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Are Stricter Investment Rules Contagious? Host Country Competition for Foreign Direct Investment through International Agreements

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Eric Neumayer, Peter Nunnenkamp, and Martin Roy[1]

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Abstract

We argue that the trend toward international investment agreements (IIAs) with stricter investment rules is driven by competitive diffusion, namely defensive moves of developing countries concerned about foreign direct investment (FDI) diversion in favor of competing host countries. Accounting for spatial dependence in the formation of bilateral investment treaties (BITs) and preferential trade agreements (PTAs) that contain investment provisions, we find that the increase in agreements with stricter provisions on investor-state dispute settlement and pre-establishment national treatment is a contagious process. Specifically, a developing country is more likely to sign an agreement with weak investment provisions if other developing countries that compete for FDI from the same developed country have previously signed agreements with similarly weak provisions. Conversely, contagion in agreements with strong provisions exclusively derives from agreements with strong provisions that other FDI-competing developing countries have previously signed with a specific developed source country of FDI.

Keywords: bilateral investment treaties, preferential trade agreements, investment provisions, competition for FDI, spatial dependence

JEL classification: F21; F53

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1. Introduction

While the fundamental purpose of a bilateral investment treaty (BIT) is to encourage foreign direct investment (FDI) flows between country pairs (Bergstrand and Egger 2013), the empirical evidence that BITs are effective in stimulating FDI is ambiguous.[2] As noted by Swenson (2005), it is therefore not obvious that developing countries[3] sign BITs simply because these treaties help increase the inflow of FDI.

Yet, the number of BITs and other international investment agreements (IIAs) continues to grow "even in the absence of conclusive evidence as to the effects of BITs … on FDI flows" (Sachs and Sauvant 2009: LX). Furthermore, it appears that ever more developing host countries are accepting stricter FDI-related provisions in BITs and other IIAs, notably with regard to investor-state dispute settlement and pre-establishment national treatment of foreign investors. This seems to have resulted in "an unexpectedly large wave of litigation" (Simmons 2014: 13), implying considerable costs and loss of sovereignty of developing host countries.

This raises the question of why IIAs continue to be concluded, and what explains the willingness of developing countries to increasingly agree to strict and binding investment rules at the bilateral and plurilateral level. Another element of this puzzle is that developing countries have so far strongly objected to binding *multilateral* investment rules (Salacuse 2010).

As Milner (2014: 7) points out, research on the investment regime has predominantly drawn on theories of competitive diffusion, power politics, and the rational design of institutions. Our contribution is firmly rooted in the first set of theories. We argue that the mushrooming of IIAs and the acceptance of stricter investment rules at the bilateral and plurilateral, as opposed to multilateral, level are mainly defensive moves of developing host countries being concerned about FDI diversion in favor of competing host countries that became parties to IIAs before. Accordingly, the increase in IIAs is fundamentally driven by a self-reinforcing or contagious process: "Governments could be signing these treaties because, as more countries conclude more and more of these agreements, they could be afraid that investors may avoid investing in countries that have *not* signed such treaties" (Sachs and Sauvant 2009: LX). Importantly, contagion may also help explain the increasing strictness of provisions in BITs and other IIAs: developing countries are caught in a race to conclude not only more such treaties but increasingly more stringent treaties.

The argument that competition for FDI among developing countries drives the conclusion of BITs between developed source countries of FDI and developing host countries of FDI is everything but new (see, for example, Guzman 1997; Elkins et al. 2006; Jandhyala et al. 2011). Our original contribution to this literature is that we refine the theoretical argument and provide a superior empirical test for it. As discussed in Section 2, just a few empirical studies have addressed the diffusion of BITs by modeling spatial dependence in BIT formation. Furthermore, previous studies typically treated BITs and other IIAs as 'black boxes', ignoring the content and strictness of FDI-related provisions agreed upon between the source and host countries of FDI. Yet, it is exactly the differentiation by content and strictness that allows us to provide a superior test for the competitive diffusion hypothesis.

[2] See the collection of papers in Sauvant and Sachs (2009) as well as Kerner (2009), Tobin and Rose-Ackerman 2011, and Allee and Peinhardt (2011).

[3] We use the term "developing countries" as short cut for all countries that are not one of the developed FDI source countries listed in appendix 1. It therefore also includes countries often called countries in transition.

In terms of refining the theoretical argument, based on emerging, though as yet still mixed, evidence that BITs and other IIAs with stringent investment provisions increase FDI inflows more than treaties without such provisions (Berger et al. 2011, 2013; Büthe and Milner 2014), we argue that a developing country is most concerned about other developing countries concluding IIAs with major FDI source countries if these IIAs contain strict investor-state dispute settlement (ISDS) or pre-establishment national treatment (NT) provisions because these pose the greatest threat in terms of potential FDI diversion away from the country. As a corollary, spatial dependence in the form of FDI-competition driven pressure on a developing country to sign more stringent IIAs should therefore stem from the existence and diffusion of such IIAs with equally stringent provisions in other developing countries competing with the developing country for FDI from developed source countries. By contrast, the existence and diffusion of IIAs with less stringent or no provisions should not drive the diffusion of IIAs with more stringent provisions.

Empirically, we are the first to employ existing bilateral FDI stocks as the best and most direct measure of what is at stake in terms of potential FDI diversion as weights in the spatial lags that capture competition among developing countries. Existing FDI stocks thus track much more closely the theoretical argument of FDI-competition driven spatial dependence among developing countries as a major driver of their willingness to sign IIAs and sign increasingly stringent IIAs.

Based on estimations from a global sample of 21 developed source countries and 87 developing host countries over the period 1978 to 2004, we show that the increase in IIAs with stricter provisions on ISDS and pre-establishment NT is a contagious process. Importantly, however, contagion of IIAs with weak investment provisions exclusively derives from weak IIAs of FDI-competing host countries, while contagion of IIAs with strong provisions stems solely from strong IIAs of competing host countries. Our stringent and conservative research design shields the estimations from finding spurious evidence for competitive diffusion dynamics. At the same time, it renders it harder to find statistically significant evidence for competing theoretical perspectives. We stress that our findings should be interpreted as buttressing competitive diffusion as an important driver of the international investment regime, not as implying that power politics (e.g., Allee and Peinhardt 2014) or efficient institutional design (e.g., Koremenos 2007) cannot additionally play a complementary role.

After reviewing the extant literature in Section 2, we put forward our theoretical argument that results in two testable hypotheses in Section 3. Section 4 describes our research design. We report results from our main estimations in Section 5, from robustness tests in Section 6, and conclude in Section 7.

2. Related literature

Important gaps remain even though there is a growing literature on the determinants of BITs and preferential trade agreements (PTAs) that include investment provisions. Until recently this literature failed to address two crucial issues that figure prominently in our empirical analysis: First, it was not taken into account that the scope and depth of investment-related provisions differ considerably across BITs and other IIAs. Second, where an emerging literature started to look into the stringency of BITs and other IIAs, it assumed at least implicitly that such treaties, in particular the conclusion of BITs, were the result of purely bilateral initiatives unaffected by the behavior of other country pairs. This view neglects the impact of spatial dependence on whether a specific pair of source and host country of FDI decide to engage in BIT negotiations, that is, the impact that the treaty concluding behavior of other country pairs has on a specific country pair's willingness to conclude such a treaty.

Indeed, most of the literature treats BITs as a 'black box' and neglects that the likelihood to conclude a BIT with far-reaching commitments may differ from that of concluding a weaker BIT. Swenson (2005), Elkins et al. (2006), Neumayer and Plümper (2010) and Bergstrand and Egger (2013) are all prominent examples in this regard. An emerging strand of the literature explicitly addresses the content of BITs, however. Effective dispute settlement provisions have received most attention so far. Allee and Peinhardt (2010: 2) note that "legal scholars have singled out these investor-state dispute settlement clauses within BITs as perhaps the most important aspect of the treaties." According to Allee and Peinhardt (2010; 2014), developing host countries make more concessions on dispute settlement provisions when negotiating BITs with source countries that enjoy a particularly strong bargaining position. Simmons (2014) complements this finding and argues that host countries are more likely to agree to strict dispute settlement provisions in harder economic times, e.g., in periods of weak economic growth. Importantly, however, spatial dependence in the form of FDI-competition among developing host countries for FDI is not explicitly modeled by these authors.

Another strand of the recent literature departs from Baldwin's 'domino theory of regionalism' (Baldwin 1993) to overcome the purely bilateral perspective of analyzing the determinants of BITs and other IIAs. Baldwin (1993) develops a formal political economy model to show that an idiosyncratic event of economic integration among third countries triggers domino effects by changing the cost-benefit calculus of non-members. The triggering event threatens to harm the profits of competing outsiders, thus increasing their inclination to join existing integration schemes or initiate new ones. This process is driven "by a peculiar tendency of special interest groups; they usually fight harder to avoid losses than they do to secure gains" (Baldwin 1993: 4). Baldwin and Jaimovich (2012) as well as Baccini and Dür (2012) provide empirical analyses of interdependent formation of PTAs. The authors of both papers propose a 'contagion index' to capture the extent to which a PTA between countries A and B changes country C's incentive to conclude a new PTA with either A or B – in a defensive move to mitigate adverse effects from trade diversion. Bilateral trade relations are used to construct the spatially lagged contagion measure. However, FDI-related provisions in IIAs and FDI diversion are not considered in these papers.

The logic of why countries do not decide in isolation on trade agreements can easily be transferred to the conclusion of BITs in general and the conclusion of BITs with stricter investment-related provisions in particular. As stressed by Baldwin (1997), nonmembers are concerned about trade diversion when their competitors engage in closer economic integration. In the case of BITs, this would imply that an agreement concluded between a pair of a host country and a source country of FDI increases the incentive of a competing host country to engage in BIT negotiations in order to avoid FDI diversion. The BIT boom would feed itself, even if each host country had a preference not to enter into BITs had competitors not done so before.

