Are stricter investment rules contagious?: host country competition for foreign direct investment through international agreements

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

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Abstract: We argue that competitive diffusion is a driver of the trend toward international investment agreements (IIAs) with stricter investment rules, 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

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 is ambiguous.[1] As noted by Swenson (2005), it is therefore not obvious that developing countries[2] 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

[1] 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).

[2] 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.

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 is a driver of the diffusion 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.

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. At the same time, though not at the core of our theoretical argument, we control for potential spatial dependence among FDI source countries, too. These are not subject to the same competitive pressure amongst themselves that FDI host countries are. However, since net FDI exporters are always interested in more stringent provisions, their incentive to pressure a host country into providing such provisions for one's own investors increases if the host is an important location of the source country's FDI and if it has previously been willing to grant such provisions to other FDI source countries. Having provided stricter provision to a larger number of other FDI source countries makes it harder to defend a host country's resistance to extend such provisions to this FDI source country, too.

Empirically, we are the first to employ existing bilateral FDI stocks as the most directly relevant measure of what is at stake in terms of potential FDI diversion as weights in the construction of the spatial lags that capture competition among developing countries. Existing FDI stocks track 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 among FDI host countries. 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 three 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

Until recently the extant 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 preferential trade agreements (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 as weights to construct the spatial lag, and FDI-related provisions in IIAs and FDI diversion are rarely considered. However, a few recent contributions to the literature on PTA formation differentiate between PTAs of different depth or strength, as we do in the following for FDI-related provisions in IIAs. Baldwin and Jaimovich (2012) stress that there are important differences in contagion for relatively shallow trade agreements and deeper custom unions.[3] Dür et al. (2014) considerably refine the differentiation between PTAs of varying depth, inter alia by constructing an additive index that combines several key treaty characteristics, including investment liberalizations and dispute settlement.[4] According to the empirical findings of Dür et al. (2014), the trade effects of PTAs are mainly driven by deep agreements.

The logic of why countries do not decide in isolation on trade agreements can easily be transferred to the conclusion of IIAs. 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"

[3] Baldwin and Jaimovich (2012) show that, in contrast to custom unions, the gains from signing a free trade agreement with a given partner country are decreasing in the number of free trade agreements the partner country already has.

[4] Various indicators are considered to define the depth of each of the key characteristics. For instance, investment agreements may contain provisions on expropriation, transfers, minimum standard of treatment, most-favoured-nation treatment, as well as non-discrimination for pre- and post-establishment operations.

(page 811). 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. The same holds for the decision of a developed source country to sign a BIT with a developing host country: it is only affected by other source countries' BITs with the *same* host country, rather than other source countries' BITs with *any* host country. Neumayer and Plümper (2010) thus find that what matters is what they term specific target and specific source contagion, whereas aggregate target and source contagion does not. 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.[5] 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.[6]

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 here. 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

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

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

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 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 resources 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.

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 of, in the terminology of Neumayer and Plümper (2010), *specific target contagion*:

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.

On the part of developed countries we argue 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. In other words, Germany has little reason to act defensively against a prior move of the UK. This implies that developed source countries are not subject to the same competitive pressure that developing host countries are.

Nevertheless, the fact that a specific host country has granted other FDI exporters stricter investment protection provisions does not leave the utility maximizing calculus of FDI source countries unaffected. True, they always have an incentive to lobby and even pressure host

countries to provide its own investors with investment protection provisions. However, seeing that a larger number of other FDI exporters have been granted similar provisions will increase the incentive of the FDI source country in question to pressure the specific FDI host country to extend the same provisions to its own investors. This incentive will be the larger the more important the FDI host country is as a location for the developed source country's foreign investment. In other words, despite the lack of competitive pressure amongst themselves, there is nevertheless likely to be spatial dependence amongst FDI source countries in relation to specific FDI host countries. We therefore predict as our third hypothesis *specific source contagion*:

Hypothesis 3. IIAs with weak (strong) investment provisions signed by a specific developing host country with a larger number of other developed source countries increases the incentive of a developed source country to exert pressure on the host country to also sign an IIA with weak (strong) provisions if the developing host country is an important location of the developed source country's foreign investment.

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. This is due to the fact that the typical investment protection obligations (e.g., expropriation) that form the core of most IIAs would have limited value if not backed by a mechanism allowing affected investors to seek compensation for damages suffered as a result of a breach of the treaty. As noted by the OECD (2006, p. 170), "this mechanism gives practical significance to the treaties and enables them to guarantee an effective protection of investments and foreign investors". 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

[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

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]

IIAs have evolved over time from the traditional focus on investment protection towards the inclusion of more comprehensive liberalization provisions. Pre-establishment NT provisions represent the key aspect of FDI liberalization in IIAs. They restrict the ability of host-country governments to discriminate with respect to the admission of foreign investors and can lead to new market access (Hoekman and Newfarmer 2005). 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 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.

[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. For details, see: http://unctad.org/en/PublicationsLibrary/webdiaepcb2013d3_en.pdf (accessed: January 2014).
[11] However, obligations on market access are a standard feature of BITs concluded by the United States and Canada.

(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) and IIAs (i.e. BITs or PTAs) 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).

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.[12] 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 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 IIAs can only be signed by nations with power to sign international treaties, 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.[13]

[12] This estimation technique produces almost identical results as a conditional logit estimator with period fixed effects (Beck et al. 1998).

[13] Our definition of independence is either full political independence or being independent in the sense of having signed international treaties like double taxation treaties (see Barthel and Neumayer 2012).

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 for specific target contagion and specific source contagion. 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 South 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 relevant IIAs signed by the host country and source country as well as the squared terms of these, respectively. 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. 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. The same goes for dummy variables capturing whether the developed source and the developing host

country were previously in a colonial relationship with each other and whether the same language is spoken by at least 9 per cent of the population in both countries. Appendix 3 reports summary variable descriptive information.

Spatial lag variables

We focus on analyzing the role of 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. Our first two and principal hypotheses refer to specific target contagion among developing host countries, whereas our third hypothesis refers to specific source contagion among developed source countries.

For contagion among developing host countries, 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 specific 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 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 for *specific target contagion* is defined as follows (see also Appendix 4):

$$\sum_{m \neq j} \left[\left(\frac{FDIstock_{ijt}}{\sum_{i} FDIstock_{ijt}} \right) \cdot \left(\frac{FDIstock_{imt}}{\sum_{m} FDIstock_{imt}} \right) \cdot 100 \right] Y_{imt}$$

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 when South 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 South Korea; (ii) the relative importance of South Korea in Japan's total outward FDI stock, reflecting the extent to which South 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 South 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 superior to weights based on trade relations, let alone weights based on geographical distance, used in almost all previous studies (see Section 2). This is not to ignore that the reliability of available FDI data suffers from several shortcomings. Many developing host countries are unlikely to adhere to international best practices in FDI data reporting. In particular, book values at historical costs appear to be often used as proxies of the market value of FDI stocks. All the same, there are good reasons to prefer bilateral FDI stocks

over bilateral trade as weights in the construction of the spatial lag variables when assessing host-country competition for FDI through international agreements. As discussed in more detail in Appendix 5, it can reasonably be assumed that decision makers in the host countries refer to relevant, though less precisely measured FDI data – rather than more reliable, though less relevant trade data – to identify important competitors for FDI and important source countries of FDI. In other words, we argue that decision makers would opt for the available information on FDI which maps more closely than trade data 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). While it cannot be ruled out completely that zero observations result from incomplete reporting, we reduce the risk of 'fake' zeros by considering period averages of inward FDI stocks. Furthermore, missing entries in the reporting of FDI by host countries are unlikely for major sources of their inward FDI. Conversely, missing entries are most likely for minor sources of their inward FDI. This implies that our measure of specific target contagion is unlikely to be seriously biased because of incomplete reporting.[14]

For specific contagion among developed source countries, the specification of our spatial lag variables is simpler due to the absence of competitive pressure for FDI among developed source countries. Considering again a source-host country pair *ij*, the incentive of source *i* to pressure host *j* to accept (stricter) IIA provisions with *i* increases with a larger number of such provisions previously agreed upon by *j* with other source countries *k* and with the importance that host *j* has as a location for the export of investment from source *i*, approximated by the share of total

[14] See Appendix 5 for details.

outward FDI from source *i* that goes to host *j*. Hence, formally, the spatial lag variable for *specific source contagion* is defined as follows:

$$\sum_{k \neq i} \left[\left(\frac{FDIstock_{ijt}}{\sum_{j} FDIstock_{ijt}} \right) \cdot 100 \right] \cdot Y_{kjt}$$

Note that the spatial lag variables are positively correlated with each other but not to an extent that would cause concerns with multicollinearity. Hence, we can include target and source contagion spatial lag variables simultaneously. We normalize all spatial lag variables to fall into the 0 to 1 range by dividing their value by the maximum value of the original scale.

5. Results

In Table 1, we analyze 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. For interpreting substantive effects, the reported coefficients are easily converted into hazard ratios by taking their exponential. Hazard ratios above one raise the hazard of a treaty signing, whereas hazard ratios below one reduce this hazard.

Table 1 about here

Table 1 provides a first indication that FDI competition driven contagion among developing host countries matters. Specifically, results suggest that a developing host country is more likely to agree to a BIT, a BIT with ISDS or a BIT with ISDS or NT provision or, finally, a BIT or PTA

with ISDS or NT provision with a specific developed source country if other developing host countries competing for FDI from this source country have done so with the same source country. Substantively, a one standard deviation (s.d.) increase in the spatial lag variable would increase the hazard of any BIT being signed by 1.046 and thus by 4.6 per cent, of a BIT with ISDS or ISDS or NT provision being signed by 7 per cent and a BIT or PTA signed with ISDS or NT provision by 5.4 per cent. This is a modest though not negligible effect. In contrast to contagion among developing countries, we find no statistically significant evidence for spatial dependence among developed source countries.

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 10 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 between 8 to 14 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 one unit

increase in the natural log of distance the hazard decreases by between 13 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 329 to 343 per cent. By contrast, a former colonial relationship and a common language spoken in both countries do not matter. 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. For reasons of space constraints, we no longer report results on the control variables in any of the estimations that follow but full results are made available in the replication data and do-file.

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 differentiate the dependent variable by setting it to one for BITs with weak ISDS provisions in column (2), or for BITs with strong ISDS provisions in column (3) and, accordingly, 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.[15]

Table 2 about here

We find that contagion for BITs with weak ISDS provisions derives exclusively from BITs with weak provisions of competing host countries with the same source country, not from BITs with strong provisions (column 2), with a one s.d. increase in this spatial lag variable raising the hazard by 4.8 per cent. Distinguishing between ISDS provisions of different strengths, for the first time we find a statistically significant effect of the source contagion spatial lag variable.

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

Specifically, a BIT with weak ISDS provisions becomes more likely if the specific developing host country, in which the source country has invested a large share of its foreign investments, has concluded more BITs with weak ISDS provisions with other developed source countries. Substantively, a one s.d. increase in this spatial lag variable raises the hazard by 6.4 per cent. In contrast to weak ISDS provisions, we find no statistically significant evidence for spatial dependence of either type in the conclusion of BITs with strong ISDS provisions (column 3).[16]

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 (results not reported). 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.

More interestingly, 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. Moreover, we need to exclude a very small number of PTAs both in the construction of the dependent and, consequently, the spatial lag variables. These are observations in which the PTA conclusion followed a strictly plurilateral rather than bilateral process.[17] Failure to exclude these plurilateral PTAs could lend spurious support to the hypotheses of spatial dependence.

[16] The results for the control variables are similar to the estimations reported in Table 1 (detailed results not reported). Of note, however, the bargaining perspective now receives some support when the dependent variable refers to BITs with strong ISDS provisions 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.

[17] Namely, the two PTAs between the countries of the European Free Trade Area (Norway, Iceland, Switzerland, Liechtenstein) and Mexico and Chile, respectively; the PTA between the EU-15 countries and Mexico as well as EU enlargement agreements involving countries that in our sample are classified as developing host countries.

Once we account for the strength of ISDS or pre-establishment NT provisions in BITs *or* PTAs in our definition of dependent variables, the evidence on spatial dependence in the form of target contagion among FDI-competing developing host countries 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, with a one s.d. increase in this spatial lag variable increasing the hazard by 14.9 per cent; while the spatial dependence in IIAs with strong ISDS or NT provisions exclusively stems from other dyads that have signed IIAs with strong provisions, with a one s.d. increase resulting in a 10.7 per cent increase in hazard. In fact, not only do IIAs with weak ISDS or NT provisions in other FDI-competing developing countries not increase the hazard of signing IIAs with strong provisions, they even lower the hazard.

Table 3 about here

As with BITs with investment provisions, we find some evidence for specific source contagion for weak investment provisions. As before, a larger number of weak provisions granted to other investors by a specific developing host country that is an important location for one's foreign investment makes it more likely that a source country will achieve similar protection for its own investors (a one s.d. increase in this spatial lag variable raises the hazard by 12.4 per cent). Moreover, the pre-existence of strong provisions renders the conclusion of an IIA with weak provision less likely (lowering the hazard by 13.6 per cent for a one s.d. increase). In contrast to specific target contagion, there is however no statistically significant effect for spatial dependence among developed FDI source countries for the conclusion of IIAs with strong

provisions. The only spatial dependence that matters for these types of IIAs is the FDI-competition driven spatial dependence among developing host countries.[18]

6. Robustness tests

We now turn to additional tests where we analyze whether our inferences are robust to specified changes in the estimation strategy. 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.

In Table 4, 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. The reason for this robustness test is to see whether the baseline results are predominantly driven by the major FDI source countries.[19] Table 4 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 different) 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.

[18] 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.

[19] In addition, restricting the source country sample to the top 6 FDI sources mitigates the problem of potentially unreported bilateral FDI stocks and, thus, reduces the number of FDI observations set to zero (see Appendix 5 for details).

Table 4 about here

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 those developing countries for which our data source reports major outward FDI stocks (namely, Brazil, Chile, Malaysia, Mexico and South Korea) as FDI source countries rather than FDI host countries.[20] Results from Table 5 show that our inferences are fairly robust to this re-classification of some developing countries as far as target contagion spatial lag variables are concerned. None of the source contagion spatial lag variables are statistically significant in this test.

Table 5 about here

Some developing countries could only sign international treaties after 1978, the start of our analysis, and therefore enter the sample after the initial period. To check whether this affects our results, we restricted the sample and the construction of the spatial lag variables to countries already independent in 1978. Table 6 shows that our results are fully robust to this test.

Table 6 about here

For the results reported in Table 7, we replaced FDI stocks with bilateral trade as the connectivity variable for the construction of the spatial lags. Specifically, we use the host country's exports to the source country to construct the spatial lag variable for specific target contagion and the exports of the source country to the host country to construct the spatial lag variable for specific source contagion.

[20] We consequently exclude the plurilateral PTA among members of the Association of Southeast Asian Nations.

There is no evidence for target contagion in Table 7. This is not necessarily inconsistent with the findings of previous studies, notably Elkins et al. (2006) as well as Neumayer and Plümper (2010), that are more in line with the stronger benchmark results on specific target contagion in column 1 of Table 3 than with the results in Table 7. While the methodological approach of Neumayer and Plümper (2010) is closest to our approach, there are important differences in the specification of spatial lag variables. Neumayer and Plümper employ export-product competition (i.e., the similarity between countries' export products) as the weighting variable, rather than export-market competition. Moreover, country samples as well as periods of observations differ considerably between the studies. It is particularly noteworthy in this context that the analyses of Elkins et al. (2006) and Neumayer and Plümper (2010) range further back into the 1960s and early 1970s, respectively, while our analysis starts only in 1978 because of data limitations with regard to variables of major interest in the present context. Moreover, in additional estimations (not shown for the sake of brevity), we distinguished between the top 6 FDI source countries and other source countries as in Table 4 but continuing to employ exports as weights in the construction of spatial lag variables. For the group of other source countries there is evidence for target contagion ~~fully~~ in line with our main estimations from columns 1 and 2 of Table 3. For the group of top 6 FDI source countries, we find significantly positive effects for target contagion from IIAs with strong ISDS or NT on the propensity to conclude an IIA with either weak or strong provisions. While not entirely consistent with our main estimations, there is thus some evidence for target contagion even with exports as weights in the spatial lag construction once we split the group of source countries into two.

Importantly, the comparison with previous studies and the weaker evidence for target contagion do not point to particular weaknesses in our FDI data used as weights. We have argued that despite the measurement error in the FDI stock variable, it is a more appropriate connectivity

variable to use for determining weights in the construction of the spatial lag variables for the purpose of testing our main hypotheses. The weaker results on specific target contagion when we employ exports as the weighting variable in the construction of the spatial lags support the view that decision makers in the host countries are more likely to refer to relevant, though less precisely measured information on FDI to identify important competitors and important source countries of FDI, which is relevant for our first two hypotheses on specific target contagion.

In contrast to specific target contagion, the evidence on specific source contagion is somewhat stronger in Table 7 than in Table 3. This is plausible, recalling from Section 3 that it does not necessarily create a competitive disadvantage for a particular source country when another source country succeeds in convincing a specific host country to accept (strict) investment provisions in an IIA. However, the underlying assumption that a source country has little reason to react defensively against a prior move of another source country toward stricter FDI provisions with a host country that is relatively important in terms of FDI relations is less likely to hold when the importance of host countries is assessed in terms of trade relations. When using source country exports as weights for specific source contagion, the perception of decision makers as well as multinational enterprises is more likely to focus on possible complementarities between FDI and trade. Competitive disadvantages in terms of losing export opportunities to multinational enterprises from other source countries are then more likely to enter the economic and political calculus of pressing host countries to accept strict IIAs once other source countries have succeeded in this respect.[21]

[21] Distinguishing between the top 6 FDI source countries and other source countries, the pattern of export-weighted specific source contagion essentially holds for both groups of source countries (results not shown). In particular, the evidence for specific source contagion continues to be stronger than for the benchmark results with FDI-weighted spatial lags.

Table 7 about here

For the next robustness test, we return to the preferred approach of calculating spatial lags based on FDI stocks. However, we subtract from any year's FDI stock the value of FDI stocks from 10 years prior. In other words, we take only into account the stock from the previous 10 years and then re-calculate the spatial lags.[22]In this way, we mitigate the impact of older FDI stocks for identifying important competitors and important source countries of FDI.[23] The evidence on specific target contagion reported in Table 8 proves to be just slightly weaker than the results in Table 3 for IIAs with strong FDI-related provisions, while the evidence for IIAs with weak provisions is hardly affected. This implies that older FDI stocks are unlikely to bias our results towards finding evidence for specific target contagion.

Table 8 about here

All estimates so far are based on a semi-parametric Cox proportional hazards model, which is appropriate for the dependent variables. For the results reported in Table 9 we switch to ordinary least squares (OLS). OLS has well known disadvantages for limited dependent variables. But it also offers the advantage that we are able to include dyad and period fixed effects and to cluster standard errors not merely on dyads but to employ three-way clustered standard errors (following Cameron et al. 2011), namely clustered simultaneously on dyads, as well as on host countries and on source countries. Table 9 shows that our results are largely robust to this rather dramatic departure from our previous estimation strategy. Most importantly, we continue to find evidence for target contagion in column 1. A one standard deviation increase in this variable increases the

[22] This implies that our sample can only start in 1987, instead of 1978, in this robustness test. We truncate to zero in case this value is negative, which happens in 0.56% of cases.

[23] As discussed in more detail in Appendix 5, the impact of older FDI stocks is already reduced to the extent that reporting countries adhere to internationally agreed best practices of accounting for accumulated depreciation to arrive at net property, plant and equipment values.

expected value of an IIA with ISDS or NT provisions by almost 12 per cent. This is much higher than the estimate of 5.4 per cent using the Cox proportional hazard model. The substantive estimates are closer to the baseline model once we distinguish between IIAs with weak and strong provisions, however. We continue to find evidence for target contagion from other hosts having concluded treaties with weak provisions for the conclusion of similar treaties with weak provisions by the dyad under observation in column 2. A one standard deviation increase in this variable increases the expected value of an IIA with weak ISDS or NT provisions by 11.4 per cent, while our estimate based on the Cox proportional hazard model estimated this to be 14.9 per cent. Similarly, we continue to find evidence for target contagion from treaties with strong provisions for the conclusion of BITs and PTAs with strong investment provisions in column 3. A one standard deviation increase in this variable increases the expected value of an IIA with strong ISDS or NT provisions by 7.7 per cent, while our estimate based on the Cox proportional hazard model estimated this to be 10.7 per cent.

Table 9 about here

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 both among developed source countries and developing host countries 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 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 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 variables 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 first and second 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 some evidence for spatial dependence among developed source countries, consistent with our third hypothesis, in that a larger number of IIAs with weak investment provisions concluded by a specific developing country with other developed source countries raises the likelihood that a developed country will manage to conclude a similar treaty with this developing country. However, when we do not distinguish among treaties according to the strength of their investment provisions we find evidence only for target contagion among developing host countries. The same is true for our analysis of IIAs with strong investment provisions, except in two of the robustness tests. FDI-competition driven spatial dependence among developing host countries thus clearly dominates spatial dependence among developed source countries as the more consistent driver of the diffusion of such treaties.

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 protection rules over time.

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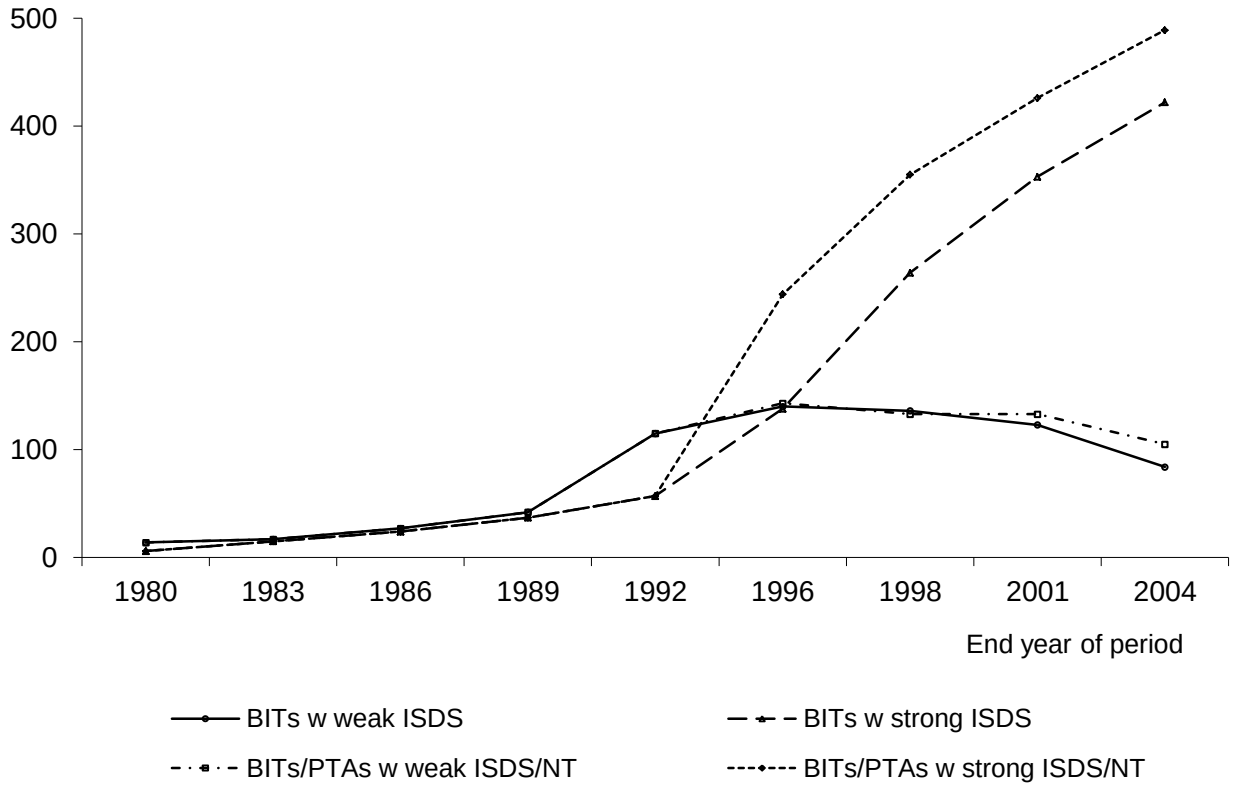
Figure 1. Diffusion of international investment agreements over time.



Note: For variable definitions, see Section 4.

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
Target (host) country contagion spatial lag	1.690**	2.887***	2.859***	2.213**
	(0.793)	(0.812)	(0.800)	(0.922)
Source country contagion spatial lag	-1.417	-0.523	-0.449	-0.165
	(1.161)	(1.098)	(1.065)	(1.089)
FDI stock of source as share of total FDI in host country	-0.280	-0.808*	-0.834*	-0.938*
	(0.374)	(0.451)	(0.451)	(0.492)
DTT	0.0442	0.128	0.129	0.186
	(0.120)	(0.135)	(0.135)	(0.135)
PTA	0.0140			
	(0.164)			
PTA w/o ISDS (ISDS/NT)		0.0146	-0.0430	
		(0.250)	(0.261)	
PTA with ISDS (ISDS/NT) of any strength		-0.0223	0.0187	
		(0.233)	(0.225)	
Lack of democracy host country	-0.0800***	-0.154***	-0.151***	-0.148***
	(0.0280)	(0.0342)	(0.0338)	(0.0338)
At least one dyad member has diplomatic representation in other	1.233***	1.190***	1.197***	1.204***
	(0.167)	(0.189)	(0.189)	(0.183)
Former colonial relationship	-0.193	0.281	0.344	0.395
	(0.304)	(0.329)	(0.312)	(0.306)
Common language spoken	-0.0578	-0.231	-0.236	-0.229
	(0.179)	(0.202)	(0.199)	(0.198)
Difference in ln GDP of source to host country	-0.00365	0.0187	0.0245	0.0361
	(0.0269)	(0.0308)	(0.0303)	(0.0282)
ln GDP per capita of source country	-0.166	0.168	0.210	0.176
	(0.156)	(0.170)	(0.169)	(0.164)
ln GDP per capita of host country	0.0639	0.0508	0.0622	0.0211
	(0.0532)	(0.0619)	(0.0614)	(0.0601)
ln distance	-0.215***	-0.253***	-0.250***	-0.208***
	(0.0796)	(0.0899)	(0.0878)	(0.0788)
Cum. number of BITs (BITs/PTAs) source country	0.117***	0.0896***	0.0894***	0.0854***
	(0.0109)	(0.0103)	(0.0101)	(0.0104)
Cum. number of BITs (BITs/PTAs) source country squared	-0.00109***	-0.000865***	-0.000875***	-0.000815***
	(0.000163)	(0.000158)	(0.000156)	(0.000153)
Cumulative number of BITs (BITs/PTAs) host country	0.606***	0.609***	0.606***	0.505***
	(0.0444)	(0.0516)	(0.0516)	(0.0443)
Cumulative number of BITs (BITs/PTAs) host country squared	-0.0286***	-0.0306***	-0.0303***	-0.0214***
	(0.00338)	(0.00380)	(0.00377)	(0.00268)
Observations	11,396	11,926	11,926	11,917

Notes: Coefficients from a semi-parametric Cox proportional hazard estimator. Standard errors clustered on dyads in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
(1) BIT=1 when (any) bilateral investment agreement (BIT) concluded;
(2) BIT w ISDS=1 when a BIT with investor-state dispute settlement (ISDS) concluded;
(3) BIT w ISDS or NT=1 when a BIT with ISDS or pre-establishment national treatment (NT) concluded;
(4) BIT or PTA w ISDS or NT=1 when a BIT or preferential trade agreement (PTA) with ISDS or NT concluded.

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

	(1) BIT w ISDS	(2) BIT w weak ISDS	(3) BIT w strong ISDS
Target (host) country contagion spatial lag (any ISDS)	2.887***		
	(0.812)		
Target (host) country contagion spatial lag (weak ISDS)		2.591**	1.318
		(1.260)	(1.472)
Target (host) country contagion spatial lag (strong ISDS)		-1.239	1.903
		(2.337)	(1.601)
Source country contagion spatial lag (any ISDS)	-0.523		
	(1.098)		
Source country contagion spatial lag (weak ISDS)		4.306***	-8.531
		(1.198)	(8.147)
Source country contagion spatial lag (strong ISDS)		-13.65	0.753
		(9.802)	(1.387)
Observations	11,926	12,269	12,477

Notes: Coefficients from a semi-parametric Cox proportional hazard estimator. Standard errors clustered on dyads in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Control variables as in Table 1, but coefficients on control variables not shown for the sake of brevity.
(1) BIT w ISDS=1 when a BIT with any investor-state dispute settlement (ISDS) concluded;
(2) BIT w weak ISDS=1 when a BIT with weak ISDS concluded;
(3) BIT w strong ISDS=1 when a BIT with strong ISDS concluded.

Table 3. Determinants of IIAs with investor-to-state dispute settlement or national treatment provisions.

	(1) BIT/PTA w ISDS/NT	(2) BIT/PTA w weak ISDS/NT	(3) BIT/PTA w strong ISDS/NT
Target (host) country contagion spatial lag (any ISDS or NT)	2.213**		
	(0.922)		
Target (host) country contagion spatial lag (weak ISDS or NT)		7.642*	-4.237**
		(3.937)	(1.814)
Target (host) country contagion spatial lag (strong ISDS or NT)		-7.370	3.749*
		(5.055)	(2.075)
Source country contagion spatial lag (any ISDS or NT)	-0.165		
	(1.089)		
Source country contagion spatial lag (weak ISDS or NT)		7.839**	-0.0730
		(3.054)	(1.002)
Source country contagion spatial lag (strong ISDS or NT)		-18.34*	0.794
		(10.22)	(1.801)
Observations	11,917	12,277	12,312

Notes: Coefficients from a semi-parametric Cox proportional hazard estimator. Standard errors clustered on dyads in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Control variables as in Table 1, but coefficients on control variables not shown for the sake of brevity.
(1) BIT/PTA w ISDS/NT=1 when a BIT or preferential trade agreement (PTA) with any ISDS or NT concluded;
(2) BIT/PTA w weak ISDS/NT=1 when a BIT or PTA with weak ISDS or NT concluded;
(3) BIT/PTA w strong ISDS/NT=1 when a BIT or PTA with strong ISDS or NT concluded.

Table 4. Robustness tests: Group jackknives (eliminating top 6 FDI source countries versus restricting to top 6 FDI source countries).

	(1) BIT/PTA w ISDS/NT	(2) BIT/PTA w ISDS/NT	(3) BIT/PTA w weak ISDS/NT	(4) BIT/PTA w weak ISDS/NT	(5) BIT/PTA w strong ISDS/NT	(6) BIT/PTA w strong ISDS/NT
Target (host) country contagion spatial lag	1.046	7.618***				
(any ISDS or NT)	(1.870)	(2.352)				
Target (host) country contagion spatial lag			5.048	12.54***	-1.629	-0.195
(weak ISDS or NT)			(13.06)	(3.522)	(3.033)	(5.084)
Target (host) country contagion spatial lag			-8.537	1.794	-0.909	9.228***
(strong ISDS or NT)			(15.83)	(3.958)	(3.464)	(2.588)
Source country contagion spatial lag	0.152	-2.190				
(any ISDS or NT)	(1.152)	(5.186)				
Source country contagion spatial lag			11.25	-0.851	-0.697	-3.147
(weak ISDS or NT)			(7.621)	(7.765)	(1.112)	(5.288)
Source country contagion spatial lag			-22.63	-10.16	2.219	9.548
(strong ISDS or NT)			(14.38)	(16.25)	(2.356)	(8.611)
Observations	8,519	3,398	8,707	3,605	8,707	3,605

Notes: Coefficients from a semi-parametric Cox proportional hazard estimator. Standard errors clustered on dyads in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Control variables as in Table 1, but coefficients on control variables not shown for the sake of brevity. Columns (1), (3) and (5) without top 6 FDI source countries; columns (2), (4) and (6) with top 6 FDI countries only.
(1) and (2) BIT/PTA w ISDS/NT=1 when a BIT or preferential trade agreement (PTA) with any ISDS or NT concluded;
(3) and (4) BIT/PTA w weak ISDS/NT=1 when a BIT or PTA with weak ISDS or NT concluded;
(5) and (6) BIT/PTA w strong ISDS/NT=1 when a BIT or PTA with strong ISDS or NT concluded.

Table 5. 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 weak ISDS/NT	(3) BIT/PTA w strong ISDS/NT
Target (host) country contagion spatial lag (any ISDS or NT)	2.601***		
	(0.830)		
Target (host) country contagion spatial lag (weak ISDS or NT)		10.99***	-6.099***
		(2.953)	(2.115)
Target (host) country contagion spatial lag (strong ISDS or NT)		-11.23***	6.848**
		(4.134)	(2.752)
Source country contagion spatial lag (any ISDS or NT)	-4.882		
	(6.695)		
Source country contagion spatial lag (weak ISDS or NT)		-3.119	-1.493
		(2.714)	(3.320)
Source country contagion spatial lag (strong ISDS or NT)		-28.21	-0.491
		(18.30)	(3.046)
Observations	14,226	14,533	14,592

Notes: Coefficients from a semi-parametric Cox proportional hazard estimator. Standard errors clustered on dyads in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Control variables as in Table 1, but coefficients on control variables not shown for the sake of brevity.
(1) BIT/PTA w ISDS/NT=1 when a BIT or preferential trade agreement (PTA) with any ISDS or NT concluded;
(2) BIT/PTA w weak ISDS/NT=1 when a BIT or PTA with weak ISDS or NT concluded;
(3) BIT/PTA w strong ISDS/NT=1 when a BIT or PTA with strong ISDS or NT concluded.

Table 6. Robustness test: Exclude countries not independent at sample start period.

	(1) BIT/PTA w ISDS/NT	(2) BIT/PTA w weak ISDS/NT	(3) BIT/PTA w strong ISDS/NT
Target (host) country contagion spatial lag (any ISDS or NT)	2.503***		
	(0.898)		
Target (host) country contagion spatial lag (weak ISDS or NT)		7.676*	-3.653**
		(4.018)	(1.775)
Target (host) country contagion spatial lag (strong ISDS or NT)		-7.367	3.814*
		(5.165)	(1.975)
Source country contagion spatial lag (any ISDS or NT)	-0.247		
	(1.082)		
Source country contagion spatial lag (weak ISDS or NT)		7.860**	0.0488
		(3.091)	(0.946)
Source country contagion spatial lag (strong ISDS or NT)		-17.28*	0.798
		(9.975)	(1.770)
Observations	11,844	12,187	12,252

Notes: Coefficients from a semi-parametric Cox proportional hazard estimator. Standard errors clustered on dyads in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Control variables as in Table 1, but coefficients on control variables not shown for the sake of brevity.
(1) BIT/PTA w ISDS/NT=1 when a BIT or preferential trade agreement (PTA) with any ISDS or NT concluded;
(2) BIT/PTA w weak ISDS/NT=1 when a BIT or PTA with weak ISDS or NT concluded;
(3) BIT/PTA w strong ISDS/NT=1 when a BIT or PTA with strong ISDS or NT concluded.

Table 7. Robustness test: Employ exports as connectivity variable in spatial lag construction.

	(1) BIT/PTA w ISDS/NT	(2) BIT/PTA w weak ISDS/NT	(3) BIT/PTA w strong ISDS/NT
Target (host) country contagion spatial lag (any ISDS or NT)	-2.478*		
	(1.290)		
Target (host) country contagion spatial lag (weak ISDS or NT)		-0.421	-5.830***
		(1.449)	(1.399)
Target (host) country contagion spatial lag (strong ISDS or NT)		-0.624	0.814
		(1.360)	(0.815)
Source country contagion spatial lag (any ISDS or NT)	0.978		
	(0.618)		
Source country contagion spatial lag (weak ISDS or NT)		2.663***	-7.111***
		(0.555)	(2.373)
Source country contagion spatial lag (strong ISDS or NT)		-6.151**	3.435***
		(2.392)	(0.652)
Observations	11,917	12,277	12,312

Notes: Coefficients from a semi-parametric Cox proportional hazard estimator. Standard errors clustered on dyads in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Control variables as in Table 1, but coefficients on control variables not shown for the sake of brevity.
(1) BIT/PTA w ISDS/NT=1 when a BIT or preferential trade agreement (PTA) with any ISDS or NT concluded;
(2) BIT/PTA w weak ISDS/NT=1 when a BIT or PTA with weak ISDS or NT concluded;
(3) BIT/PTA w strong ISDS/NT=1 when a BIT or PTA with strong ISDS or NT concluded.

Table 8. Robustness test: FDI stocks from last 10 years only in spatial lag construction.

	(1) BIT/PTA w ISDS/NT	(2) BIT/PTA w weak ISDS/NT	(3) BIT/PTA w strong ISDS/NT
Target (host) country contagion spatial lag (any ISDS or NT)	2.142**		
	(0.936)		
Target (host) country contagion spatial lag (weak ISDS or NT)		4.988**	-3.087*
		(2.360)	(1.700)
Target (host) country contagion spatial lag (strong ISDS or NT)		-5.041	2.033
		(3.530)	(1.752)
Source country contagion spatial lag (any ISDS or NT)	-0.379		
	(1.093)		
Source country contagion spatial lag (weak ISDS or NT)		6.974**	-0.222
		(3.036)	(0.949)
Source country contagion spatial lag (strong ISDS or NT)		-15.48	1.440
		(9.646)	(1.743)
Observations	8,079	8,504	8,430

Notes: Coefficients from a semi-parametric Cox proportional hazard estimator. Standard errors clustered on dyads in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Control variables as in Table 1, but coefficients on control variables not shown for the sake of brevity.
(1) BIT/PTA w ISDS/NT=1 when a BIT or preferential trade agreement (PTA) with any ISDS or NT concluded;
(2) BIT/PTA w weak ISDS/NT=1 when a BIT or PTA with weak ISDS or NT concluded;
(3) BIT/PTA w strong ISDS/NT=1 when a BIT or PTA with strong ISDS or NT concluded.

Table 9. Robustness test: Linear probability model with three-way clustered standard errors.

	(1) BIT/PTA w ISDS/NT	(2) BIT/PTA w weak ISDS/NT	(3) BIT/PTA w strong ISDS/NT
Target (host) country contagion spatial lag (any ISDS or NT)	0.188*		
	(0.104)		
Target (host) country contagion spatial lag (weak ISDS or NT)		0.343*	-0.125
		(0.192)	(0.0911)
Target (host) country contagion spatial lag (strong ISDS or NT)		-0.168*	0.162**
		(0.0949)	(0.0815)
Source country contagion spatial lag (any ISDS or NT)	0.0322		
	(0.118)		
Source country contagion spatial lag (weak ISDS or NT)		0.266	-0.0599
		(0.169)	(0.0590)
Source country contagion spatial lag (strong ISDS or NT)		-0.321***	0.697***
		(0.119)	(0.193)
Observations	11,917	12,277	12,312

Notes: Standard errors clustered on dyads, host countries and source countries in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Control variables as in Table 1, but coefficients on control variables not shown for the sake of brevity.
(1) BIT/PTA w ISDS/NT=1 when a BIT or preferential trade agreement (PTA) with any ISDS or NT concluded;
(2) BIT/PTA w weak ISDS/NT=1 when a BIT or PTA with weak ISDS or NT concluded;
(3) BIT/PTA w strong ISDS/NT=1 when a BIT or PTA with strong ISDS or NT concluded.

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	32	6	26	6	27
Belgium-Luxembourg	41	9	26	10	30
Canada	13	1	11	1	13
Denmark	30	4	24	4	24
Finland	34	5	24	5	24
France	49	5	38	5	38
Germany	66	3	35	3	35
Iceland	5	0	0	0	10
Ireland	0	0	0	0	0
Japan	9	7	0	8	0
Netherlands	47	10	33	10	33
New Zealand	1	0	0	0	0
Norway	15	2	11	2	14
Portugal	24	0	0	0	1
Spain	33	3	25	3	25
Sweden	29	3	19	3	19
Switzerland	52	4	29	4	29
United Kingdom	57	8	46	8	47
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, South Korea, Sudan, Swaziland, Syrian Arab Republic, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Uganda, Ukraine, Uruguay, Venezuela, Vietnam, Zambia, Zimbabwe.

Appendix 3. Descriptive Variable Statistics.

	N	Mean	s.d.	Min	Max
BIT	11396	0.047	0.212	0	1
Target contagion spatial lag (from BITs)	11396	0.004	0.026	0	1
Source contagion spatial lag (from BITs)	11396	0.002	0.024	0	1
BIT with ISDS	11926	0.035	0.185	0	1
Target contagion spatial lag (any ISDS)	11926	0.003	0.023	0	1
Source contagion spatial lag (any ISDS)	11926	0.002	0.022	0	1
BIT with ISDS or NT	11926	0.036	0.185	0	1
Target contagion spatial lag (any ISDS or NT)	11926	0.003	0.023	0	1
Source contagion spatial lag (any ISDS or NT)	11926	0.002	0.022	0	1
BIT/PTA with ISDS or NT	11917	0.036	0.187	0	1
Target contagion spatial lag (any ISDS or NT)	11917	0.003	0.024	0	1
Source contagion spatial lag (any ISDS or NT)	11917	0.002	0.023	0	1
BIT with weak ISDS	12269	0.023	0.150	0	1
Target contagion spatial lag (weak ISDS)	12269	0.002	0.019	0	1
Source contagion spatial lag (weak ISDS)	12269	0.001	0.014	0	1
BIT with strong ISDS	12477	0.029	0.169	0	1
Target contagion spatial lag (strong ISDS)	12477	0.005	0.032	0	1
Source contagion spatial lag (strong ISDS)	12477	0.002	0.022	0	1
BIT/PTA with weak ISDS or NT	12277	0.023	0.150	0	1
Target contagion spatial lag (weak ISDS or NT)	12277	0.002	0.018	0	1
Source contagion spatial lag (weak ISDS or NT)	12277	0.001	0.015	0	1
BIT/PTA with strong ISDS or NT	12312	0.034	0.180	0	1
Target contagion spatial lag (strong ISDS or NT)	12312	0.004	0.027	0	1
Source contagion spatial lag (strong ISDS or NT)	12312	0.001	0.016	0	1
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 with weak ISDS	12269	0.006	0.076	0	1
PTA with strong ISDS	12477	0.017	0.128	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	3.058	2.399	-4.9	10.3
ln GDP per capita of source country	11396	9.858	0.389	8.7	10.6
ln GDP per capita of host country	11396	6.964	1.148	4.4	9.8
ln distance	11396	8.870	0.579	5.5	9.9
Cumulative number of BITs host country	11396	12.69	14.44	0	68
Cumulative number of BITs source country	11396	2.718	3.339	0	17
Cumulative number of BITs/PTAs host country	11917	14.70	15.43	0	70
Cumulative number of BITs/PTAs source country	11917	2.939	3.700	0	18

Appendix 4. Spatial Lag Variables

Specific target contagion:		
$\sum_{m \neq j}\left[\left(\frac{FDIstock_{ijt}}{\sum_{i} FDIstock_{ijt}}\right)\cdot\left(\frac{FDIstock_{imt}}{\sum_{m} FDIstock_{imt}}\right)\cdot 100\right] Y_{imt}$	i	source country under observation
	j	host country under observation
	m	other host countries
	t	time period
	FDIstock	stocks of FDI used as weights; the first FDI term reflects the importance of *i* as a foreign investor in *j*, as measured by the stock of FDI from country *i* in country *j* as a share of the entire FDI stock in country *j*; the second FDI term reflects 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.
	Y	dependent variable in our estimations; depending on the specific estimation, the depending variable is set to one if the source-host country pair has concluded (i) any BIT, (ii) a BIT with any ISDS, (iii) a BIT with any ISDS or NT. (iv) a BIT or PTA with any ISDS or NT, (v) a BIT with weak ISDS, (vi) a BIT with strong ISDS, (vii) a BIT or PTA with weak ISDS or NT, or (viii) a BIT or PTA with strong ISDS or NT.
Specific source contagion:		
$\sum_{k \neq i}\left[\left(\frac{FDIstock_{ijt}}{\sum_{j} FDIstock_{ijt}}\right)\cdot 100\right]\cdot Y_{kjt}$	i	source country under observation
	j	host country under observation
	k	other source countries
	t	time period
	FDIstock	stocks of FDI used as weights; the FDI term reflects the importance that host country *j* has as a location for the export of investment from source country *i*, approximated by total outward FDI from source country *i* that goes to host country *j* as a share of the entire FDI stock from country *i* invested abroad in all developing countries.
	Y	dependent variable in our estimations; depending on the specific estimation, the depending variable is set to one if the source-host country pair has concluded (i) any BIT, (ii) a BIT with any ISDS, (iii) a BIT with any ISDS or NT. (iv) a BIT or PTA with any ISDS or NT, (v) a BIT with weak ISDS, (vi) a BIT with strong ISDS, (vii) a BIT or PTA with weak ISDS or NT, or (viii) a BIT or PTA with strong ISDS or NT.

Appendix 5. FDI data issues

"Missing" FDI

The IMF's Balance of Payments and International Investment Position Compilation Guide (IMF 2014), the OECD's Benchmark Definition of Foreign Direct Investment (OECD 2008) and UNCTAD's Training Manual on Statistics for FDI and the Operations of TNCs (UNCTAD 2009) all provide detailed instructions on how to compile FDI statistics and specify the involved complexities in voluminous manuals with hundreds of pages. Nevertheless, the reliability of actually available FDI data suffers from several shortcomings.

The instructions on international best practices have not only been revised repeatedly, but various developing countries can safely be assumed to lack the administrative expertise and capacity to follow the detailed instructions. As a matter of fact, even more developed countries differ in the degree to which they adhere to current best practices as given by the above mentioned institutions (IMF 2003).

All the same, we see good reasons to prefer bilateral FDI stocks as weights in the construction of spatial lag variables when assessing host-country competition for FDI through international agreements. First of all, the fact that both UNCTAD and the OECD report bilateral FDI statistics covering our large sample can be taken as the first indication that these institutions are confident to convey relevant, though inaccurate information by making these statistics available. Second, we tentatively assessed whether the magnitude of "missing FDI" is considerably larger than "missing trade," which could be expected if FDI reporting was seriously deficient. Specifically, we compared the difference between (worldwide) outward FDI stocks declared by source countries and (worldwide) inward FDI stocks declared by host countries with the difference between worldwide exports and worldwide imports (details not shown here, but available on request). It is well known that world imports typically exceed world exports by about 2-5%. The gap between inward and outward FDI stocks was much larger during the earlier part of our period of

observation (about 20% in the first half of the 1980s). However, the underreporting of outward FDI in these years is unlikely to affect our estimations since we refer to inward FDI stocks whenever available. Subsequently, the FDI gap continues to be larger than the trade gap (2-10%, compared to 2-5%); but "missing FDI" does not appear to be excessive compared to "missing trade". See also Lipsey (2001: 27) who noted: "The worldwide discrepancy between outward and inward direct investment flows, which should be zero if all flows were recorded fully and consistently by both sides, has been no higher than 8% in any year from 1993 to 1999, as contrasted with 40 or 50% for portfolio investment."

It is also noteworthy in this context that Barthel et al. (2010) find a fairly high correlation between inward and outward FDI stocks for those dyads in the FDI database which is also underlying our analysis with both the host and the source country reporting the relevant (inward and outward) FDI data (r=0.86).

Valuing historical FDI stocks

As noted above, the adherence to best practices in reporting FDI stocks differs across countries and also has changed over time. Current IMF-OECD-UNCTAD guidelines recommend market values prevailing at the time of compilation as the basis for valuing FDI stocks. In practice, book values from the balance sheets of enterprises are often used as proxies of the market value of FDI stocks (for details, see IMF 2003: Section 7). If based on historical costs, such balance sheet values do not conform to the preferred market-price principle.

Importantly, using FDI stocks at historical costs does not necessarily imply that old FDI stocks would be weighted equally as most recently built FDI stocks in our calculation of spatial lags. For instance, the valuation of the direct investment position in US economic accounts, as specified by the US Bureau of Economic Analysis, explicitly accounts for accumulated depreciation to arrive at net property, plant and equipment at historical cost (for details, see: https://ideas.repec.org/p/bea/papers/0025.html). The IMF's

Balance of Payments and International Investment Position Compilation Guide (https://www.imf.org/external/pubs/ft/bop/2007/bop6comp.htm) lists Own Funds at Book Value (OFBV) as one of six methods for approximating market value for unlisted equity: "OFBV involves valuing a company at the value appearing in its books following International Accounting Standards (IAS). (…) IAS require most financial assets to be revalued on, at least, an annual basis and for plant and equipment to be depreciated" (IMF 2014: Appendix 4, paragraph A4.48).

It remains open to question, however, how many developing countries fail to meet demanding international standards on reporting FDI stocks. As noted by the IMF (2013: 123), "in cases in which none of the above methods are feasible, less suitable data may need to be used as data inputs. For example, cumulated flows or a previous balance sheet adjusted by subsequent flows may be the only sources available." UNCTAD notes: "For a large number of economies, FDI stocks are estimates by either cumulating FDI flows over a period of time or adding flows to an FDI stock that has been obtained for a particular year from national official sources" (http://unctad.org/en/Pages/DIAE/Investment%20and%20Enterprise/FDI_Stocks.aspx). Hence, we perform an additional robustness test by subtracting from any year's FDI stock the value of FDI stocks from 10 years prior (see main text for details).

Zero observations

In a dyadic setting, annual FDI data are frequently zero. What is more, it is often hard to decide whether zero observations are 'real' in the sense that partner countries explicitly report zero flows and/or stocks. In various instances, it cannot be ruled out that zero observations result from incomplete reporting ('fake' zeros).

It is in several ways that we reduce the risk of 'fake' zeros in our analysis. First of all, we use FDI stocks, rather than FDI flows, and we take averages over three years. The frequency of zeros, and thus the risk of 'fake' zeros, is considerably lower for FDI stocks than for FDI flows – particularly when considering period averages, rather than annual data. The risk of 'fake' zeros is further reduced in our analysis, compared to previous dyadic analyses. We consider developing countries only as hosts of FDI, not as sources of FDI. In other words, our analysis excludes dyads comprising two developing countries. