A Granular Approach to the Effects of Bilateral Investment Treaties and Regional Trade Investment Agreements on Foreign Direct Investment

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Abstract

We adopt a granular approach to investigate the impact of bilateral investment treaties (BITs) and regional trade investment agreements (RTIAs) on foreign direct investment (FDI). Using detailed and under-exploited databases, our empirical analysis explicitly takes into account the heterogeneity of both treaties and FDI projects. We find that BITs specifically granting access to an investor-state dispute mechanism and RTIAs specifically protecting foreign investors from discrimination have a large, positive, and statistically significant effect on FDI. These results hold when we distinguish FDI flows according to the partners involved, the entry mode, or the destination sector. The focus on narrowly identified investment provisions and various robustness checks suggest that our findings are not driven by reverse causality or an omitted variable bias. Overall a 'pro-FDI' BIT or RTIA can be expected to increase the number of FDI projects by 35% and 58% respectively.

Keywords: bilateral investment treaties; discrimination; investment chapter; investor-state dispute mechanism; regional trade agreement. *JEL code:* F23.

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1 Introduction

Many countries actively seek to attract foreign direct investment (FDI) because they believe that multinational enterprises will actively contribute to economic growth by generating new job opportunities, increasing capital accumulation, and raising total factor productivity. Indeed, a large body of empirical evidence shows that FDI tends to generate net gains for both home and host countries.[1] The growth-enhancing effects of FDI flows have motivated a thorough investigation of their determinants. Robust push and pull factors are market size, cultural and physical proximity, relative labour market endowments, corporate tax rates (Eicher et al., 2012; Blonigen and Piger, 2014). Bilateral investment treaties (BITs) and regional trade investment agreements (RTIAs) could potentially be added to this list.

Figures 1 and 2 show that the number of BITs and RTIAs have been rapidly growing since the mid-nineties.[2] The purpose of the investment provisions included in these treaties is to promote bilateral or intra-regional FDI by creating and enforcing a business climate favourable to foreign investors. For example, foreign firms can be promised the absence of discrimination, free transfer of payments, protection against expropriation. Most notably, foreign investors may gain access to international arbitration when a dispute with a host country arises.[3]

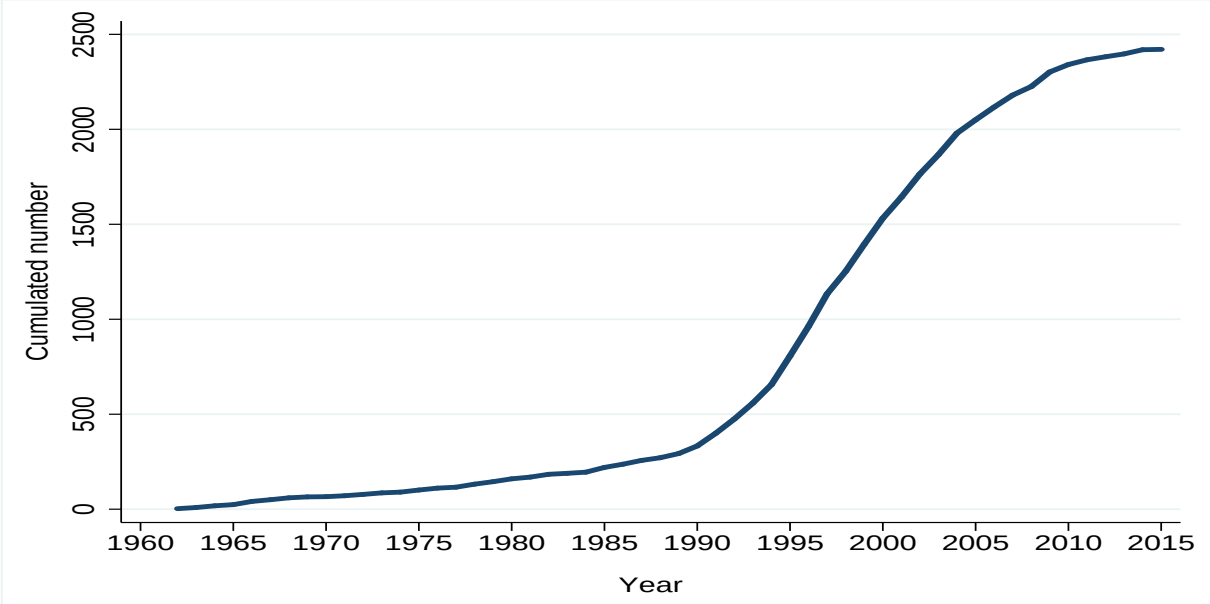
International investment agreements (IIAs) offering both substantive and credible promises ought to increase FDI. However, in the case of BITs, the empirical literature is very far from having reached a consensus regarding their impact on FDI. The recent meta-analysis of Chaisse and Bellak (2015) highlights the wide range of estimated elasticities of FDI with respect to the entry in force of a BIT. These can be extremely large, very small, positive, negative, statistically significant or not. The authors conclude that the absence of a statistical relationship cannot be rejected on the basis of current empirical evidence, especially when publication bias towards positive results is accounted for. In the case of RTIAs, empirical studies are few and limited to specific investment provisions but suggest that RTIAs can increase FDI (Berger et al., 2013).

[1] Excellent surveys of the literature can be found in Moran (2001), Navaretti and Venables (2005), Caves (2007) Dunning and Lundan (2008), or Moran (2011).

[2] For these figures, the raw data come from UNCTAD (`http://investmentpolicyhub.unctad.org/IIA`) and DESTA (`http://investmentpolicyhub.unctad.org/IIA`).

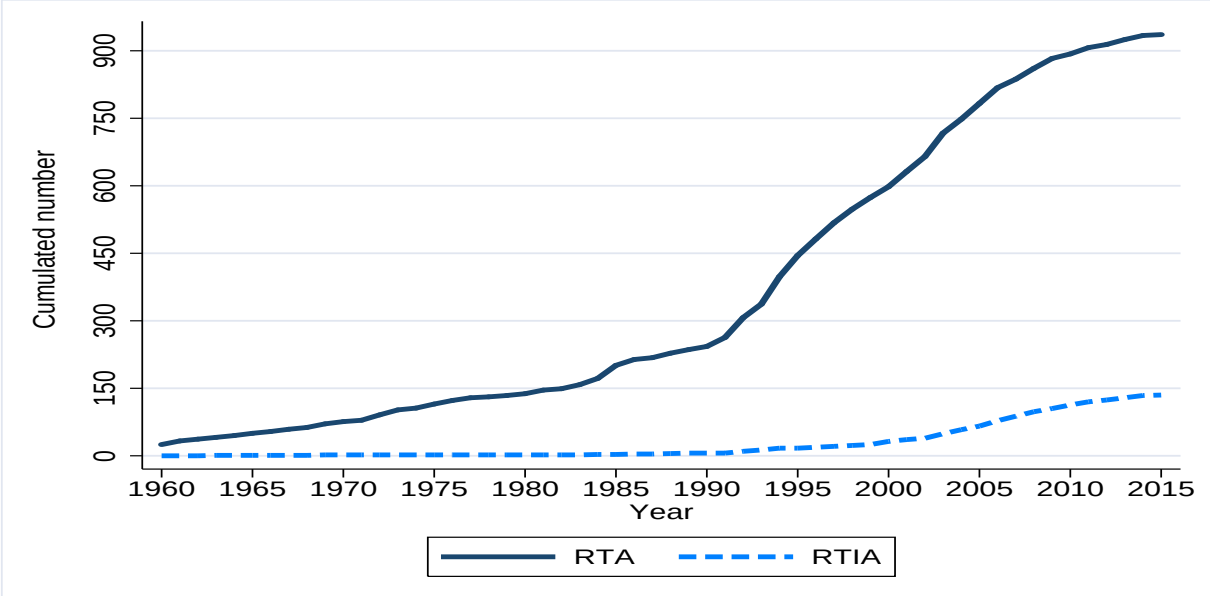
[3] Sauvant and Sachs (2009) provide an excellent overview of the literature.