Indeed, Elkins et al. (2006) find that the diffusion of BITs is associated with competitive pressure among developing host countries. These authors "rely on network measures of economic competition as well as more indirect evidence on competitive pressures on the host to sign BITs" (page 811). Specifically, Elkins et al. (2006) use three alternative spatial weights to proxy for competition among host countries of FDI: the similarity of the destination of exports, the similarity of the export product structure, and the similarity of educational and infrastructural endowments. Similarity in all three dimensions increases the odds of a BIT. Using similar proxies of competition for FDI among host countries, Jandhyala et al. (2011) allow for varying effects over time of these proxies and other determinants of BIT formation. They find that competition among host countries mattered for BIT signing throughout the period of observation, but the effects were stronger in the1970-1988 period than more recently.

Neumayer and Plümper (2010) refine the analysis of Elkins et al. (2006) by exploring specific channels through which BITs may diffuse. The results of Neumayer and Plümper suggest that the decision of a developing host country to sign a BIT with a developed source country depends only on other host countries' BITs with the *same* source country, rather than other host countries' BITs with *any* source country. In other words, Neumayer and Plümper (2010: 148) find that what they term "dyad-specific target contagion matters rather than aggregate target contagion." Lupu and Poast (2013) propose another refinement by modelling the boom in BITs as a multilateral – or *k*-adic – process, rather than a dyadic process.[4] Nevertheless, Lupu and Poast (2013) corroborate Neumayer and Plümper (2010) in that host countries conclude BITs with specific source countries in order to divert FDI away from competing hosts of FDI by this particular source country.[5]

However, these recent BIT studies analyzing spatial dependence have some common shortcomings that we attempt to overcome. Competition among host countries of FDI is typically proxied by spatial lags using trade relations or geographic distance as weights. Given that BITs and other IIAs raise concerns about FDI diversion in the first place, it is more appropriate to use existing FDI relations as weights as we do in the following. More importantly, none of these studies accounts for the content of BITs and other IIAs. As specified below, we contribute to closing this important gap by considering two essential treaty provisions: investor-state dispute settlement (ISDS) and pre-establishment national treatment (NT). Furthermore, we take into account that such provisions may not only be specified in BITs but also in other IIAs, namely PTAs with investment provisions.

3. Theoretical argument and testable hypotheses

Like any theoretical argument that leads to testable hypotheses, ours too is based on a set of assumptions that, in our view, are persuasive, if perhaps not uncontroversial. On the part of developed countries, we firstly assume that these countries unambiguously prefer IIAs and prefer stronger to weaker investment provisions. The case for this assumption is clearest for BITs, which developed countries almost exclusively contract upon with developing countries. For such dyads, developed countries typically enjoy a strongly asymmetrical outward net FDI position such that the benefits almost exclusively accrue to foreign investors from the developed source country and the costs in terms of loss of sovereignty almost exclusively accrue to developing host countries. Our assumption is more problematic for PTAs with investment provisions since these are also concluded among developed countries themselves. These agreements impose some costs in terms of loss of sovereignty onto the developed countries even if developing countries also form part of the agreement – witness for example the political controversy in the US and Canada surrounding chapter 11 of the North Atlantic Free Trade Agreement, which allowed Canadian (and Mexican) investors to sue the American government and American (and Mexican) investors to sue the Canadian government. However, our research design is restricted to dyads comprising developed FDI source countries and developing FDI host countries. It is outside the remit of our article and we thus cannot and seek not explain why developed countries join PTAs with investment provisions with other developed countries (Mansfield and Milner 2012). However, conditional on such PTAs potentially existing, it remains true that developed PTA member countries will prefer that developing countries join a PTA with investment provisions and ideally strong provisions as again the outward net FDI position is likely to be asymmetrically in favor of the developed country. We also note that developed countries were on the whole strongly in favor of the failed attempt at creating a multilateral

[4] Note that a *k*-ad stands for a group of states with size *k* consisting of one source country and a varying number of host countries, including dyads with just one host country.

[5] By contrast, other types of contagion appear to have negative effects on the process of BIT formation.

agreement on investment, which suggests that they are not too concerned about committing to binding investment provisions that investors from other developed countries could take advantage of (Henderson 1999).

Secondly, we further assume on the part of developed countries that any single developed country's success in convincing a specific developing country to accept (strict) investment provisions does not create a major competitive disadvantage for other developed countries. For example, if the United Kingdom manages to convince India to accept strict investment provisions, then this is beneficial to UK investors, but not necessarily disadvantageous to German investors. That is not to say that Germany is not interested in concluding similarly strict investment provisions with India. But this interest existed even before and is not necessarily affected by the agreement between the UK and India.[6] This assumption necessarily presupposes that any potential increase in FDI flowing from the UK to India following the conclusion of the agreement with strict investment provisions between the two countries does not crowd out German FDI flowing into India. This, in turn, means that developing FDI host countries are not close to a binding FDI absorption constraint. We do not find this assumption problematic given the hugely under-developed state of the economies of many developing countries and the large potential, at least in principle, for foreign investors to earn high profits from exploiting the economic opportunities that come from economies operating far from any long-run steady state. This second assumption relating to developed FDI source countries allows us to focus on FDI-competition driven spatial dependence among developing countries resulting in what Neumayer and Plümper (2010) dub 'specific target contagion' without the need to simultaneously model what these authors term 'specific source contagion', which would model competition among developed countries.

On the part of developing countries, we assume that all other things equal they prefer not to sign IIAs with investment provisions that curtail their sovereignty to impose conditions on foreign investors since they typically are net FDI importers and would thus predominantly experience the costs without their own foreign investors enjoying much benefit from the investment provisions. Yet, all other things are not equal. First of all, the cost in terms of loss of sovereignty needs to be balanced against any potential increase in inward FDI following from signing such an agreement, which we assume to be beneficial, at least in expectation, for the developing host country. For this to play a part in the benefit-cost consideration of developing countries, the mixed evidence with regards to whether IIAs actually result in more FDI, referred to in the Introduction, is not fatal since all that is needed is that developing country policy-makers believe that these treaties result in more FDI. It must also be true, however, that at least initially developing countries expect the costs to be larger than the potential benefits since otherwise they would all rush to the negotiating table to conclude bilateral IIAs with strict investment provisions. This is also consistent with their refusal to negotiate any multilateral agreement on investment. Instead, what we observe is that some frontrunner developing countries sign such agreements before others. Poulsen and Aisbett (2013) argue that developing countries might have ignored the risks this entails. Whilst we cannot exclude this possibility, another reason is that frontrunners might enjoy an early mover advantage as foreign investment is diverted from locations that refuse to offer provisions favorable to foreign investors toward locations that have committed to such provisions (Guzman 1998). Such FDI diversion will increase the expected benefits of signing IIAs, thus tilting the expected benefit-cost ratio in their favor. This, in turn, creates a negative externality onto other developing countries in the form of FDI diversion.

This leads directly to our core argument, namely that developing host countries cannot ignore the behavior of other developing countries with whom they compete for scarce FDI from developed source countries. Every competitor who concludes an IIA with (strict) investment provisions with a specific developed FDI source country poses a threat for a developing country that some of the existing or, more

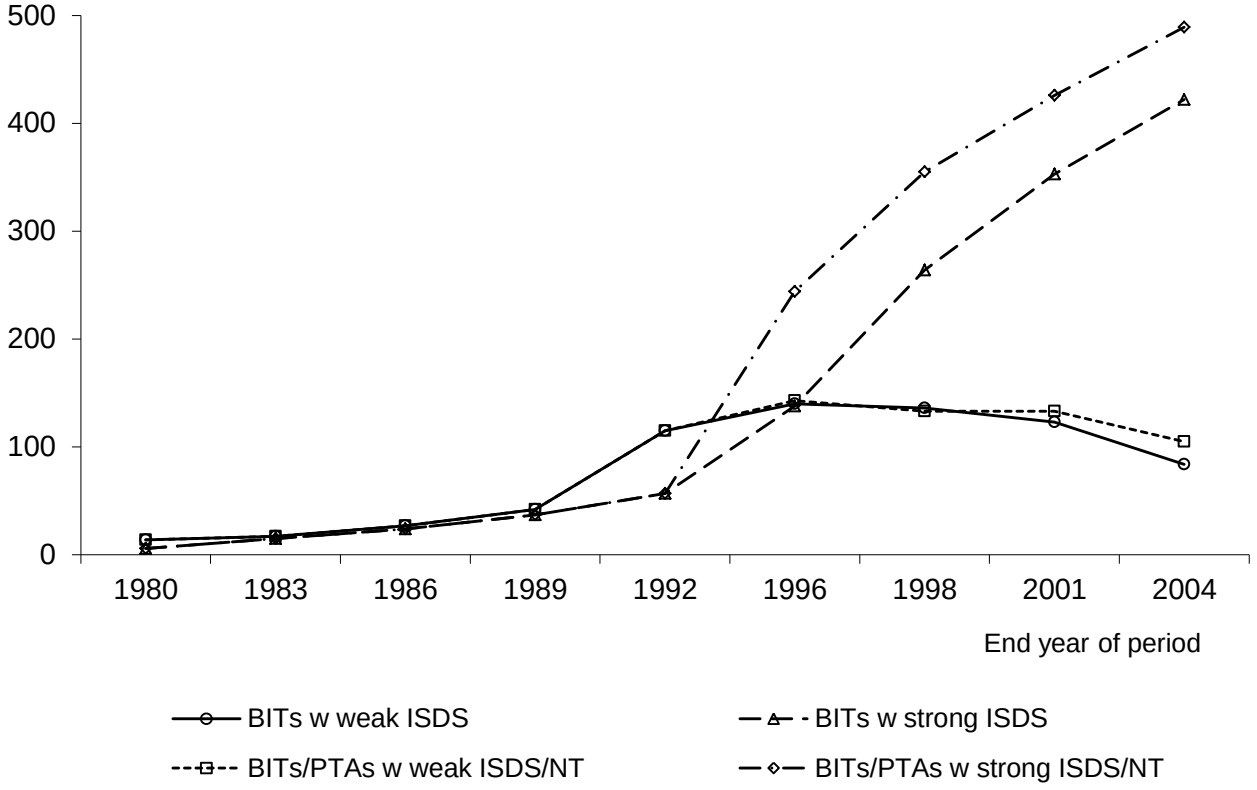
[6] In other words, Germany has little reason to act defensively against a prior move of the UK.

likely, future FDI from this developed country will be diverted away from it. For this argument to have bite it must be true that either the developed country operates at or close to a binding constraint on the amount of FDI that can flow out of the country or that the quality of FDI differs and the FDI that is more desirable to developing countries comes from investors who are keener on strict investment provisions. This is because without such a constraint or, alternatively, such heterogeneity in the desirability of FDI flows no detrimental diversion can take place. Whether developed countries operate close to such a constraint is hard to say, but some constraint exists of course since FDI needs to be financed by diverting income away from domestic purposes. That FDI is heterogeneous in its desirability to developing host countries is plausible since some FDI will lead to more local job creation and knowledge spillovers than others. Foreign investors who perceive that their investment is particularly desirable to developing host countries in turn have an incentive to expect better investment protection provisions since their investment flows are preferred over those of other investors.

Once some developing countries have started signing IIAs, they have set in motion a contagious process that over time induces more and more developing countries to follow suit. Collectively, developing countries would be better off refusing to sign away national sovereignty, which is also why they refuse a multilateral treaty. But individually some took advantage of early mover advantage, leaving those with whom they compete for scarce FDI from developed source countries with little choice than to give in, too. Thus, the pressure on a single country to sign an IIA is the greater the larger the share of competitors that have already signed a treaty.

The logic of our argument can also explain the stylized facts of the dynamics of rolling-out investment provisions of different strengths over time (see Figure 1). Developing countries do not favor investment provisions, but they dislike strong investment provisions even more than weak provisions. Hence, in the early periods IIAs with weak provisions will dominate. Yet, the same temptation that induced some developing countries to sign IIAs with weak provisions in the beginning in order to seize a first mover advantage lures them or others into signing IIAs with strong provisions such that at some point these become the dominating type of investment provisions.

Figure 1: Diffusion of international investment agreements over time.



Note: For variable definitions, see Section 4.

A crucial implication of our argument is that the pressure that comes from the IIA signing behavior of other developing countries with whom a developing country under observation competes in terms of FDI from a specific source country will be exclusive to the specific strength of investment provisions competitors have agreed to. Thus, one's competitors having signed treaties with weak provisions only exerts pressure on a developing country to sign a treaty with weak provisions to remove the previously created competitive disadvantage and avoid FDI diversion. In other words, weak provisions in competitors' treaties do not induce developing countries to sign treaties with strong provisions since these are not necessary and carry greater costs. Conversely, one's competitors having signed treaties with strong provisions exerts pressure on a developing country to sign a treaty with equally strong provisions, which are now needed to remove the competitive disadvantage and avoid FDI diversion. Strong provisions in competitors' treaties do not induce developing countries to sign treaties with weak provisions since weak provisions are insufficient to counter the competitive advantage that one's competitors have previously created for themselves. Our reasoning therefore results in the following two testable hypotheses:

Hypothesis 1. IIAs with *weak* investment provisions signed by a larger number of one's competitors for FDI from a specific developed source country increases the incentive of a developing host country to also sign an IIA with *weak* provisions with this developed country, but not an IIA with *strong* provisions.

Hypothesis 2. IIAs with *strong* investment provisions signed by a larger number of one's competitors for FDI from a specific developed source country increases the incentive of a developing host country to also sign an IIA with *strong* provisions with this developed country, but not an IIA with *weak* provisions.

4. Research Design

IIA provisions and dependent variables

While the conclusion of new BITs has slowed down considerably since the early 2000s, possibly because many countries became more reluctant after having experienced their first legal challenges (Poulsen and Aisbett 2013), the cumulative number of all IIAs reached almost 3,200 at the end of 2012 (UNCTAD 2013). BITs accounted for almost 90 percent of all IIAs. In addition, UNCTAD (2013) lists 339 other IIAs, defined as "economic agreements, other than BITs, that include investment-related provisions" (essentially investment chapters in PTAs). In the following, we analyze the diffusion of BITs on their own, but also of BITs and PTAs with investment provisions together. We thus also analyze the diffusion of IIAs more broadly, not just BITs.[7]

The proliferation of IIAs has taken place jointly with a transformation of the content of IIAs, resulting in increasingly strict obligations. Importantly, IIAs differ in whether and to what extent they contain critical legal provisions that diffused over the last two decades (Berger et al. 2013). The two most important features relating to the liberalization and protection of foreign investment appear to be: (i) guarantees of market access for foreign investors, i.e., the extent to which IIAs include provisions on national treatment (NT) in the pre-establishment phase; and (ii) the extent to which IIAs include a strong investor-state dispute settlement (ISDS) mechanism, which is key in ensuring that foreign investments are effectively protected from discriminatory or abusive treatment in the host country.

As noted in Section 2, dispute settlement has received more attention in the previous literature than liberal admission rules in the form of pre-establishment NT. The relevant question is whether foreign investors can effectively sue host country governments before an international arbitration tribunal for breaches of treaty obligations, without having to exhaust local remedies or to obtain the host government's prior consent. To capture the variation in such ISDS provisions we follow the classification of BITs by Yackee (2009),[8] which we extended to PTAs applying the same classification. Accordingly, the strongest type of ISDS (coded as 3) offers comprehensive pre-consent concerning the investors' possibility to unilaterally initiate binding international arbitration of disputes. Partial pre-consent (coded as 2) restricts this possibility to a limited class of disputes such as disputes on the compensation for expropriation. So-called promissory provisions – without guarantee of international arbitration for the investor – offer a weaker type of ISDS (coded as 1), while the lack of any ISDS provisions is coded as 0. Over time, the proportion of BITs with strong ISDS has grown significantly; stricter ISDS now tends to be the norm in BITs and other IIAs negotiated since the mid-1990s (see Figure 1).[9] As a result, UNCTAD notes that the number of new cases of ISDS has increased considerably since the mid-1990s (see also Simmons 2014).[10]

[7] By restricting our analysis to BITs and PTAs we may miss a very small number of IIAs that come neither in the form of BITs nor PTAs

[8] Yackee's classification has previously been employed in Berger et al. (2011; 2013).

[9] However, some recent IIAs do not include (strict) ISDS provisions, e.g., IIAs involving the European Union.

[10] The total number of known cases exceeded 500 in 2012. Investors have challenged a broad range of measures by host-country governments, including revocations of licenses, irregularities in public tenders, changes in domestic regulations, withdrawal of subsidies, direct expropriations, and tax measures. For details, see: http://unctad.org/en/PublicationsLibrary/webdiaepcb2013d3_en.pdf (accessed: January 2014).

Pre-establishment NT provisions represent a major aspect of FDI liberalization in IIAs. They restrict the ability of host-country governments to discriminate with respect to the admission of foreign investors. In contrast, IIAs with a national treatment obligation limited to the post-establishment phase do not provide foreign investors with any minimum guarantee of access to the market, and do not imply any removal of barriers to entry. Compared to ISDS, binding obligations in IIAs related to market access, e.g., through the removal of entry barriers, are a more recent and a less common phenomenon in BITs,[11] though more frequent in other IIAs – starting with the North American Free Trade Agreement (NAFTA) in the mid-1990s.

Following Berger et al. (2013), we classify NT provisions in terms of liberalization modalities. Different modalities have important implications for the predictability and security of admission rights, notably by specifying the way in which reservations for non-conforming measures can be maintained. We consider negative-list modalities to offer the most liberal access conditions and use a coding of 3 for IIAs incorporating this approach. In negative-list modalities, measures are considered to be fully compatible with the pre-establishment NT obligation unless specifically provided for in annexes where all non-conforming measures are listed. IIAs using negative-list modalities but without detailed lists of non-conforming measures are coded as 2. Another less liberal modality, coded as 1, offers pre-establishment NT through a positive-list approach, whereby pre-establishment NT only applies to specified services sectors. This modality mimics the approach used under the WTO's General Agreement on Trade in Services (GATS). A code of 0 is used for pairs of countries not bound by pre-establishment NT obligations in IIAs.

Based on the coding of ISDS and NT provisions in IIAs, we construct different dependent dummy variables for our empirical analysis below. Our first dependent variable is simply set to one if a BIT of any type exists between a source-host country pair, and zero otherwise. This resembles earlier studies which completely omit the content of BITs. We then start distinguishing BITs (or IIAs more generally) depending on whether they contain any form of ISDS or pre-establishment NT, but without yet differentiating according to the strictness of ISDS or NT provisions. In the first step, we differentiate between BITs with or without any type of ISDS, in a second step between BITs with or without any ISDS *or* pre-establishment NT, and, thirdly, between IIAs in general (i.e. BITs or PTAs) with or without any ISDS *or* pre-establishment NT.

We then move to differentiating between weak and strong provisions in IIAs. We thus code the same set of dummy dependent variables, but this time additionally distinguishing between BITs with weak versus strong ISDS provision (weak means ISDS code of 1 or 2; strong means ISDS code of 3), BITs with weak versus strong ISDS *or* NT provisions (strong requires either ISDS or NT code of 3, weak is achieved by either ISDS or NT code of 1 or 2), and finally IIAs (i.e. BITs or PTAs) with weak versus strong ISDS *or* NT provisions (similar as before, but this time for either BIT or PTA).

Estimation technique, sample and explanatory variables

We follow the literature and estimate event history models in which dyads are included in the sample until they have signed a BIT or IIA (of a specified stringency), depending on the dependent variable in question, after which they drop out of the sample. We thus estimate the time delay until a treaty has been signed, if at all. We employ a semi-parametric Cox proportional hazard estimator with standard errors clustered on dyads. This estimator has the advantage that it flexibly accounts for changing baseline hazards over time, such as the waves of BIT signing identified by Jandhyala et al. (2011), without a need

[11] However, obligations on market access are a standard feature of BITs concluded by the United States and Canada.

to model these. Explanatory variables shift the flexible baseline hazard in proportion to their effect strengths. We employ the so-called Efron method for handling tied failures, which is a more accurate approximation to the exact marginal likelihood method than the so-called Breslow method (the exact marginal is not possible in our research design since it does not allow standard errors to be clustered) (Cleves et al. 2010: 151).

The date from which a dyad starts accumulating risk (of signing a treaty) is taken as 1959 since in this year the first BIT was signed by Germany and Pakistan. However, because international treaties can only be signed by sovereign nations, a dyad enters the analysis only in the period in which the developing country became independent if it was not already independent in 1978, the start of our sample period.

As mentioned before, the ISDS coding of BITs is taken from Yackee (2009). This coding is available for the 1978-2004 period and, therefore, defines the overall time period covered in our empirical estimations. The coding of BITs and PTAs is based on three-year intervals, hence our estimations are also based on three-year averages, starting with 1978 to 1980 and ending with 2002 to 2004. Dyads drop out of the sample if they have signed a relevant treaty at any point during one of these three-year periods. Importantly, the estimations are based on a large sample of 21 developed source countries, listed in Appendix 1 with information on how many treaties with varying investment provisions they had signed by 2004 with the 87 developing host countries in our sample, listed in Appendix 2. The inclusion of essentially all developing countries in our sample mitigates the sample selection bias that has plagued many studies on BITs and FDI (Berger et al. 2013). Note that our research design uniquely classifies countries as either sources or hosts of FDI. This has apparent disadvantages, but even larger advantages. The advantage of our research design is that we can explicitly model and empirically test our theoretical argument that developing host countries compete with each other for FDI from specific source countries. One seeming disadvantage is that developed source countries are of course also host countries of FDI. However, with very few exceptions developed countries do not conclude BITs with each other. Hence, it is actually an advantage of our research design that they only appear as source countries, not host countries, in our sample since our argument that FDI-competition among developing countries drives the diffusion of BITs clearly does not extend to developed countries. One disadvantage of our research design is that some developing countries such as the Republic of Korea, Mexico or, more recently, China are not only hosts of FDI subject to the competition with other developing countries for FDI from developed countries, but are also sources of FDI. We miss these sources of FDI in our baseline model, but we test the robustness of our inferences to including major developing countries as source rather than host countries. One should also keep in mind that the rise of developing source countries is a relatively recent phenomenon and less prevalent during the period of our study (1978 to 2004) than it is nowadays.

The spatially lagged dependent variables, described in more detail below, represent our explanatory variables of principal interest. In addition, our estimation model contains several control variables which are widely used in the relevant literature (FDI stock data are sourced from Barthel et al. 2010; all other data come from Barthel and Neumayer 2012). First, we control for other treaties concluded by a source-host country pair such as double taxation treaties (DTTs) in all estimations and PTAs in estimations where the dependent dummy variable refers only to BITs. IIAs and DTTs have repeatedly been shown to be complementary contractual arrangements within country pairs. We thus expect a positive effect of DTTs on BIT and PTA conclusion. PTAs often include investment-related provisions, thus offering alternative and substitutive contractual arrangements to agree on ISDS and pre-establishment NT. This suggests a negative effect of PTAs with investment provisions on BIT conclusion. However, as argued by Tobin and Busch (2010), trade liberalization through PTAs tends to be complementary to the protection and liberalization of FDI through BITs. Consequently, the effect of PTAs with investment provisions on BIT conclusion is ambiguous ex ante.

Second, we account for major host-country as well as source-country characteristics. The level of economic development of both countries is captured by their respective log of GDP per capita. As argued by Barthel and Neumayer (2012), two richer countries may have stronger incentives to enter into contractual arrangements. On the other hand, richer source countries and poorer host countries are likely to result in a more unequal dyadic relationship, which in turn may make the signing of a BIT (with strong investment provisions) more likely, following the bargaining perspective. Furthermore, we account for democracy since previous studies have shown that democratic countries are typically more inclined to enter into binding contractual agreements (e.g., Mansfield and Milner 2012; Roy 2011; Mansfield et al. 2008). Finally, we control for the cumulative number of BITs signed by the host country and source country as well as the squared terms of these, respectively (these refer to BITs or to PTAs with investment provisions for estimations in which the dependent variable is constituted of either BITs or PTAs). The two variables control for the general, though time-varying propensity of a country to conclude BITs. A higher general propensity to sign such treaties should make the conclusion of a treaty in a specific dyad under observation more likely though at a decreasing rate. These two sets of control variables are vital to shield the estimates against spuriously detecting evidence for spatial dependence since there is both a trend toward more IIAs and stricter IIAs over time and the values of the spatial lag variables will consequently increase over time.

Third, we account for several pair-specific control variables. We include the difference in (the log of) GDP of the source country to that of the host country, following Allee and Peinhardt's (2014) argument that the larger this difference the more powerful the source country relative to the host country and the more likely it is that the source country can impose its will onto the host country.[12] We also include the share of the source country in total FDI stocks located in the host country. On the one hand, this variable may have a negative effect if the host country agrees to FDI-related provisions in IIAs to attract higher FDI from a particular source that is underrepresented so far. On the other hand, it may have a positive effect if strongly engaged source countries seek better protection through FDI-related provisions in IIAs. Larger geographical distance between the source and the host country can be expected to have a negative effect due to rising transaction and bargaining costs. By contrast, a dummy variable capturing whether at least one country in a dyad has diplomatic representation in the other country reflects closer general political cooperation, which lowers transaction costs and should thus have a positive impact. Appendix 3 reports summary variable descriptive information.

Spatial lag variables

We focus on analyzing the role of FDI-competition driven spatial dependence in the diffusion of IIAs in general and IIAs with stricter FDI-related provisions specifically. Accordingly, we estimate spatial lag models in which the weighted values of the dependent variables, as defined above, for other dyads enter as the explanatory variables of principal interest.

The construction of our spatial lag variables closely maps onto our theoretical argument. Specifically, we suppose that developing host countries *j* compete for FDI from a particular source country *i*. Considering a source-host country pair *ij*, the incentive of *j* to agree to (stricter) IIA provisions with *i* depends on previous agreements that *i* concluded with other host countries *m* that compete with host country *j* for FDI from source country *i*. The weights capture the degree to which such previous agreements of *i* with other host countries *m* matter for *j*. The weights increase in the importance of *i* as a foreign investor in *j*, as

[12] The knowledge-capital model of Carr et al. (2001) suggests the opposite effect as a larger gap between the source and host countries' GDP indicates a lower potential of (horizontal) FDI. Consequently, the source country might have less interest in engaging in negotiations on IIA provisions.

measured by the stock of FDI from country *i* in country *j* as a share of the entire FDI stock in country *j*, and in the importance of competing countries *m* as hosts of FDI from *i*, as measured by the stock of FDI from country *i* in country *m* as a share of the entire FDI stock from country *i* invested abroad in all developing countries. Formally, with Y_{ijt} as the dependent variable, the spatial lag variable is defined as follows:

$$\sum_{m \neq j} \left(\frac{FDIstock_{ijt}}{\sum_{i} FDIstock_{ijt}}\right) \cdot \left(\frac{FDIstock_{imt}}{\sum_{m} FDIstock_{imt}}\right) Y_{imt}$$

This specific target contagion, in the terminology of Neumayer and Plümper (2010), may be exemplified by considering the competition for Japanese FDI among mainly Asian host countries. The incentives of Viet Nam to conclude a BIT with Japan in 2003, one year after the Republic of Korea had concluded a BIT with Japan, were shaped by two factors in our weighting scheme: (i) the relative importance of Japan as one of several foreign investors in Viet Nam, reflecting the extent to which Viet Nam could potentially suffer from FDI diversion due to the BIT of Japan with the Republic of Korea; (ii) the relative importance of the Republic of Korea in Japan's total outward FDI stock, reflecting the extent to which the Republic of Korea is a relevant competitor for Japanese FDI. Obviously, Viet Nam's decision to conclude a BIT with Japan did not only depend on Japan's BIT with the Republic of Korea, but in the same way on BITs that Japan had previously concluded with other host countries, including Russia (1998), Pakistan (1998), Bangladesh (1999) and Mongolia (2001).

We use bilateral FDI stocks as weights to reflect the competition for FDI among host countries. In our view, these weights are clearly superior to trade-related weights used in almost all previous studies (see Section 2). They map much more closely what is at stake in FDI-competition driven spatial dependence. Bilateral FDI stock data have been acquired from UNCTAD's Data Extract Service, supplemented by OECD data. Missing observations are filled with zeros as first approximation unless the source country does not report any FDI stock data in a given year, in which case the observation stays missing (see Barthel et al. 2010 for details).

5. Results

In Table 1, we report our baseline results by considering whether or not a source-host country pair has concluded any BIT (column 1), a BIT with any type of ISDS provisions (column 2), a BIT with either ISDS or pre-establishment NT provisions of any type (column 3), or a BIT or PTA with either ISDS or NT provisions of any type (column 4). In other words, we do not yet account for the degree of strictness of ISDS and pre-establishment NT provisions in BITs and PTAs. The reported "coefficients" are hazard ratios, which are easier to interpret than the coefficients themselves. Hazard ratios above one raise the hazard of a treaty signing, whereas hazard ratios below one reduce this hazard.

Table 1: Determinants of BITs (BITs/PTAs): Baseline results.

	(1) BIT	(2) BIT w ISDS	(3) BIT w ISDS or NT	(4) BIT or PTA with ISDS or NT
Spatial lag	1.038	1.121***	1.121***	1.081**
	(0.0405)	(0.0328)	(0.0327)	(0.0384)
FDI stock of source as share of total FDI in host country	0.794	0.451*	0.444*	0.419*
	(0.298)	(0.200)	(0.196)	(0.203)
DTT	1.019	1.158	1.167	1.223
	(0.119)	(0.151)	(0.152)	(0.159)
PTA	1.023			
	(0.165)			
PTA w/o ISDS (ISDS/NT)		1.017	0.961	
		(0.254)	(0.252)	
PTA with ISDS (ISDS/NT) of any strength		0.975	1.012	
		(0.225)	(0.226)	
Lack of democracy host country	0.920***	0.858***	0.861***	0.866***
	(0.0257)	(0.0292)	(0.0290)	(0.0287)
At least one dyad member has diplomatic representation in other	3.382***	3.213***	3.239***	3.380***
	(0.562)	(0.606)	(0.610)	(0.618)
Difference in ln GDP of source to host country	0.991	1.016	1.023	1.031
	(0.0257)	(0.0303)	(0.0302)	(0.0281)
ln GDP per capita of source country	0.865	1.171	1.216	1.004
	(0.134)	(0.197)	(0.204)	(0.163)
ln GDP per capita of host country	1.060	1.048	1.060	1.016
	(0.0565)	(0.0651)	(0.0655)	(0.0609)
ln distance	0.799***	0.766***	0.767***	0.801***
	(0.0625)	(0.0680)	(0.0666)	(0.0617)
Cumulative number of BITs (BITs/PTAs) source country	1.125***	1.095***	1.094***	1.093***
	(0.0121)	(0.0112)	(0.0110)	(0.0113)
Cumulative number of BITs (BITs/PTAs) source country Squared	0.999***	0.999***	0.999***	0.999***
	(0.000164)	(0.000157)	(0.000156)	(0.000152)
Cumulative number of BITs (BITs/PTAs) host country	1.832***	1.836***	1.830***	1.617***
	(0.0819)	(0.0952)	(0.0949)	(0.0708)
Cumulative number of BITs (BITs/PTAs) host country Squared	0.972***	0.970***	0.970***	0.981***
	(0.00332)	(0.00370)	(0.00367)	(0.00256)
Observations	11,396	11,926	11,926	11,908

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

Strikingly, Table 1 provides first indications that the content of IIAs matters for contagion effects. The estimated hazard ratio of the spatial lag variable is statistically indistinguishable from one when we consider all BITs independent of whether they contain ISDS or pre-establishment NT provisions in column (1).[13] In contrast, the hazard ratios of the spatial lag variables are statistically significantly larger than one once we account for the content of BITs. Specifically, results from column (2) suggest that a developing host country is more likely to agree to ISDS provisions in a BIT with a specific developed source country if other developing host countries competing for FDI from this source country have concluded a BIT with ISDS provisions with the same source country. Substantively, a one unit increase in the spatial lag variable would increase the hazard of such a treaty being signed by 12.1 per cent, a one standard deviation (s.d.) increase by roughly half this size. This is a modest though not negligible effect. Results are almost identical if we analyze contagion in BITs that contain either ISDS or NT provisions in column (3), which is not surprising given that only a small minority of BITs contain NT as opposed to ISDS provisions. Of greater interest are the results reported in column (4) where we similarly look at IIAs with either ISDS or NT provisions, but this time analyzing the diffusion of BITs or PTAs with ISDS or NT provisions, keeping in mind that NT provisions are much more common in PTAs than they are in BITs. The spatial lag with a hazard ratio significantly above one implies that a developing host country is more likely to agree to ISDS or NT provisions in a BIT or PTA with a specific source country of FDI if other developing host countries competing for FDI from this source country have concluded a BIT or PTA with ISDS or NT provisions with the same source country. A one unit increase in this spatial lag variable raises the hazard of signing such a treaty by 8.1 per cent, a one s.d. increase by 4.2 per cent.

In interpreting the results on our control variables, readers need to keep in mind that the control variables counting the cumulative number of IIAs previously signed impose a stringent and conservative specification on the estimations that absorbs a large amount of variation in these variables and render it less likely that explanatory variables have a statistically significant effect. With this in mind, we find that neither DTTs nor PTAs previously concluded have an effect. We similarly find no statistically significant effect of the difference in economic size of the source to host country or of the source or host country's per capita income. We do find, however, that a larger pre-existing share of FDI stock of the source country in the developing host country makes the conclusion of IIAs with investment provisions less likely. Substantively, a one s.d. increase in this variable lowers the hazard by around 7 per cent.

We corroborate previous studies insofar as more democratic host countries appear to be more inclined to enter into binding contractual agreements, with every one unit step toward autocracy on the scale from 1 to 7 lowering the hazard by around 9 per cent. Smaller geographical distance and diplomatic representation of at least one dyad member in the other country both facilitate the conclusion of BITs and BITs/PTAs with ISDS or NT provisions. For every doubling in distance the hazard decreases by between 14 and 20 per cent. By far the strongest single determinant is whether dyad members are diplomatically represented in each other, raising the hazard by between 321 and 338 per cent. Finally, countries with a higher general propensity to sign relevant treaties are more likely to sign such a treaty in a particular dyad under observation but at a decreasing rate, as one would expect.

[13] This result seems to contradict the findings of Elkins et al. (2006) and Neumayer and Plümper (2010) who find evidence for spatial dependence in the formation of BITs independently of whether they contain ISDS or pre-establishment NT provisions. One reason for this conflicting finding might be that we exclusively analyze the more recent BIT signing period and Jandhyala et al. (2011) find that competition among host countries mattered more for BIT signing in the1970-1988 period than more recently.

Table 2: Determinants of BITs with investor-to-state dispute settlement provisions.

	(1) BIT w ISDS	(2) BIT w ISDS	(3) BIT w weak ISDS	(4) BIT w strong ISDS
Spatial lag (from other BITs with ISDS of any strength)	1.121***			
	(0.0328)			
Spatial lag (from other BITs with ISDS of weak strength)		1.147**	1.184**	1.103
		(0.0663)	(0.0824)	(0.0856)
Spatial lag (from other BITs with ISDS of strong strength)		1.071	0.788	1.136*
		(0.0858)	(0.148)	(0.0878)
FDI stock of source as share of total FDI in host country	0.451*	0.456*	0.659	0.463
	(0.200)	(0.204)	(0.332)	(0.250)
DTT	1.158	1.142	1.366**	0.948
	(0.151)	(0.150)	(0.217)	(0.136)
PTA w/o ISDS	1.017	1.041	1.119	1.150
	(0.254)	(0.259)	(0.347)	(0.261)
PTA with ISDS of any strength	0.975			
	(0.225)			
PTA with weak ISDS		0.611	0.563	1.684*
		(0.245)	(0.271)	(0.526)
PTA with strong ISDS		1.345	0.923	0.782
		(0.336)	(0.397)	(0.220)
Lack of democracy host country	0.858***	0.862***	0.872***	0.900***
	(0.0292)	(0.0296)	(0.0352)	(0.0298)
At least one dyad member has diplomatic representation in other	3.213***	3.221***	2.716***	3.244***
	(0.606)	(0.606)	(0.621)	(0.672)
Difference in ln GDP of source to host country	1.016	1.019	1.003	1.098***
	(0.0303)	(0.0305)	(0.0361)	(0.0358)
ln GDP per capita of source country	1.171	1.163	1.276	1.254
	(0.197)	(0.196)	(0.256)	(0.241)
ln GDP per capita of host country	1.048	1.051	1.012	1.128*
	(0.0651)	(0.0653)	(0.0726)	(0.0758)
ln distance	0.766***	0.773***	0.726***	0.977
	(0.0680)	(0.0692)	(0.0769)	(0.0934)
Cumulative number of BITs source country	1.095***	1.095***	1.066***	1.122***
	(0.0112)	(0.0112)	(0.0131)	(0.0133)
Cumulative number of BITs source country squared	0.999***	0.999***	0.999***	0.999***
	(0.000157)	(0.000158)	(0.000208)	(0.000173)
Cumulative number of BITs host country	1.836***	1.861***	1.788***	1.875***
	(0.0952)	(0.0974)	(0.112)	(0.112)
Cumulative number of BITs host country squared	0.970***	0.969***	0.969***	0.970***
	(0.00370)	(0.00369)	(0.00469)	(0.00388)
Observations	11,926	11,926	12,269	12,477

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

In the next step, we differentiate between BITs with weak and strong ISDS provisions. For a start, we maintain the definition from column (2) of Table 1 where the dependent dummy variable and the spatial lag variable refer to BITs with ISDS provisions of any strength and, for ease of comparison, we reproduce this previously reported result in column (1) of Table 2. We then decompose the spatial lag variable into two separate spatially lagged effects of other BITs: (i) those with weak ISDS provisions, and (ii) those

with strong ISDS provisions.[14] As can be seen in column (2), contagion results from other BITs with weak ISDS provisions as long as we maintain BITs with ISDS provisions of any strength as the dependent variable.

In the remainder of Table 2, we differentiate the dependent variable by setting it to one for BITs with weak ISDS provisions in column (3), or for BITs with strong ISDS provisions in column (4). We find that contagion for BITs with weak ISDS provisions derives exclusively from weak BITs of competing host countries with the same source country (column 3), while contagion for BITs with strong ISDS provisions derives exclusively from strong BITs of competing host countries with the same source country (column 4).

The results for the control variables are similar to the estimations reported in Table 1 when the dependent variable refers to BITs with weak ISDS provisions – though the effect of pre-existing FDI stock is no longer statistically significant while the effect of existing DTTs is now statistically significantly positive. There are some notable changes, however, when the dependent variable refers to BITs with strong ISDS provisions. Larger distance between the host and source country of a pair does not discourage this type of BITs. Furthermore, the bargaining perspective now receives some support by the fact that a larger difference in total economic size between the source and host country now significantly increases the hazard of signing BITs with strong ISDS provisions. Richer host countries are also more likely to sign these types of treaties.

While we focused on ISDS provisions of different strength in BITs in Table 2, we achieve essentially the same results when also accounting for pre-establishment NT provisions of different strength in BITs (see Appendix 4 for details). This is hardly surprising given that, as explained in Section 4, pre-establishment NT provisions played a minor role in BITs, compared to ISDS provisions. In other words, the contagion effects of BITs are driven almost exclusively by ISDS provisions.

Finally, we account for the strength of ISDS or pre-establishment NT provisions in BITs *or* PTAs in our definition of dependent variables in Table 3. The spatial lag variables are redefined accordingly. PTA-related control variables are excluded since the content of PTAs is now considered part of the dependent variable. The evidence on spatial dependence is fully consistent with expectations. In particular, we find that FDI-competition driven spatial dependence in IIAs with weak ISDS or NT provisions exclusively stems from other dyads that have signed IIAs with weak provisions, while the spatial dependence in IIAs with strong ISDS or NT provisions exclusively stems from other dyads that have signed IIAs with strong provisions. In fact, not only do IIAs with strong ISDS or NT provisions in other FDI-competing developing countries not increase the hazard of signing IIAs with weak provisions, they even lower the hazard, instead inducing developing countries to sign IIAs with equally strong provisions. Results on the control variables are similar to the ones reported in Table 2, except that larger distance now continues to deter BITs/PTAs with strong ISDS/NT provisions and weak (strong) ISDS/NT provisions become more (less) likely the richer the FDI source country.

[14] Note that we decompose the PTA-related control variable in the same way.

Table 3: Determinants of BITs/PTAs with investor-to-state dispute settlement or national treatment provisions.

	(1) BIT/PTA w ISDS/NT	(2) BIT/PTA w ISDS/NT	(3) BIT/PTA w weak ISDS/NT	(4) BIT/PTA w strong ISDS/NT
Spatial lag (from other BITs/PTAs with ISDS/NT any strength)	1.081**			
	(0.0384)			
Spatial lag (from other BITs/PTAs with ISDS/NT weak strength)		1.035	1.588***	0.876
		(0.183)	(0.264)	(0.0862)
Spatial lag (from other BITs/PTAs with ISDS/NT strong strength)		1.031	0.729**	1.151**
		(0.112)	(0.102)	(0.0787)
FDI stock of source as share of total FDI in host country	0.419*	0.460	0.754	0.709
	(0.203)	(0.224)	(0.418)	(0.354)
DTT	1.223	1.219	1.373**	0.953
	(0.159)	(0.159)	(0.213)	(0.124)
Lack of democracy host country	0.866***	0.866***	0.895***	0.877***
	(0.0287)	(0.0287)	(0.0347)	(0.0267)
At least one dyad member has diplomatic representation in other	3.380***	3.385***	2.193***	2.257***
	(0.618)	(0.619)	(0.460)	(0.382)
Difference in ln GDP of source to host country	1.031	1.031	0.958	1.117***
	(0.0281)	(0.0282)	(0.0304)	(0.0325)
ln GDP per capita of source country	1.004	0.997	1.399*	0.659**
	(0.163)	(0.161)	(0.267)	(0.108)
ln GDP per capita of host country	1.016	1.017	1.021	1.083
	(0.0609)	(0.0608)	(0.0698)	(0.0704)
ln distance	0.801***	0.799***	0.795**	0.706***
	(0.0617)	(0.0628)	(0.0759)	(0.0479)
Cumulative number of BITs/PTAs source country	1.093***	1.093***	1.065***	1.082***
	(0.0113)	(0.0114)	(0.0129)	(0.0118)
Cumulative number of BITs/PTAs source country squared	0.999***	0.999***	0.999***	0.999***
	(0.000152)	(0.000153)	(0.000182)	(0.000165)
Cumulative number of BITs/PTAs host country	1.617***	1.617***	1.573***	1.551***
	(0.0708)	(0.0708)	(0.0775)	(0.0711)
Cumulative number of BITs/PTAs host country squared	0.981***	0.981***	0.981***	0.987***
	(0.00256)	(0.00256)	(0.00294)	(0.00248)
Observations	11,908	11,908	12,269	12,263

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

6. Robustness tests

We now turn to three tests where we analyze whether our inferences are robust to specified changes in the estimation model. We apply these tests to the estimations from Table 3, i.e. where we analyze the strictness of investment provisions in both BITs and PTAs. The Cox estimation model depends on the assumption that covariates shift the flexible baseline hazards proportionally in a time-invariant fashion throughout the estimation period. This assumption can be tested with the help of so-called Schoenfeld residuals. Covariates failing this test need to be interacted with a function of time in order to allow their effect to be time-varying. In Table 4, we have interacted those covariates in each estimation that failed the Schoenfeld test with time. Our results fully withstand this robustness test.

In Table 5, we present results from group-wise jackknives where we once drop the top 6 FDI source countries (France, Germany, Japan, Netherlands, the United Kingdom and the United States) from the sample and once restrict the sample to these top 6 FDI source countries. We apply this group-wise jackknife to the estimation models of columns (1), (3) and (4) of Table 3, i.e. where we analyze IIAs in general according to their varying strengths of ISDS/NT provision. The reason for this robustness test is to see whether the baseline results are driven by the major FDI source countries.

Table 5 shows that this is indeed the case. All evidence for FDI-competition driven spatial dependence disappears if we drop these top 6 FDI source countries from the sample (columns 1, 3, and 5). Conversely, results are similar to the baseline estimations with higher point estimates (though not statistically significantly so) if we restrict the sample to these top 6 FDI source countries (columns 2, 4, and 6). In other words, FDI-competition driven spatial dependence among developing host countries is predominantly about signing BITs/PTAs with ISDS or NT provisions with the top 6 FDI source countries. This is not surprising and indeed further corroborates the FDI-competition driven explanation for spatial dependence.

As mentioned in Section 4, our research design classifies countries either as FDI sources or FDI hosts. There are some developing countries which are both major FDI hosts and, if to a smaller –and for some of these countries substantially smaller – extent, sources of FDI. In a further robustness test, we have re-classified the developing countries for which our data source reports outward FDI stock data (namely, Argentina, Brazil, Chile, Colombia, Malaysia, Mexico, the Republic of Korea, Thailand, Turkey and Venezuela) as FDI source countries rather than FDI host countries. We apply this robustness test to the models of Table 3 again. Results from Table 6 show that our inferences are largely robust to this re-classification of some developing countries. The one exception is that the estimation in column (4) now mirrors the estimation in column (3) in that weak provisions in IIAs of FDI-competitors raise the hazard of a developing country signing a treaty with weak provisions and lower the hazard of signing a treaty with strong provisions and vice versa for strong provisions in IIAs of FDI-competitors.

Table 4. Robustness test: Interacting covariates that fail proportional hazards assumption test with time.

	(1) BIT/PTA w ISDS/NT	(2) BIT/PTA w ISDS/NT	(3) BIT/PTA w weak ISDS/NT	(4) BIT/PTA w strong ISDS/NT
Spatial lag	1.074*			
(from other BITs/PTAs with ISDS/NT any strength)	(0.0408)			
Spatial lag		1.077	1.588***	0.881
(from other BITs/PTAs with ISDS/NT weak strength)		(0.207)	(0.245)	(0.0875)
Spatial lag		1.046e+10	0.686***	1.155**
(from other BITs/PTAs with ISDS/NT strong strength)		(7.467e+11)	(0.0923)	(0.0787)
Spatial lag (from other		0.989		
BITs/PTAs with ISDS/NT strong strength)* time		(0.0353)		
FDI stock of source as share of total FDI in host country	0.455	0.533	2.2e-137***	0.703
	(0.227)	(0.268)	(2.6e-135)	(0.346)
FDI stock of source as share of total FDI in host country			1.171***	
* time			(0.0702)	
DTT	4.236e+61***	2.576e+61***	1.425e+59***	7.467e+53***
	(1.605e+63)	(9.770e+62)	(6.192e+60)	(3.215e+55)
DTT * time	0.931***	0.932***	0.934***	0.940***
	(0.0177)	(0.0177)	(0.0204)	(0.0203)
Lack of democracy host country	0.869***	0.869***	0.895***	5.387e+06
	(0.0286)	(0.0286)	(0.0344)	(5.493e+07)
Lack of democracy host country * time				0.992
				(0.00507)
At least one dyad member has diplomatic representation	3.386***	3.394***	2.240***	2.316***
in other	(0.617)	(0.620)	(0.470)	(0.395)
Difference in ln GDP of source to host country	1.025	1.025	0.948*	1.107***
	(0.0285)	(0.0288)	(0.0304)	(0.0327)
ln GDP per capita of source country	1.082	1.077	1.366	0.662**
	(0.180)	(0.179)	(0.260)	(0.110)
ln GDP per capita of host country	1.010	1.012	0.999	1.076
	(0.0606)	(0.0606)	(0.0682)	(0.0699)
ln distance	0.816***	0.818**	5.08e-27**	0.705***
	(0.0623)	(0.0640)	(1.43e-25)	(0.0482)
ln distance * time			1.031**	
			(0.0146)	
Cumulative number of BITs/PTAs source country	0.000397***	0.000284***	1.063***	1.076***
	(0.00103)	(0.000741)	(0.0129)	(0.0121)
Cumulative number of BITs/PTAs source country * time	1.004***	1.004***		
	(0.00131)	(0.00132)		
Cumulative number of BITs/PTAs source country squared	0.999***	0.999***	1.000**	0.999***
	(0.000276)	(0.000277)	(0.000184)	(0.000171)
Cumulative number of BITs/PTAs host country	34.55	23.17	217.8	1.528***
	(197.3)	(133.3)	(1,464)	(0.0693)
Cumulative number of BITs/PTAs host country * time	0.998	0.999	0.998	
	(0.00286)	(0.00289)	(0.00337)	
Cumulative number of BITs/PTAs host country	0.984***	0.984***	0.984***	0.988***
	(0.00265)	(0.00266)	(0.00309)	(0.00246)
Observations	11,908	11,908	12,269	12,263

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

Table 5. Robustness tests: Group jackknives (eliminating top 6 FDI source countries versus restricting to top 6 FDI source countries).

	(1)	(2)	(3)	(4)	(5)	(6)
	BIT/PTA w ISDS/NT	BIT/PTA w ISDS/NT	BIT/PTA w weak ISDS/NT	BIT/PTA w weak ISDS/NT	BIT/PTA w strong ISDS/NT	BIT/PTA w strong ISDS/NT
Spatial lag (from other BITs/PTAs with ISDS/NT any strength)	1.019	1.405***				
	(0.0988)	(0.155)				
Spatial lag (from other BITs/PTAs with ISDS/NT weak strength)			1.341	1.781***	0.888	0.828
			(1.348)	(0.300)	(0.108)	(0.194)
Spatial lag (from other BITs/PTAs with ISDS/NT strong strength)			0.730	0.947	1.096	1.422***
			(0.541)	(0.159)	(0.102)	(0.148)
FDI stock of source as share of total FDI in host country	0.527	0.374*	3.206	0.464	0.976	0.426
	(1.326)	(0.193)	(5.550)	(0.332)	(1.506)	(0.257)
DTT	1.410**	1.183	1.645**	1.087	1.101	0.962
	(0.239)	(0.247)	(0.350)	(0.272)	(0.186)	(0.211)
Lack of democracy host country	0.888***	0.846***	0.933	0.849***	0.858***	0.968
	(0.0398)	(0.0415)	(0.0499)	(0.0494)	(0.0337)	(0.0483)
At least one dyad member has diplomatic representation in other	3.314***	2.159**	2.066***	1.287	2.185***	3.107**
	(0.705)	(0.803)	(0.525)	(0.541)	(0.423)	(1.378)
Difference in ln GDP of source to host country	1.049	1.099	0.970	0.948	1.126***	1.459***
	(0.0453)	(0.0634)	(0.0502)	(0.0601)	(0.0484)	(0.0988)
ln GDP per capita of source country	0.817	0.0102***	1.430	0.0183***	0.768	0.00173***
	(0.157)	(0.00994)	(0.387)	(0.0233)	(0.142)	(0.00196)
ln GDP per capita of host country	1.144	0.951	1.190*	0.866	1.164*	1.218*
	(0.0956)	(0.0904)	(0.117)	(0.0934)	(0.101)	(0.126)
ln distance	0.816*	0.880	0.849	0.751*	0.724***	1.003
	(0.0886)	(0.113)	(0.118)	(0.117)	(0.0656)	(0.126)
Cumulative number of BITs/PTAs source country	1.127***	0.948**	1.074***	0.929*	1.095***	0.976
	(0.0194)	(0.0250)	(0.0224)	(0.0348)	(0.0194)	(0.0257)
Cumulative number of BITs/PTAs source country	0.999***	1.001	0.999*	1.001*	0.999***	1.000
	(0.000258)	(0.000326)	(0.000296)	(0.000469)	(0.000277)	(0.000305)
Cumulative number of BITs/PTAs host country	1.651***	1.616***	1.667***	1.533***	1.712***	1.569***
	(0.0976)	(0.110)	(0.111)	(0.124)	(0.118)	(0.117)
Cumulative number of BITs/PTAs host country	0.982***	0.979***	0.981***	0.979***	0.982***	0.988***
	(0.00335)	(0.00401)	(0.00385)	(0.00504)	(0.00358)	(0.00389)
Observations	8,510	3,398	8,696	3,573	8,675	3,588

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Columns (1), (3) and (5) without top & FDI source countries; columns (2), (4) and (6) with top 6 FDI countries only.

Table 6: Robustness test: Re-classifying major developing FDI source countries as source rather than host country.

	(1) BIT/PTA w ISDS/NT	(2) BIT/PTA w ISDS/NT	(3) BIT/PTA w weak ISDS/NT	(4) BIT/PTA w strong ISDS/NT
Spatial lag (from other BITs/PTAs with ISDS/NT of any strength)	1.069**			
	(0.0358)			
Spatial lag (from other BITs/PTAs with ISDS/NT of weak strength)		1.592	2.796***	0.684*
		(0.526)	(0.684)	(0.151)
Spatial lag (from other BITs/PTAs with ISDS/NT of strong strength)		0.744	0.408***	1.396**
		(0.176)	(0.0931)	(0.221)
FDI stock of source as share of total FDI in host country	0.466	0.581	0.575	0.728
	(0.220)	(0.272)	(0.348)	(0.317)
DTT	1.310*	1.292*	1.525**	0.946
	(0.184)	(0.183)	(0.250)	(0.135)
Lack of democracy host country	0.884***	0.882***	0.882***	0.890***
	(0.0297)	(0.0297)	(0.0345)	(0.0284)
At least one dyad member has diplomatic representation in other	3.275***	3.270***	2.425***	2.343***
	(0.596)	(0.595)	(0.526)	(0.398)
Difference in ln GDP of source to host country	1.022	1.021	0.966	1.123***
	(0.0291)	(0.0292)	(0.0337)	(0.0332)
ln GDP per capita of source country	2.406***	2.392***	1.941***	1.817***
	(0.240)	(0.239)	(0.233)	(0.168)
ln GDP per capita of host country	1.049	1.054	1.028	1.065
	(0.0656)	(0.0657)	(0.0742)	(0.0757)
ln distance	0.785***	0.784***	0.673***	0.625***
	(0.0642)	(0.0640)	(0.0676)	(0.0449)
Cumulative number of BITs/PTAs source country	1.106***	1.108***	1.061***	1.079***
	(0.0131)	(0.0131)	(0.0157)	(0.0133)
Cumulative number of BITs/PTAs source country squared	0.999***	0.999***	1.000*	0.999***
	(0.000198)	(0.000199)	(0.000250)	(0.000208)
Cumulative number of BITs/PTAs host country	1.517***	1.517***	1.546***	1.519***
	(0.0559)	(0.0557)	(0.0719)	(0.0586)
Cumulative number of BITs/PTAs host country squared	0.986***	0.986***	0.983***	0.988***
	(0.00172)	(0.00171)	(0.00236)	(0.00169)
Observations	16,088	16,088	16,362	16,381

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

7. Conclusion

The number of international investment agreements signed by developing countries with increasingly strict commitments to protect foreign investors and liberalize entry regulations continues to grow, even though the empirical evidence that IIAs are effective in stimulating FDI inflows is ambiguous. This raises the question of why BITs and PTAs containing investment provisions continue to be concluded, and what explains the willingness of developing countries to increasingly agree to strict and binding investment rules at the bilateral and plurilateral level.

Our answer to this question is that the diffusion of BITs and PTAs with stricter investment provisions is fundamentally a self-reinforcing or contagious process, driven by developing host countries acting defensively and agreeing to binding commitments in order to avoid diversion of FDI to competing developing host countries which agreed to similar binding commitments before. To test this hypothesis, we accounted for spatial dependence in the formation of BITs and PTAs with investment provisions in a large sample of developing host countries and developed source countries during the 1978-2004 period. Crucially, in contrast to previous studies, we are the first to employ existing bilateral FDI stocks to closely mirror the causal mechanism of FDI-competition driven spatial dependence that our argument is based upon: existing bilateral FDI stocks capture what is at stake in terms of potential FDI diversion. Equally importantly, we departed from extant literature, which all too often still treats BITs and PTAs as 'black boxes', and we focused on the content of IIAs and the strictness of FDI-related provisions with regard to investor-state dispute settlement (ISDS) and pre-establishment national treatment (NT) of foreign investors.

Our findings robustly support the argument that the increase in BITs and PTAs with stricter ISDS and NT provisions is a contagious process. According to our results, a developing host country is more likely to agree to ISDS or NT provisions in a BIT or PTA with a specific source country if other developing host countries competing for FDI from this source country have concluded a BIT or PTA with ISDS or NT provisions with the same source country. The process is contagious since with every new treaty a developed source country signs with a FDI-seeking developing country the pressure on those holding out rises to similarly sign a treaty with this same developed country.

We also decomposed the spatial lag variable into two separate spatial lags – one capturing spatial dependence coming from other BITs or PTAs with weak ISDS or NT provisions and another one capturing spatial dependence coming from other BITs or PTAs with strong ISDS or NT provisions. This refinement reveals that consistent with our theoretical argument and testable hypotheses contagion for IIAs with weak investment provisions exclusively derives from IIAs of competing host countries with weak provisions, while contagion for IIAs with strong provisions exclusively derives from IIAs of competing host countries with strong provisions. IIAs agreed upon by other FDI-competing developing countries with only weak investment provisions create no incentive to conclude an IIA with strong investment provisions – only IIAs concluded by other developing countries with strong investment provisions induce a country to conclude a treaty with strong provisions. Developing countries are hesitant to give in to stricter investment provisions, they hold out unless their main competitors for FDI from the source country have previously given in to these stricter provisions.

We also find that our results crucially depend on the major FDI source countries (France, Germany, Japan, Netherlands, the United Kingdom and the United States) included in the sample. This corroborates further our argument that the diffusion of IIAs with investment provisions is driven by competition of developing countries for FDI from the major source countries. If our spatial lag variables were spuriously picking up factors that have nothing to do with the concern about FDI diversion, then they should continue to spuriously pick up these factors when the major FDI source countries have been dropped from the sample.

The self-reinforcing nature of FDI-competition driven spatial dependence in the diffusion of IIAs means that we can expect the number of such treaties to rise further. However, it is not likely to be a process that eventually results in an exhaustive web of treaties. For one, our argument is that only the treaty signing behavior of other developing countries with whom one competes for FDI from a specific developed source country matters. Second, and related, each developing country will have to consider whether the pressure to conclude an IIA with a specific developed country is worth the cost in terms of loss of sovereignty. These caveats notwithstanding, we predict there will be a further mushrooming of IIAs for some time. Despite the failure of the OECD's MAI negotiations and the lack of agreement to put investment on the WTO's negotiating agenda, the developed countries may eventually get close to their objective of a comprehensive web of IIAs with increasingly stricter investment provisions with those developing countries that compete with each other as hosts of their FDI. Though likely not a deliberate strategy on the part of developed countries, a contagious process has been set in motion that will continue to bind a greater number of countries to deeper investment rules over time.

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Appendix 1 – List of source countries of FDI in sample and the number of treaties with hosts in 2002-04.

	BIT	BIT w weak ISDS	BIT w strong ISDS	BIT/PTA w weak ISDS/NT	BIT/PTA w strong ISDS/NT
Australia	17	12	5	12	5
Austria	33	6	27	7	30
Belgium-Luxembourg	41	9	26	10	30
Canada	19	1	17	1	19
Denmark	33	4	27	5	30
Finland	36	5	26	6	27
France	49	5	38	6	41
Germany	68	3	35	4	38
Iceland	5	0	0	2	10
Ireland	1	0	0	1	10
Japan	10	7	1	8	1
Netherlands	48	10	34	11	36
New Zealand	1	0	0	0	0
Norway	17	2	12	4	16
Portugal	25	0	0	1	10
Spain	44	4	34	5	36
Sweden	39	3	28	4	32
Switzerland	64	5	39	7	39
United Kingdom	57	8	46	9	50
United States	29	0	27	2	29

Appendix 2 – List of host countries of FDI in sample

Albania, Algeria, Angola, Argentina, Azerbaijan, Bangladesh, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Cameroon, Chile, China, Colombia, Congo (Republic), Costa Rica, Croatia, Czech Republic, Côte d'Ivoire, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Estonia, Ethiopia, Gambia, Ghana, Guatemala, Guinea, Guyana, Haiti, Honduras, Hungary, India, Indonesia, Israel, Jordan, Kazakhstan, Kenya, Latvia, Lithuania, Madagascar, Malaysia, Mali, Mauritius, Mexico, Mongolia, Morocco, Mozambique, Namibia, Nicaragua, Niger, Nigeria, Oman, Pakistan, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Romania, Russian Federation, Saudi Arabia, Senegal, Seychelles, Slovakia, Slovenia, Sri Lanka, The Republic of Korea, Sudan, Swaziland, Syrian Arab Republic, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Uganda, Ukraine, Uruguay, Venezuela, Viet Nam, Zambia, Zimbabwe.

Appendix 3 - Descriptive Variable Statistics.

	N	Mean	s.d.	Min	Max
BIT	11396	0.047	0.212	0	1
Spatial lag (from other BITs)	11396	0.090	0.579	0	21.887
BIT with ISDS	11926	0.035	0.185	0	1
Spatial lag (from other BITs with ISDS of any strength)	11926	0.070	0.510	0	21.88652
BIT with weak ISDS	12269	0.023	0.150	0	1
Spatial lag (from other BITs with ISDS of weak strength)	12269	0.033	0.324	0	17.751
BIT with strong ISDS	12477	0.029	0.169	0	1
Spatial lag (from other BITs with ISDS of strong strength)	12477	0.045	0.310	0	9.552
BIT with ISDS or NT	11926	0.036	0.185	0	1
Spatial lag (from other BITs with ISDS or NT of any strength)	11926	0.071	0.513	0	21.886
BIT with weak ISDS or NT	12288	0.022	0.148	0	1
Spatial lag (from other BITs with ISDS or NT of weak strength)	12288	0.029	0.321	0	17.751
BIT with strong ISDS or NT	12470	0.030	0.170	0	1
Spatial lag (from other BITs with ISDS or NT of strong strength)	12470	0.048	0.320	0	9.552
BIT/PTA with ISDS or NT	11908	0.037	0.188	0	1
Spatial lag (from other BITs/PTAs with ISDS or NT of any strength)	11908	0.076	0.518	0	21.886
BIT/PTA with weak ISDS or NT	12269	0.024	0.153	0	1
Spatial lag (from other BITs/PTAs with ISDS or NT of weak strength)	12269	0.033	0.330	0	17.751
BIT//PTA with strong ISDS or NT	12263	0.035	0.184	0	1
Spatial lag (from other BITs//PTAs with ISDS or NT of strong strength)	12263	0.093	0.644	0	27.473
FDI stock of source as share of total FDI in host country	11396	0.027	0.126	0	1
DTT	11396	0.195	0.396	0	1
PTA	11396	0.030	0.170	0	1
PTA w/o ISDS	11926	0.016	0.127	0	1
PTA with ISDS of any strength	11926	0.015	0.123	0	1
PTA w/o ISDS or NT	11926	0.014	0.118	0	1
PTA with ISDS or NT of any strength	11926	0.017	0.131	0	1
PTA with weak ISDS	12269	0.006	0.076	0	1
PTA with strong ISDS	12477	0.017	0.128	0	1
PTA with weak ISDS or NT	12288	0.003	0.053	0	1
PTA with strong ISDS or NT	12470	0.025	0.156	0	1
Lack of democracy host country	11396	4.198	1.923	1	7
At least one dyad member has diplomatic representation in other	11396	0.612	0.487	0	1
Difference in ln GDP of source to host country	11396	282.206	1329.302	0.008	27939.850
ln GDP per capita of source country	11396	9.858	0.389	8.667	10.556
ln GDP per capita of host country	11396	6.964	1.148	4.437	9.794
ln distance	11396	8.870	0.579	5.483	9.870
Cumulative number of BITs host country	11396	12.689	14.435	0	68
Cumulative number of BITs source country	11396	2.718	3.339	0	17

Appendix 4 - Determinants of BITs with investor-to-state dispute settlement or national treatment provisions.

	(1) BIT w ISDS/NT	(2) BIT w ISDS/NT	(3) BIT w weak ISDS/NT	(4) BIT w strong ISDS/NT
Spatial lag (from other BITs with ISDS/NT any strength)	1.121***			
	(0.0327)			
Spatial lag (from other BITs with ISDS/NT weak strength)		1.141**	1.253***	1.028
		(0.0667)	(0.0902)	(0.110)
Spatial lag (from other BITs with ISDS/NT strong strength)		1.101	0.644*	1.159**
		(0.0768)	(0.158)	(0.0873)
FDI stock of source as share of total FDI in host country	0.444*	0.440*	0.510	0.514
	(0.196)	(0.195)	(0.311)	(0.272)
DTT	1.167	1.161	1.396**	0.955
	(0.152)	(0.152)	(0.225)	(0.137)
PTA w/o ISDS/NT	0.961	0.952	0.899	1.154
	(0.252)	(0.250)	(0.300)	(0.285)
PTA with ISDS/NT of any strength	1.012			
	(0.226)			
PTA with weak ISDS/NT		1.709	3.458**	1.924
		(0.957)	(1.989)	(0.873)
PTA with strong ISDS/NT		0.920	0.742	0.871
		(0.211)	(0.252)	(0.222)
Lack of democracy host country	0.861***	0.859***	0.873***	0.895***
	(0.0290)	(0.0292)	(0.0355)	(0.0295)
At least one dyad member has diplomatic representation	3.239***	3.237***	2.637***	3.245***
in other	(0.610)	(0.610)	(0.610)	(0.671)
Difference in ln GDP of source to host country	1.023	1.028	0.984	1.117***
	(0.0302)	(0.0305)	(0.0354)	(0.0361)
ln GDP per capita of source country	1.216	1.202	1.213	1.230
	(0.204)	(0.202)	(0.241)	(0.233)
ln GDP per capita of host country	1.060	1.056	0.996	1.131*
	(0.0655)	(0.0656)	(0.0723)	(0.0763)
ln distance	0.767***	0.755***	0.686***	0.950
	(0.0666)	(0.0665)	(0.0701)	(0.0929)
Cumulative number of BITs source country	1.094***	1.095***	1.068***	1.117***
	(0.0110)	(0.0111)	(0.0131)	(0.0131)
Cumulative number of BITs source country squared	0.999***	0.999***	0.999***	0.999***
	(0.000156)	(0.000157)	(0.000205)	(0.000173)
Cumulative number of BITs host country	1.830***	1.825***	1.757***	1.892***
	(0.0949)	(0.0953)	(0.109)	(0.113)
Cumulative number of BITs host country squared	0.970***	0.971***	0.970***	0.969***
	(0.00367)	(0.00371)	(0.00461)	(0.00387)
Observations	11,926	11,926	12,288	12,470

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