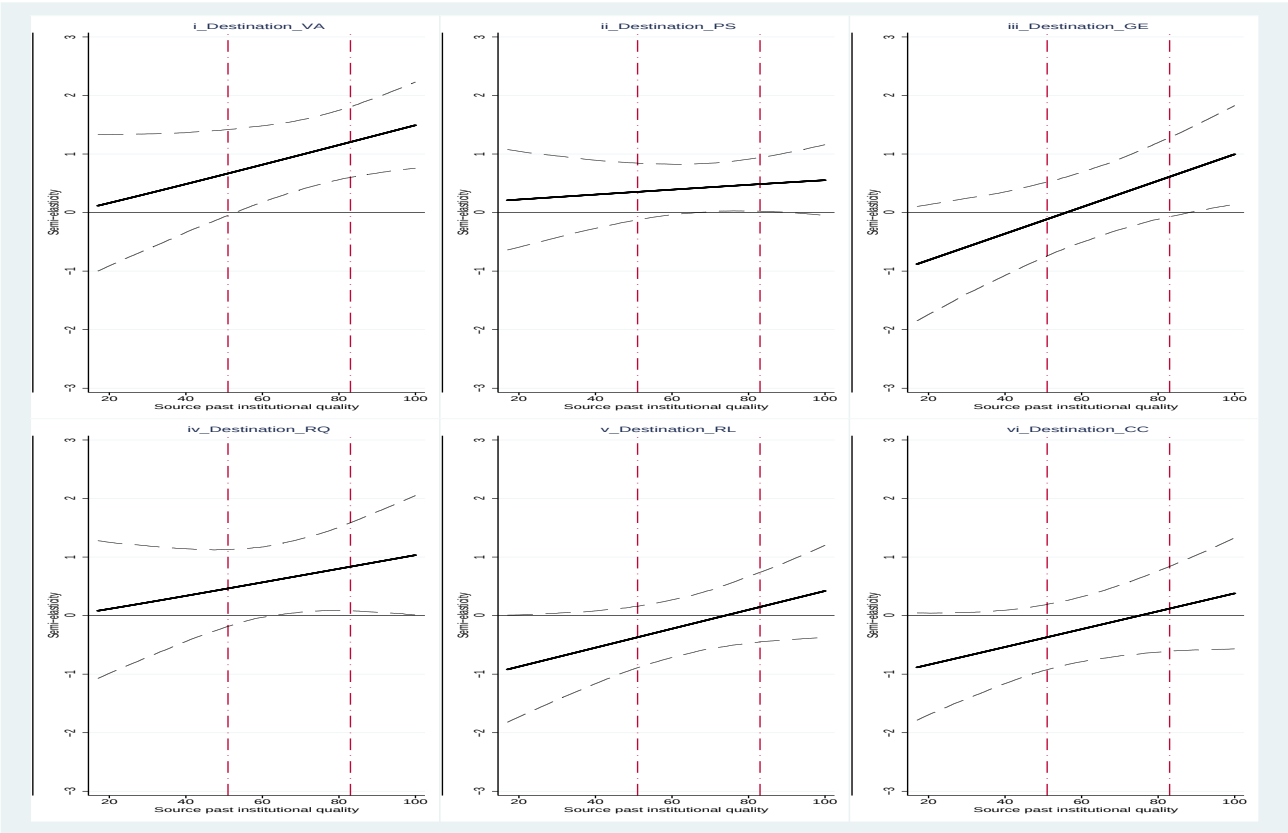


Figure 7: Source country's experience with poor institutional quality and FDI in the tertiary sector