Figure 1: The rising number of BITs



Notes: original data come from UNCTAD. Entry into force treaties.

Figure 2: The rising number of RTIAs



Notes: original data come from DESTA.

In the Introduction of the book they edit, Sauvant and Sachs (2009) highlight that current research is extremely coarse. Balance of payments FDI data have severe limitations, including poor coverage and the absence of distinction between entry modes or destination sectors. BITs and RTIAs are treated as homogenous entities despite the fact that the provisions they include can vary widely across treaties. The presence of other international agreements, such as standard regional trade agreements (RTAs) or double tax treaties (DTTs), is frequently ignored. Finally, source and destination countries' push and pull factors, especially those specific to FDI, are imperfectly controlled for. In other words, many further insights could be gained from a granular approach to the effects of BITs and RTIAs on FDI.

Thanks to the use of detailed and under-exploited databases, this paper adopts such an approach and fully acknowledges the heterogeneity of both treaties and FDI. Real new FDI projects are distinguished according to their entry mode (greenfield or M&A) and destination sector (natural resources, manufacturing, services). BITs and RTIAs are unbundled in five different categories of investment provisions. The econometric model exhaustively controls for country-specific factors and accounts for a large number of bilateral determinants, including DTTS, RTAs, or currency unions. Finally, the sample covers most source and destination developed and developing countries over the period 2003-2010.

We find that both BITs and RTIAs have a large, positive, and statistically significant effect on the number of FDI projects provided that they include specific provisions. BITs are effective only if they grant foreign investors access to international arbitration of investment disputes and RTIAs are more likely to promote FDI if they guarantee the absence of negative discrimination. The effects of these various provisions do not appear to differ across entry modes and destination sectors of FDI. In other words, our granular approach shows that specific provisions can have general effects on FDI. The focus on narrowly identified investment provisions and various robustness checks suggest that our findings are not driven by reverse causality or an omitted variable bias. Overall a 'pro-FDI' BIT or PTIA can be expected to increase the number of FDI projects by 35% and 58% respectively.

The rest of the paper proceeds as follows. In Section II we describe our data. In Section III, we outline our empirical methodology. In Section IV, we investigate the heterogenous effects of BITs on

heterogeneous FDI. In Section V, we also take into account the potential role of RTIAs. Section VI offers concluding remarks.

2 Data

We use detailed novel data on BITs, RTIAs, and FDI. Their exploitation provides the tremendous opportunity to investigate in depth the precise nature of the links between the presence of IIAs and the attraction of foreign investors.

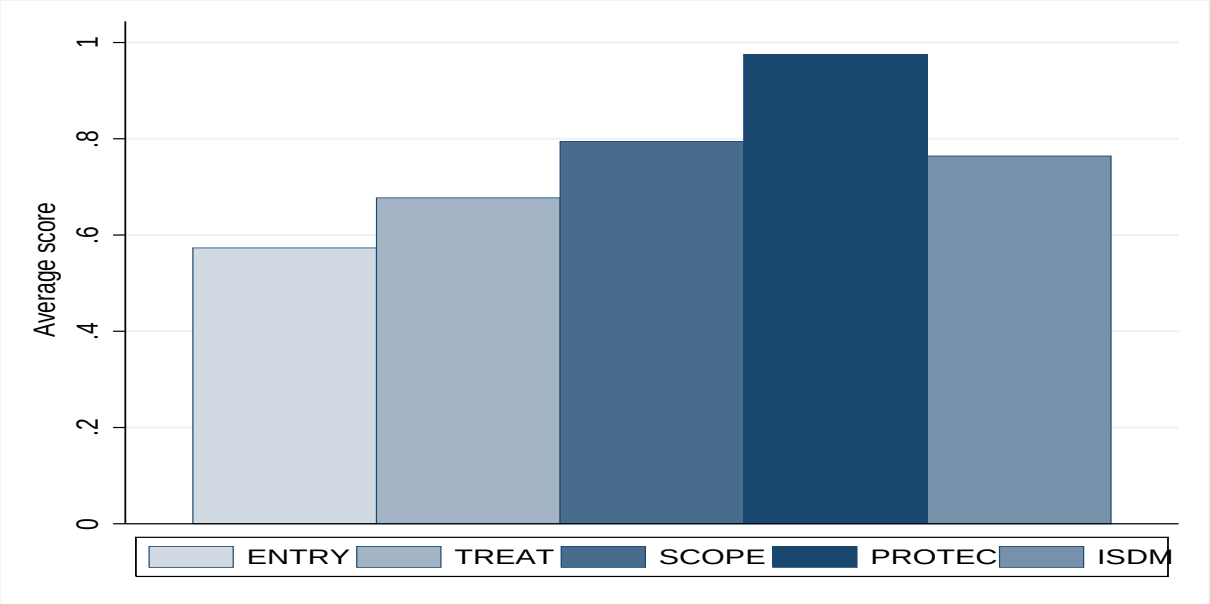
2.1 International investment agreements

Chaisse and Bellak (2015) have created the 'BITSel Index'.[4] This database codes the eleven most important provisions included in BITs/RTIAs. The value assigned to each component of BITSel ranges from 1 (least favourable to FDI) to 2 (most favourable to FDI).[5] We group each component in five broad categories:

- ENTRY: average of (i) entry rules (admission vs. establishment); (ii) non-economic standards (yes vs. no); iii) free transfer of investment-related funds (no vs. yes).
- TREAT: average of i) national treatment (no vs. yes); ii) most favoured nation (no vs. yes).
- SCOPE: average of i) definition of investment (narrow vs. broad); ii) umbrella clause (no vs. yes); iii) temporal scope of application (short vs. long).
- EXPR: i) fair and equitable treatment (no vs. yes); ii) direct and indirect expropriation coverd (no vs. yes).
- ISDM: investor-state dispute mechanism (no vs. yes).

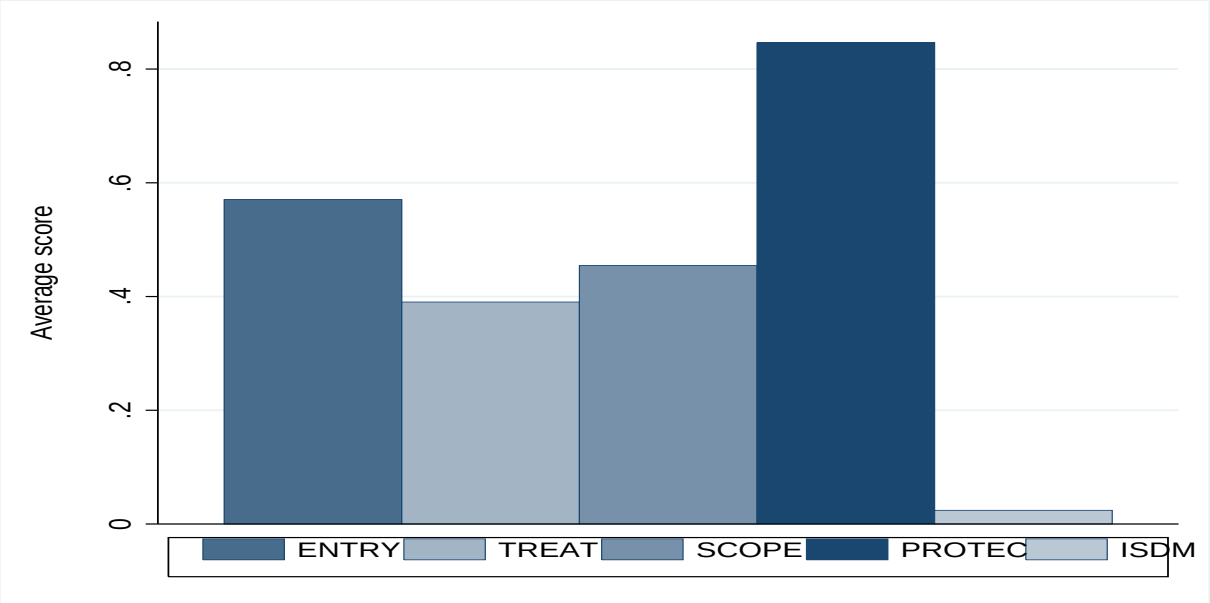
The BITSel Index does not cover the full universe of BITs and RTIAs. We address this issue in tne next section. Figures 3 and 4 show that, on average, BITs grant foreign investors more substantive rights than RTIAs, notably in terms of access to international arbitration.

Figure 3: Provisions in BITs



Source: Chaisse and Bellak (2015).

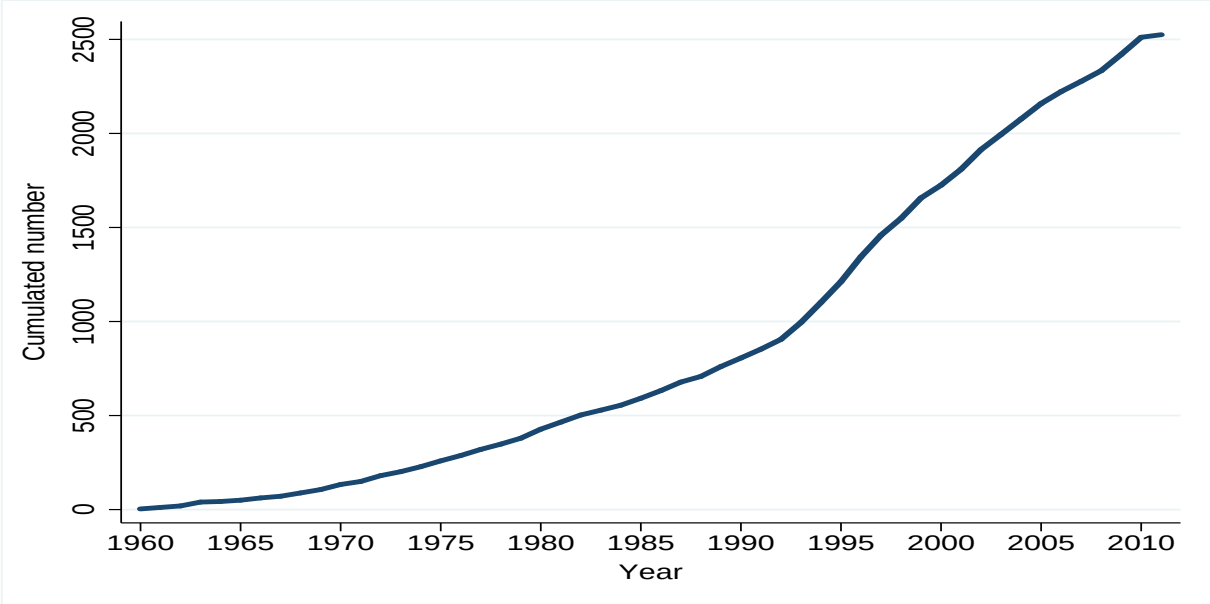
Figure 4: Provisions in RTIAs



Notes: Chaisse and Bellak (2015).

We also take into account that two countries may have signed a double taxation treaty (DTT), based on data provided by UNCTAD.[6] As shown in Figure 5, as for BITs or RTIAs, the global number of DTTs has rapidly grown since the mid-nineties. A key purpose of DTTs is to deal with issues related to the taxation by home and host countries of the revenues generated by FDI. The impact of DTTs on FDI has been found to be ambiguous (Sauvant and Sachs, 2009), possibly because the benefits of greater tax treatment predictability are offset by a reduction of tax avoidance opportunities.

Figure 5: The rising number of DTTs



Notes: Raw data come from UNCTAD. Signed treaties.

2.2 FDI projects

The *fDi Markets* database compiled by fDi Intelligence, a division of the Financial Times, provides unique data on greenfield FDI projects.[7] This database is the most comprehensive source of firm-level information on cross-border greenfield investment available, covering all countries and sectors worldwide since 2003. A drawback of the *fDi Markets* database is that it does not cover M&A FDI flows. This issue can be solved by using the *Zephyr* database, a product from Bureau Van Djik,

[4] `http://www.cuhk.edu.hk/law/proj/BITSel/`

[5] These values have been recoded '0' and '1' respectively.

[6] `http://unctad.org/en/Pages/DIAE/International\%20Investment\%20Agreements\%20(IIA)/Country-specific-Lists-of-DTTs.aspx`. UNCTAD does not report the date of entry into force.

[7] `http://www.fdimarkets.com/`

which provides comprehensive information on cross-border M&A deals, covering all countries and sectors worldwide since 2003.[8] Both the *fDi Markets* and the *Zephyr* databases include the name of the country in which the firm engaging in a new FDI project is located, the name of the destination country, the year of the transaction, and the recipient sector.

In the context of this paper, these two databases provide a much better picture of new FDI activity than balance of payments (BOP) FDI data. They cover a very large number of countries and sectors, distinguish FDI projects according to their entry mode, do not ignore locally-financed projects,[9] are not distorted by 'round-tripping' and 'trans-shipping' phenomena,[10] and do not mix together exiting and new FDI activities.[11] This last point is important given that the purpose of this paper is to investigate whether BITs and RTIAs attract new foreign projects.

Unfortunately, value of the investment is missing for many greenfield and M&A FDI projects. Hence, we will use the number of bilateral FDI projects as proxy of real bilateral FDI. Our results will therefore reflect the extensive margin of FDI.

2.3 Other variables

Country-specific fixed effects will control for all country-specific determinants of FDI. At the dyadic level, we take into account geographic distance, time zone difference and the existence of a common border/ language/ religion/ legal origin/ colonial past. Data come from Head et al. (2010). We also control for the existence of a RTA or a currency union. Data have been coded by Jose de Sousa and can be found on his website.[12]

In some regressions, countries will be split in North (developed) and South (developing/emerging) countries. The latter are all countries which are not considered to be traditional industrial countries.[13]

[8] `http://www.bvdinfo.com/en-gb/products/economic-and-m-a/m-a/zephyr`

[9] BOP FDI data only capture the portion of the funding of existing and new foreign affiliates coming from the parent company. Feldstein (1995) illustrates how using only BOP data fails to provide an accurate picture of the activities of U.S. MNEs abroad.

[10] 'Round-tripping' refers to the situation where 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. With 'trans-shipping', 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.

[11] BOP FDI flows also include sources of funds for already established foreign affiliates, e.g. reinvested earnings.

[12] `http://jdesousa.univ.free.fr/data.htm`

[13] See the 'AAA codes' dataset available at `http://graduateinstitute.ch/md4stata`.

Interaction terms involving three proxies for the quality of the business climate will also be tested. The first two proxies are the principal components of all (GOV)/first three Worldwide Governance Indicators (RL): Political Stability; Rule of Law; Control of Corruption; Voice and Accountability; Government Effectiveness; Regulatory Quality.[14] A higher value means better governance. The third proxy (OPFDI) corresponds to the Heritage Foundation Investment Freedom index.[15] This index evaluates a variety of restrictions that are typically imposed on FDI and ranges from 0 to 100 (closed to liberal FDI regime). Finally, we will also include in a robustness check the all-inclusive World Bank trade costs measure for the year 2003. This measure is based on dividing intra-national trade by international trade.[16]

3 Empirical methodology

In a first stage, we estimate variants of the following exponential model:

$$FDI0410_{ij} \quad = \quad exp(\delta_1 \overline{BIT}_{ij} + \overline{CONT}_{ij}\beta + \theta FDI03_{ij} + \alpha_i + \alpha_j)\epsilon_{ij}$$

where FDI_{ij} is the cumulated number of FDI projects of firms headquartered in source country i in destination country j over the period 2004-2010, BIT_{ij} indicates the existence, for at least two years, of an enforced BIT or of various BIT-related investment provisions, $CONT_{ij}$ is a vector of dyadic control variables, $FDI03_{ij}$ is the (log +1) value of the number of bilateral projects in 2003, αs are country fixed effects, and ϵ_{ij} is a multiplicative error term. The overline bar indicates that all values have been averaged over the period 2003-2010. Given the count nature of our dependent variable, we estimate our model using a Poisson quasi-maximum likelihood estimator. Standard errors are clustered at the country-pair level.

In a second stage, on a smaller sample for which we have data, we will also investigate the effects

[14] See `http://info.worldbank.org/governance/wgi/index.aspx`.
[15] `http://www.heritage.org/index/investment-freedom`
[16] `http://data.worldbank.org/data-catalog/trade-costs-dataset`

of RTIAs:

$$FDI0410_{ij} = exp(\delta_1 \overline{BIT}_{ij} + \delta_2 \overline{RTIA}_{ij} + \overline{CONT}_{ij}\beta + \theta FDI03_{ij} + \alpha_i + \alpha_j)\epsilon_{ij}$$

where $RTIA_{ij}$ indicates the existence, for at least two years, of a RTIA or of various RTIA-related investment provisions.

Our econometric model controls for a large number of observed and unobserved (through $FDI03$) variables which could be correlated both with new FDI projects and the presence of BITs or RTIAs. We could have gone one step further by making use of the time dimension of our data and include country-pair fixed effects. However, we decide not to adopt this empirical strategy. Like domestic investment (King and Thomas, 2006), FDI projects are discrete, occasional, and asynchronous. Yearly variation in FDI could be too noisy to identify the effects of IIAs. In addition, many BITs and RTIAs have entered into force before the beginning of our data. By including country-pair fixed effects, we would discard not only the information provided by those dyads which never experience FDI but also those which have signed a treaty before 2004. The effects of BITs and RTIAs are also likely to take time to occur rather than reaching their full magnitude on the first year of their existence. Finally, as we will show, there are other ways to control for the potential endogeneity of these IIAs. These four reasons explain why we use the cumulated number of FDI projects over the period 2003-2010.

As previously mentioned, the BITSel database does not cover the full universe of BITs and RTIAs. About 66% of all BITs have been coded and no values are given for some RTIAs, such as the European community or Chile-Colombia. To ensure that our 'control group' does not in fact include BITs/RTIAs which are not present/coded in the BITSel database, we omit from our sample first all non-coded country-pairs for which a BIT is reported by UNCTAD and also, when we estimate equation (2), all non-coded country pairs for which a RTA is reported by the WTO. In our initial sample, about 7% of the (about 24500) country pairs have a BIT. In the second sample, about 4% and 2% of the (about 22500) country pairs have a BIT or a RTIA.

4 Empirical results

4.1 Aggregate BIT effects on aggregate FDI

Table 1 provides some baseline results. As in existing research, we use here an UNCTAD BIT dummy variable and aggregated FDI data. In column (1), we find that a BIT tends to increase the cumulated number of FDI by about 12%. However this effect is only statistically significant at the 10% level. In columns (2)-(5), we investigate whether the impact of a BIT varies with i) source and destination countries' governance (GOV); ii) source and destination countries' rule of law (RL); iii) source and destination countries' FDI openness (OPFDI); iv) number of BITs signed by the destination country with other countries (BITSTOCK).[17] None of these interaction terms are statistically significant. In column (6), we look at whether the effects of BITs depend on the direction (nature) of the country pairs (North-South [NS], South-South [SS], other). This does not appear to be the case. Lastly, in column (7), we use yearly panel data, and replace the time-varying country-specific effects with country-pair fixed effects as well as time-varying control variables. This implies that identification of the BIT effect relies here only on *positive* changes in FDI associated with the entry into force of *new* BITs during the period 2003-2010. The coefficient on the BIT variable is small and not statistically significant.[18]

Table 2 replicates the empirical exercise carried out in Table 1, using now the BITSel dummy variable which covers fewer country pairs than the UNCTAD dummy variable and may not be similarly coded in terms of year of entry into force. Results are qualitatively similar to those found in Table 1 but the magnitude of the BIT effect, which is also more precisely estimated, is nearly three times larger. We now find that a BIT tends to increase in a statistically significant manner the cumulated number of FDI by about 31%. In column (7), the UNCTAD BIT dummy variable is once again used. In a smaller sample, a BIT is expected to increase FDI by about 25%. Hence, two-thirds of the larger effect found when using the BITSel dummy variable can be attributed to differences in sample and the rest to differences in coding.

The two other types of international agreements reported in Tables 1 and 2 tend to have a large and

[17] All these variables have been initially centered around their mean.
[18] Note that we ignore about 85% of the available country pairs in our sample.

Table 1: Aggregate FDI and UNCTAD BIT dummy variable

	Cumulated number of FDI projects						Yearly nb.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
UNCTAD BIT	0.117*	0.195**	0.190**	0.149**	0.277**	0.147	0.047
	(0.066)	(0.088)	(0.081)	(0.074)	(0.119)	(0.133)	(0.090)
DTT	0.406***	0.408***	0.408***	0.410***	0.402***	0.400***	0.166**
	(0.059)	(0.059)	(0.059)	(0.060)	(0.058)	(0.058)	(0.083)
RTA	0.273***	0.270***	0.270***	0.269***	0.270***	0.258***	0.072
	(0.075)	(0.074)	(0.075)	(0.073)	(0.074)	(0.073)	(0.118)
BIT X GOV_i		-0.031					
		(0.023)					
BIT X GOV_j		0.007					
		(0.027)					
BIT X RL_i			-0.042				
			(0.032)				
BIT X RL_j			0.005				
			(0.034)				
BIT X $OPFDI_i$				-0.002			
				(0.002)			
BIT X $OPFDI_j$				0.003			
				(0.003)			
BIT X $BITSTOCK_j$					-0.084		
					(0.074)		
BIT X NS						-0.098	
						(0.159)	
BIT X SS						0.202	
						(0.143)	
Observations	28911	28911	28911	28911	28911	28911	27174
Country-pairs panel							4094

*** p-value<0.01 ** p-value<0.05 * p-value<0.10. Cluster-robust standard errors in parentheses. Country fixed effects and the dyadic control variables described in section 2 are included in columns (1)-(6). GDP, GOV, OPFDI, country-pair fixed effects, and year fixed effects are included in column (7).

positive impact on FDI. A RTA is associated with an FDI increase of 17-30%. FDI can be expected to increase by about 45-51% when a DTT is signed.

Tables 1 and 2 outline the limits of existing research. BITs (and RTAs) are considered to be homogenous, FDI flows are not disaggregated according to their destination sector, and no distinction is made between GF and MA FDI. Endogeneity of BITs is also frequently not addressed. This is the topic of the next subsection.

4.2 Addressing endogeneity

In Table 3, we address the possibility that the BIT variable is endogenous, due to reverse causality or an omitted variable bias.

Our previous and forthcoming results could be driven by a simultaneity bias if *ex-ante* large FDI

Table 2: Aggregate FDI and BITSEL dummy variable

	Cumulated number of FDI projects							Yearly nb.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
BITSEL BIT	0.264***	0.323***	0.303***	0.342***	0.101	0.302**		-0.063
	(0.064)	(0.094)	(0.086)	(0.081)	(0.156)	(0.148)		(0.082)
UNCTAD BIT							0.221***	
							(0.068)	
DTT	0.371***	0.371***	0.371***	0.371***	0.372***	0.370***	0.378***	0.100
	(0.065)	(0.065)	(0.065)	(0.065)	(0.065)	(0.065)	(0.065)	(0.088)
RTA	0.167**	0.166**	0.166**	0.168**	0.168**	0.161*	0.165**	0.126
	(0.083)	(0.082)	(0.083)	(0.082)	(0.083)	(0.083)	(0.083)	(0.122)
BIT X GOV_i		-0.019						
		(0.027)						
BIT X GOV_j		-0.009						
		(0.029)						
BIT X RL_i			-0.021					
			(0.037)					
BIT X RL_j			-0.008					
			(0.038)					
IBIT X $OPFDI_i$				-0.004				
				(0.003)				
BIT X $OPFDI_j$				-0.000				
				(0.003)				
BIT X $BITSTOCK_i$					0.085			
					(0.083)			
BIT X NS						-0.072		
						(0.169)		
BIT X SS						0.034		
						(0.157)		
Observations	17321	17321	17321	17321	17321	17321	17321	19614
Country-pairs panel								2968

*** p-value$<$0.01 ** p-value$<$0.05 * p-value$<$0.10. Cluster-robust standard errors in parentheses. Country fixed effects and the dyadic control variables described in section 2 are included in columns (1)-(7). GDP, GOV, OPFDI, country-pair fixed effects, and year fixed effects are included in column (8).

activity contributes to the signature of a BIT. In presence of perfect reverse causality we would expect that a *ratified* BIT matters as much as an *enforced* BIT which has become legally binding. Column (1) shows that this is not the case. The coefficient on a ratified BIT dummy variable is smaller and identified with less precision than the BIT coefficient that we previously found. Column (2) provides a more stringent test by looking at whether a ratified but not enforced BIT exerts the same effect on FDI than an enforced BIT. A BIT has no impact on FDI if it has not entered into force.

To address the issue of a potential omitted dyadic-specific variable, we have included a large number of control variables, including a measure of initial FDI. In column (4), we also control for an index of 'revealed' trade frictions, the World Bank trade costs measure. A comparison of the estimates of column (4) with those of column (3) shows that an omitted variable bias may explain one-third of

Table 3: Assessing the endogeneity of BITs

	Cumulated number				Sector s yearly number		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Enforced BIT		0.253***	0.223***	0.147**			
		(0.065)	(0.065)	(0.060)			
Ratified BIT	0.162**						
	(0.067)						
Rat./not enf. BIT		-0.105					
		(0.147)					
DTT	0.388***	0.373***	0.408***	0.376***			
	(0.065)	(0.065)	(0.071)	(0.066)			
RTA	0.161*	0.170**	0.119	-0.060			
	(0.084)	(0.083)	(0.088)	(0.072)			
WB trade costs				-1.276***			
				(0.106)			
MEDSIZE$_s$ X BIT					0.260***	0.246***	0.242***
					(0.050)	(0.088)	(0.090)
MEDSIZE$_s$ X GOV$_j$						-0.162***	-0.144***
						(0.033)	(0.045)
MEDSIZE$_s$ X OPFDI$_j$							-0.002
							(0.003)
Observations	26093	26093	11567	11567	321176	279792	275004

*** p-value$<$0.01 ** p-value$<$0.05 * p-value$<$0.10. Cluster-robust standard errors in parentheses. Country fixed effects and the dyadic control variables described in section 2 are included in columns (1)-(4). Country-pair-year and sector fixed effects are included in columns (5)-(7). 38 sectors in column (5) and 36 sectors in columns (6)-(7) as the outlying sectors 'Oil' and 'Tourism' are omitted.

the BIT effect. Nevertheless, the entry into force of a BIT is still expected to increase FDI by about 16%.

In the last three columns we address the issue of omitted variable bias by adopting a difference-in-differences approach. Intuitively, assuming that BITs provide favourable conditions to foreign investors, their effect should be larger for FDI in sectors involving an initially large fixed investment. FDI in these sectors is presumably more sensitive to political risk due to the size of the potential losses foreign investors can incur in case of foreign troubles (Kerner and Lawrence, 2014). Using yearly data for greenfield FDI, we test this hypothesis by estimating the following econometric model

$$GF_{ijst} \;=\; exp(\beta_1[BIT_{ijt} \times MEDSIZE_s] + \alpha_s + \alpha_{ijt})\epsilon_{ijst}$$

where $MEDSIZE$ is the logarithm of the median value of the reported greenfield (GF) investments in 38 different sectors s over the period 2003-2010. α_s are sector fixed effects, α_{ijt} are country-pair-year fixed effects, and ϵ_{ijst} is the error term. We expect $\beta_1 > 0$.

Column (5) shows that BITs have a larger effect on relative FDI in initial investment-intensive sectors. Holding other factors constant, a BIT would increase bilateral FDI in a typically fixed investment-intensive sector like 'Metals' 28% more than FDI in a typically fixed investment-light sector like 'Textiles'. This effect is robust to omitting the most and least investment-intensive sectors ('Oil' and 'Tourism') and controlling for the interaction between $MEDSIZE$ and destination governance (column 6) and also for the interaction between $MEDSIZE$ and destination FDI openness (column 7).

Overall, we expect results of this paper not to be the outcome of reverse causality or an omitted variable bias.[19]

4.3 Heterogeneous BITs

In Table 4 we unbundle the effects of BITs on aggregate FDI by looking at the individual impact of each main category of investment provision. Columns (2-6) show that all categories have a large, positive, and statistically significant effect on FDI. The effect of favourable ENTRY conditions is particularly large.

Table 4: Specific BIT provisions

	Cumulated number of FDI projects					
	BIT (1)	ENTRY (2)	TREAT (3)	SCOPE (4)	PROTEC (5)	ISDM (6)
BIT provision	0.264***	0.402***	0.196***	0.276***	0.275***	0.302***
	(0.064)	(0.106)	(0.071)	(0.072)	(0.063)	(0.063)
Observations	26093	26093	26093	26093	26093	26093

*** p-value$<$0.01 ** p-value$<$0.05 * p-value$<$0.10. Cluster-robust standard errors in parentheses. Country fixed effects, the dyadic control variables described in section 2, DTT and RTA, are included in all columns.

In Table 5, we examine whether the effects of the BITSel components vary with the direction (nature) of the dyadic relationship (North-South; South-South). This does not appear to be the case.

[19] To control for endogeneity, (e.g. Kerner (2009)) has suggested the use of instrumental variables, based on BITs signed by a source country with countries in the same region as the destination country. We tested such instruments and we found that they never satisfied the exogeneity condition. This is not surprising given that FDI is often spatially interdependent (Blonigen et al., 2007). See subsection 5.5.

In unreported regressions, we also failed to find a mediating role for source and destination countries' characteristics (governance, rule of law, FDI openness, stock of existing BITs).

Table 5: Specific BIT provisions and FDI direction

	Cumulated number of FDI projects					
	BIT (1)	ENTRY (2)	TREAT (3)	SCOPE (4)	PROTEC (5)	ISDM (6)
BIT provision	0.302**	0.586**	0.369**	0.369***	0.351**	0.477***
	(0.148)	(0.241)	(0.161)	(0.143)	(0.143)	(0.134)
Prov. X NS	-0.072	-0.280	-0.217	-0.142	-0.104	-0.241
	(0.169)	(0.274)	(0.182)	(0.169)	(0.164)	(0.156)
Prov. X SS	0.034	0.041	-0.231	0.008	-0.066	-0.082
	(0.157)	(0.266)	(0.176)	(0.168)	(0.154)	(0.154)
Observations	26093	26093	26093	26093	26093	26093

*** p-value<0.01 ** p-value<0.05 * p-value<0.10. Cluster-robust standard errors in parentheses. Country fixed effects, the dyadic control variables described in section 2, DTT and RTA, are included in all columns.

4.4 Disaggregating FDI

In Tables 6 and 7, we disaggregate FDI by entry mode (greenfield [baseline] or M&A) and then by destination sector (manufacturing [baseline], services, natural resources [NR]). We find no statistical evidence that the effect of each BITSel component differs across entry modes or sectors.[20]

Table 6: Effects of specific BIT provisions according to entry mode

	Cumulated number of FDI projects Greenfield or M&A					
	BIT (1)	ENTRY (2)	TREAT (3)	SCOPE (4)	PROTEC (5)	ISDM (6)
BIT provision	0.257***	0.386***	0.154**	0.259***	0.268***	0.300***
	(0.066)	(0.107)	(0.072)	(0.073)	(0.066)	(0.064)
Prov. X M&A	-0.014	-0.002	0.067	-0.015	-0.021	-0.089
	(0.073)	(0.119)	(0.080)	(0.084)	(0.074)	(0.082)
Observations	52186	52186	52186	52186	52186	52186

*** p-value<0.01 ** p-value<0.05 * p-value<0.10. Cluster-robust standard errors in parentheses. Country fixed effects, the dyadic control variables described in section 2, DTT and RTA, are included in all columns.

[20] The number of observations increase because we 'stack' the data to test cross-equation restrictions.

Table 7: Effects of specific BIT provisions according to destination sector

	Cumulated number of FDI projects MAN, SERV, NR					
	BIT	ENTRY	TREAT	SCOPE	PROTEC	ISDM
	(1)	(2)	(3)	(4)	(5)	(6)
BIT provision	0.212***	0.309***	0.144*	0.241***	0.219***	0.242***
	(0.069)	(0.112)	(0.074)	(0.077)	(0.068)	(0.068)
Prov. X SERV	0.095	0.163	0.081	0.047	0.098	0.107
	(0.082)	(0.138)	(0.092)	(0.091)	(0.084)	(0.085)
Prov. X NR	-0.024	0.078	0.253*	0.051	-0.024	-0.007
	(0.150)	(0.226)	(0.152)	(0.178)	(0.152)	(0.147)
Observations	78279	78279	78279	78279	78279	78279

*** p-value<0.01 ** p-value<0.05 * p-value<0.10. Cluster-robust standard errors in parentheses. Country fixed effects, the dyadic control variables described in section 2, DTT and RTA, are included in all columns.

4.5 Relative importance of the BIT provisions

In Table 8, we explore which investment provision seduces the most foreign investors. In the horse race of column (1), ISDM is the only category which remains statistically significant. Columns (2)-(6) shows that other categories do not individually matter once we control for the presence of an investor-state dispute mechanism. These results are fully in line with the belief of many legal scholars that the principal advantage of BITs is to provide foreign investors with access to international arbitration (Walde, 2005; Allee and Peinhardt, 2010).

Table 8: Most important BIT provisions

	Cumulated number of FDI projects					
	(1)	(2)	(3)	(4)	(5)	(6)
ISDM	0.282*	0.287**	0.297**	0.308***	0.327**	0.265*
	(0.153)	(0.145)	(0.123)	(0.076)	(0.128)	(0.145)
BIT		0.016				
		(0.145)				
ENTRY	-0.019		0.009			
	(0.216)		(0.202)			
TREAT	-0.024			-0.012		
	(0.082)			(0.083)		
SCOPE	-0.129				-0.035	
	(0.192)				(0.143)	
PROTEC	0.159					0.042
	(0.199)					(0.144)
Observations	26093	26093	26093	26093	26093	26093

*** p-value<0.01 ** p-value<0.05 * p-value<0.10. Cluster-robust standard errors in parentheses. Country fixed effects, the dyadic control variables described in section 2, DTT and RTA, are included in all columns.

5 RTIAs and FDI

5.1 Heterogeneous RTIAs

In Table 9, using a smaller sample of country pairs, we investigate the effects of RTIAs on aggregate FDI. Column (1) shows that the coefficient on the RTIASel dummy variable is small and statistically insignificant, suggesting that RTIAs have no impact on FDI. However, a different picture emerges when we examine the impact of each broad category of investment provisions in columns (2)-(6). Most category have a large, positive, and statistically significant effect on FDI. The effects of favourable ENTRY and TREATMENT conditions are particularly large. These results are in line with the 'multilateral' findings of Büthe and Milner (2014). On the other hand, presence of ISDM does not appear to matter, possibly because this provision is present only in very few and recent RTIAs in our sample.

Table 9: FDI and specific RTIA provisions

	Cumulated number of FDI projects					
	RTIA	ENTRY	TREAT	SCOPE	PROTEC	ISDM
	(1)	(2)	(3)	(4)	(5)	(6)
RTIA provision	0.012	0.425**	0.460***	0.339**	0.254**	0.138
	(0.136)	(0.186)	(0.165)	(0.171)	(0.112)	(0.171)
BIT	0.216***	0.252***	0.247***	0.215***	0.203***	0.220***
	(0.076)	(0.077)	(0.074)	(0.076)	(0.076)	(0.076)
DTT	0.183**	0.192***	0.173**	0.188***	0.192***	0.186***
	(0.073)	(0.072)	(0.073)	(0.072)	(0.071)	(0.072)
Observations	22585	22585	22585	22585	22585	22585

*** p-value$<$0.01 ** p-value$<$0.05 * p-value$<$0.10. Cluster-robust standard errors in parentheses. Country fixed effects and the dyadic control variables described in section 2, are included in all columns.

Table 10 shows that favourable investment provisions in RTIAs are particularly relevant when South countries are involved, possibly because the latter provide a more uncertain and regulated business climate than North countries. However, it must be kept in mind that many North-North relationships are omitted from the sample due to data availability. In unreported regressions, like for BITs, we failed to find a mediating role for source and destination countries' characteristics, such as governance, rule of law, or FDI openness.

Table 10: Specific RTIA provisions and FDI direction

	Cumulated number of FDI projects					
	BIT	ENTRY	TREAT	SCOPE	PROTEC	ISDM
	(1)	(2)	(3)	(4)	(5)	(6)
RTIA provision	-0.124	0.118	0.724***	0.372	-0.038	-0.020
	(0.145)	(0.248)	(0.197)	(0.294)	(0.176)	(0.275)
Prov. X NS	0.583**	0.404	-0.453*	-0.101	0.427**	0.343
	(0.264)	(0.319)	(0.270)	(0.326)	(0.207)	(0.353)
Prov. X SS	1.642***	1.357**	0.193	0.183	0.908**	0.284
	(0.383)	(0.560)	(0.572)	(0.331)	(0.356)	(0.584)
BIT	0.192**	0.198***	0.191**	0.169**	0.201***	0.195***
	(0.077)	(0.077)	(0.076)	(0.077)	(0.077)	(0.075)
Observations	22585	22585	22585	22585	22585	22585

*** p-value<0.01 ** p-value<0.05 * p-value<0.10. Cluster-robust standard errors in parentheses. Country fixed effects, the dyadic control variables described in section 2, and DTT are included in all columns.

5.2 Disaggregating FDI

In Tables 11 and 12, we disaggregate FDI by entry mode (greenfield or M&A) and then by destination sector (manufacturing, natural resources, services). We generally find no statistical evidence that the effects of the various investment provisions differ across entry modes or sectors. A potential exception is FDI in service sectors which appears to be strongly influenced by the presence of an anti-discrimination provision. This is possibly because these sectors tend to be more regulated than other industries.

Table 11: Effects of specific RTIA provisions according to entry mode

	Cumulated number of FDI projects Greenfield or M&A					
	BIT	ENTRY	TREAT	SCOPE	PROTEC	ISDM
	(1)	(2)	(3)	(4)	(5)	(6)
Provision	-0.057	0.379*	0.456***	0.270*	0.232**	0.177
	(0.143)	(0.194)	(0.177)	(0.161)	(0.115)	(0.158)
Prov. X MA	-0.065	-0.241	-0.156	0.197	-0.003	-0.196
	(0.152)	(0.180)	(0.133)	(0.183)	(0.110)	(0.141)
BIT	0.207***	0.240***	0.241***	0.206***	0.200**	0.215***
	(0.079)	(0.079)	(0.078)	(0.079)	(0.079)	(0.079)
Observations	45170	45170	45170	45170	45170	45170

*** p-value<0.01 ** p-value<0.05 * p-value<0.10. Cluster-robust standard errors in parentheses. Country fixed effects, the dyadic control variables described in section 2, and DTT are included in all columns.

Table 12: Effects of specific RTIA provisions according to destination sector

	Cumulated number of FDI projects MAN, SERV, NR					
	BIT	ENTRY	TREAT	SCOPE	PROTEC	ISDM
	(1)	(2)	(3)	(4)	(5)	(6)
Provision	-0.044	0.356**	0.361**	0.198	0.232**	0.161
	(0.136)	(0.178)	(0.161)	(0.169)	(0.108)	(0.148)
Prov. x SERV	0.088	0.085	0.263*	0.255	-0.009	-0.097
	(0.156)	(0.190)	(0.155)	(0.184)	(0.123)	(0.185)
Prov. X NR	0.438	-0.255	-0.760*	0.438	0.078	-0.042
	(0.311)	(0.438)	(0.429)	(0.370)	(0.231)	(0.303)
BIT	0.177**	0.217***	0.212***	0.179**	0.182***	0.190***
	(0.071)	(0.071)	(0.069)	(0.071)	(0.070)	(0.070)
Observations	67755	67755	67755	67755	67755	67755

*** p-value<0.01 ** p-value<0.05 * p-value<0.10. Cluster-robust standard errors in parentheses. Country fixed effects, the dyadic control variables described in section 2, and DTT are included in all columns.

5.3 Relative importance of the RTIA provisions

In Table 13, we explore which investment provision seduces the most foreign investors. In the horse race of column (1), TREAT is the only category which remains statistically significant. Columns (2)-(6) show that other categories do not individually matter once we control for the presence of anti-discrimination provisions.

Table 13: Most important RTIA provisions

	Cumulated number of FDI projects					
	(1)	(2)	(3)	(4)	(5)	(6)
TREAT	0.679**	0.460***	0.390*	0.436***	0.349	0.722**
	(0.301)	(0.165)	(0.213)	(0.163)	(0.220)	(0.281)
RTIA		0.007				
		(0.134)				
ENTRY	0.033		0.119			
	(0.259)		(0.235)			
SCOPE	0.256			0.287*		
	(0.242)			(0.169)		
PROTEC	0.128				0.119	
	(0.213)				(0.148)	
ISDM	-0.432					-0.294
	(0.273)					(0.256)
BIT	0.240***	0.247***	0.253***	0.244***	0.234***	0.252***
	(0.077)	(0.074)	(0.076)	(0.074)	(0.074)	(0.073)
Observations	22585	22585	22585	22585	22585	22585

*** p-value<0.01 ** p-value<0.05 * p-value<0.10. Cluster-robust standard errors in parentheses. Country fixed effects, the dyadic control variables described in section 2, and DTT are included in all columns.

5.4 Endogeneity

In Table 14, we address the potential endogeneity of RTIAs by including the World Bank trade costs measure or adopting the difference-in-differences approach presented in subsection 4.2. At the exception of column (6), presence of anti-discrimination provisions in a RTIA has always a statistically significant and positive impact on absolute or relative FDI.

Table 14: Assessing the endogeneity of BITs

	Cumulated number		Sector s yearly number			
	(1)	(2)	(3)	(4)	(5)	(6)
TREAT	0.431***	0.414***				
	(0.159)	(0.099)				
MEDSIZE$_s$ X TREAT			0.245*	0.402**	0.378**	0.287
			(0.125)	(0.196)	(0.165)	(0.187)
BIT	0.189**	0.100				
	(0.074)	(0.068)				
MEDSIZE$_s$ X BIT			0.191***	0.285***	0.168*	0.140
			(0.065)	(0.094)	(0.095)	(0.108)
WB trade costs		-1.245***				
		(0.117)				
MEDSIZE$_s$ X GOV$_j$						-0.154***
						(0.054)
MEDSIZE$_s$ X OPFDI$_j$					-0.011***	-0.002
					(0.002)	(0.003)
Observations	8909	8909	207252	187668	181548	175500

*** p-value$<$0.01 ** p-value$<$0.05 * p-value$<$0.10. Cluster-robust standard errors in parentheses. Country fixed effects, the dyadic control variables described in section 2, and DTT are included in columns (1)-(2). Country-pair-year and sector fixed effects are included in columns (3)-(6). 38 sectors in column (3) and 36 sectors in columns (4)-(6) as the outlying sectors 'Oil' and 'Tourism' are omitted.

Before concluding this subsection, it is worth emphasising two points. First, the coefficient on the TREAT variable is unlikely to merely capture the fact that RTIAs guarantee access to a larger market for FDI. If this were the case, the RTIA dummy variable would have been statistically significant. Büthe and Milner (2014) reach the same conclusion, i.e. RTIAs matter because they include provisions designed to promote FDI. Second, in every RTIA-related regression, the coefficients on BIT and DTT are always large, positive, and statistically significant. BITs, RTIAs, and DTTs appear therefore to have complementary positive effects on FDI.

5.5 Robustness checks and extensions

Table 15 provides some robustness checks and extensions.

Table 15: Robustness checks and extensions

	Cumulated number of FDI projects				
	(1)	(2)	(3)	(4)	(5)
BIT_ISDS	0.242***	0.308***	0.337***	0.274***	0.346***
	(0.085)	(0.077)	(0.079)	(0.077)	(0.082)
X 2008-2010	-0.020				
	(0.106)				
RTIA_TREAT	0.445***	0.454***	0.456***	0.439***	0.479***
	(0.158)	(0.155)	(0.147)	(0.163)	(0.148)
X 2008-2010	0.073				
	(0.108)				
Common WTO membership		-0.154			
		(0.529)			
NAFTA			-0.437		
			(0.266)		
BITs with neighbours				0.384**	
				(0.175)	
Bilateral ICSD cases					-0.642*
					(0.336)
Multilateral ICSD cases					0.504**
					(0.243)
Observations	39882	22585	22585	22585	22585

*** p-value$<$0.01 ** p-value$<$0.05 * p-value$<$0.10. Cluster-robust standard errors in parentheses. Country fixed effects, the dyadic control variables described in section 2, and DTT are included in all columns. Column (1) includes a period 2008-2010 dummy variable.

In column (1), by splitting the sample in two periods (2004-2007 and 2008-2010), we investigate whether the effects of the most important provisions of BITs and RTIAs were different during the global financial crisis. This does not appear to be the case as the coefficients on the two interaction terms are small and not statistically significant. In columns (2) and (3), we do not find that controlling for joint WTO/NAFTA membership affects our results.

In column (4), we examine whether a country receives less FDI when neighbouring countries sign a BIT with a given source country. The coefficient on our spatial BIT variable, which is the distance-weighted sum of BITs signed by a country with other neighbouring destination countries, is statistically significant but positive. Hence we find no evidence of harmful 'BIT competition'.

Finally, in column (5), we investigate whether BITs could reduce FDI by making disputes between

foreign investors and host countries visible to the international business community. Using data compiled by Wellhausen (2016), we include both dyad-specific disputes and disputes with investors from other source countries. These two variables are lagged by two years. We find that recent 'dyadic' disputes reduce FDI whereas recent 'multilateral' disputes increase FDI. These results are in line with those of Wellhausen (2015). She argues that foreign firms from the same source country share risks and resources and that foreign firms from other source countries may see a foreign competitor's breach of contract as generating space for new investment opportunities.[21]

6 Concluding remarks

We have adopted a granular approach to investigate the effects of heterogeneous BITs and RTIAs on heterogeneous FDI projects in heterogeneous countries. We find that both BITs and RTIAs can strongly encourage greenfield and M&A FDI projects in all sectors and most countries as long as these treaties include specific investment provisions. In the case of BITs, the presence of an investor-state dispute mechanism is the only provision which appears to matter. Without the guarantee of access to international arbitration, any substantive promises made to foreign investors in BITs are likely to lack credibility. In the case of RTIAs, foreign investors seem to be particularly sensitive to the guarantee that they will not be discriminated against. In contrast to those included in BITs, anti-discrimination provisions included in RTIAs may matter because they are possibly more comprehensive or because they take place along measures supporting the liberalisation of intra-regional trade and, by extension, the creation of regional supply chains. Few RTIAs contain an investor-state dispute mechanism and therefore, even when both BITs and RTIAs are present, these two types of IIAs are likely to be complementary. Finally, while they were not the object of our study, we find a persistent positive effect of double taxation treaties on FDI.

[21] The generality of our findings across countries, entry modes, and sectors makes sense when the diversity of public international investment arbitrations is considered. Wellhausen (2016) documents that disputes between investors and states take place in all sectors and involve both developed and developing countries.

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