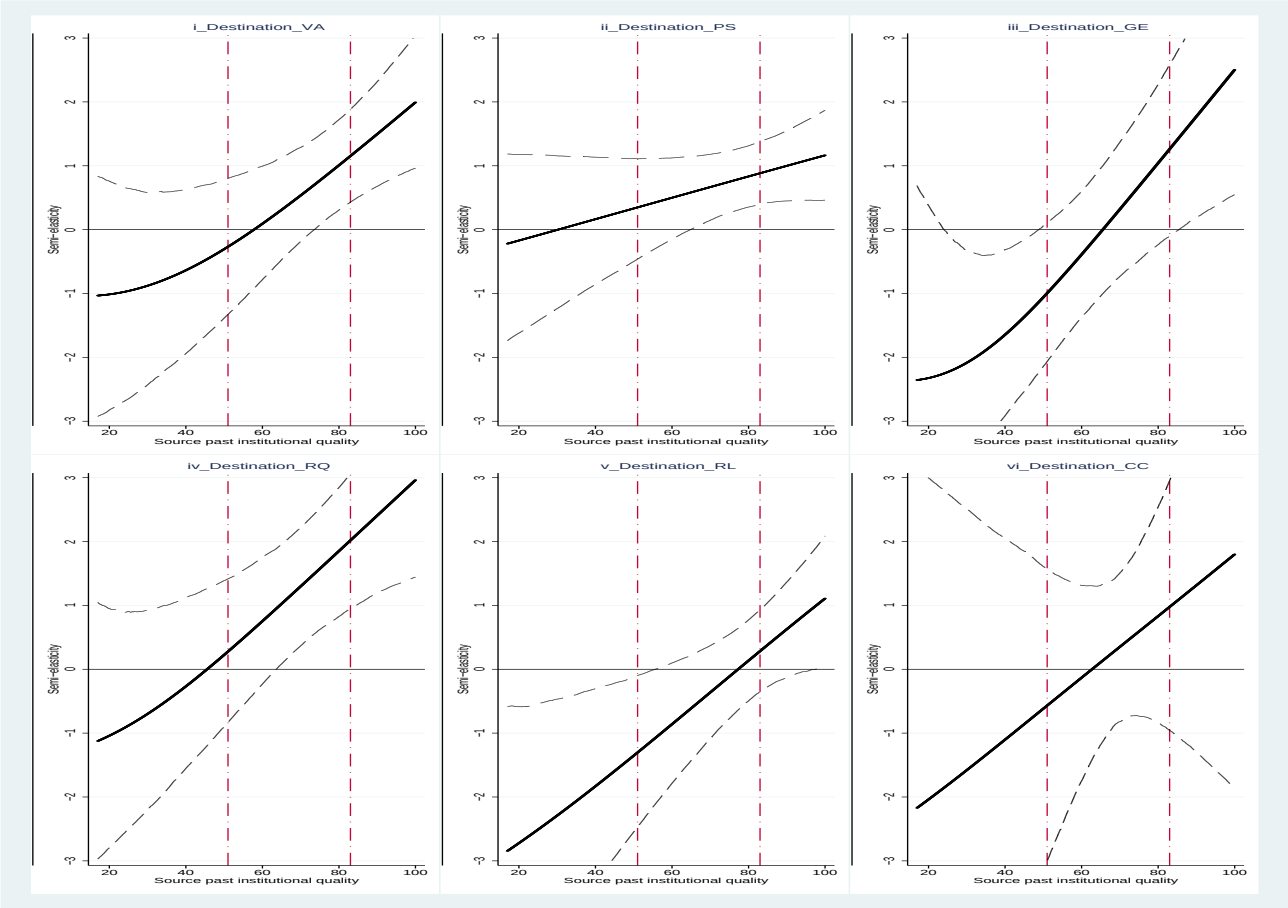


Notes: See notes of figure 4.

4.1.2 Recently established foreign affiliates

So far, our results show that those developing countries which have been able to develop good institutions over time tend to host a larger "stock" of MNEs. However, it is not clear whether current FDI "flows" share the same sensitivity to good public governance. Fortunately, data are available on the number of foreign affiliates that have been established since the year 2000. Figure 8 shows that the experience threshold above which public governance no longer matters significantly is lower than that required with the full sample (figure 4). Comparison with previous figures suggests that sectoral shifts in FDI[19] may partly explain this lower aversion to risk of MNEs. However, for those MNEs which have little experience of poor institutional quality, primarily from the North, the attraction effect of good public governance on FDI appears to have grown larger in the last decade.

Figure 8: Robustness checks: Alternative dependent variable (Recently established foreign affiliates)



Notes: See notes of figure 4.

[19]In our database, 7%, 36% and 57% of recently-established foreign affiliates operate in the primary, secondary and tertiary sectors respectively.

4.2 Endogeneity

It is possible that coefficients of our public governance variables pick up the effects, positive or negative, of omitted factors. In addition, some studies, e.g. Benassy-Quere, Coupet, and Mayer (2007), argue that FDI may lead to better public governance, implying that simultaneity bias should not be ruled out *a priori*. Alleviation of these worries warrants testing for exogeneity of public governance. Given the non-linear nature of our model, we use a control function approach. This consists of including the residual from the OLS regression of the public governance measure on all the exogenous variables and some instrumental variables as an additional regressor in the structural equation (Wooldridge, 2002). If the instruments are valid and relevant, the inclusion of the first-stage residual will "control" for the potential endogeneity of the suspect variable, parameters will be consistently estimated, and the z statistic for its coefficient will provide the basis for a robust Wald test of the null hypothesis of exogeneity of the public governance variable. Our Monte-Carlo simulations show that the power of this test, i.e. its ability to detect endogeneity, depends on the strength of the instruments, for a given correlation between the suspect and omitted variables.[20] We therefore only focus on testing the exogeneity of the VA variable, since this is the only dimension for which we have been able to find valid and relevant instruments.

Indeed, finding suitable instruments is a challenging task. The instruments traditionally used in past FDI studies (absolute values of geographical coordinates, legal origins, ethnic fractionalisation, lagged values) are suspect for two reasons. First, they may not be valid instruments if they are correlated with the error term. For instance geographical location is likely to be correlated with population health, a key FDI determinant in developing countries (Alsan, Bloom, and Canning, 2006; Azémar and Desbordes, 2009) and even in the absence of serial correlation of the error term, lagged values of the governance measures will remain correlated with any time-invariant omitted factor. In addition, even if the list of control variables were expanded, a "weak instrument" problem would nevertheless remain.[21] Our strategy to circumvent these obstacles is to use as the dependent variable the number of recently established foreign affiliates and to instrument the VA dimension using the lagged 'long'

[20] Using 50000 observations, 98% of zeros, 1000 replications, two instruments, and a correlation coefficient of 0.5 between the troublesome and omitted variables, endogeneity of the regressor is correctly predicted about 80% (p-value<0.10) of the time when the first-stage R^2 is 0.15. However, power of the test declines to 35% when the first-stage R^2 is 0.05.

[21] In unreported regressions it is found that the F statistic for joint significance of the traditional external instruments used in the growth and FDI literature (absolute values of geographical coordinates, legal origins, ethnic fractionalisation) in first-stage regressions is always well below the Stock, Wright, and Yogo (2002)'s rule of thumb value of 10. These very low F statistics can be partially explained by the presence of income per capita among the explanatory variables, which is highly correlated with the instruments. Nevertheless, (improperly) excluding it would still lead to relatively low F values.

first-differences (ten lags apart) of relevant variables. The first-differences transformation should purge our instruments of their correlation with constant omitted factors and they should also be free of correlation with omitted time-varying factors as long as the autocorrelation of the latter decays fast enough. Our instruments are the change and squared change in the averaged values of the Freedom House Political Rights and Civil Rights indices between the years 1985-1995.[22] Following estimation of a Poisson model using a non-linear IV/GMM estimator, their exogeneity is tested via the Hansen J test of overidentifying restrictions.

Table 7 reports the results. Instruments appear to be valid and relevant and the null hypothesis of the exogeneity of VA cannot be rejected. The positive sign of the latent factor nevertheless suggests that omitted variables, positively correlated with VA, may lead to a slight overestimation of the impact of public governance on FDI. Hence, sizes of the effects found in this paper could be conservatively interpreted as upper-bound estimates.

Table 7: Testing for endogeneity

	Voice and Accountability
First-stage F statistic	92.44
First-stage Partial R^2	0.17
Test of overidentifying restrictions p-value	0.87
Test of endogeneity p-value	0.49
Overall sign of latent factor	+

5 Conclusion

This paper addresses a gap in the existing literature by investigating, theoretically and empirically, whether the higher prevalence of South MNEs in risky developing countries may be explained by the experience that they have acquired of poor institutional quality at home. We confirm the intuition provided by our analytical model by empirically showing that the positive impact of good public governance on FDI in a given host country is moderated significantly, and even in some cases eliminated or reversed, when MNEs have had prior experience of poor institutional quality at home. In contrast,

[22] `www.freedomhouse.org`

MNEs with little experience are deterred much more by bad public governance conditions than could have been inferred from an unconditional estimation of the effects of public governance on FDI.

The growth of South FDI and its relative insensitivity to risk may be good news for those countries with underdeveloped institutions, as these nations are often amongst the poorest and the most in need of additional capital. Furthermore, it is possible that South-South FDI may be of more benefit to developing countries than North-South FDI in terms of technology transfer, given lower technology gaps. However, the fact that South MNEs are less worried by the quality of the business environment or the respect of political and civil rights than their Northern counterparts may impede the positive influence of globalisation towards better governance, which, overall, remains a strong determinant of FDI.

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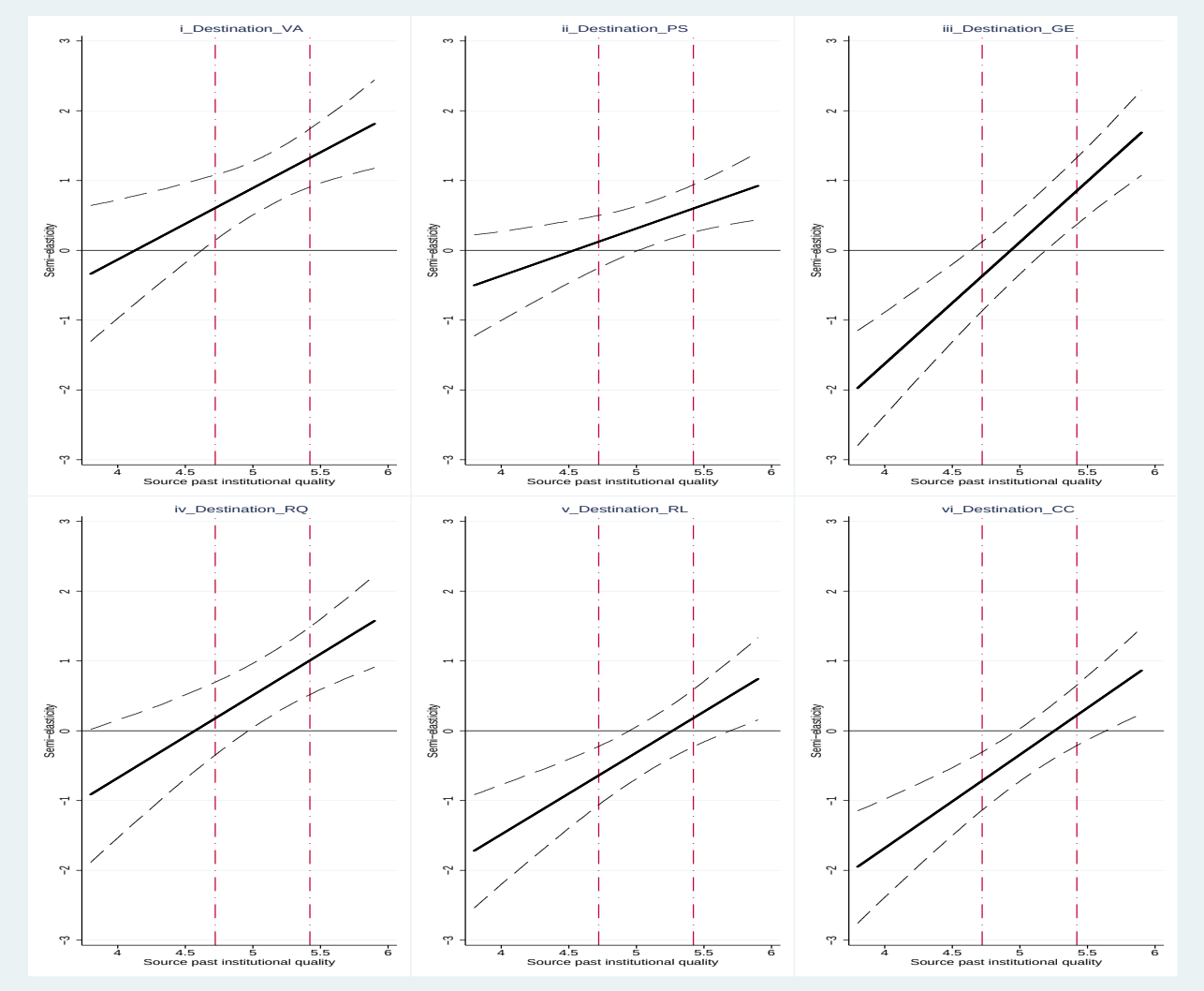
Appendix

Figure 9: Alternative measure of source country's past institutional quality: Log(Average TFP 1980-1990)



Notes: The measure of past institutional quality is Log(Average TFP 1980-1990). Natural-resource abundant source countries are not included in the estimation sample. A higher value of past institutional quality is interpreted as lower experience of dealing with poor public governance. Dashed lines correspond to the upper and lower bounds of a 95% confidence interval. The value of the measure of past institutional quality for a median FDI-active source South country is indicated by the first vertical line, while the second indicates the value of the measure of past institutional quality for a median FDI-active source North country. The FDI active designation means that firms in a given source country have invested at least once abroad.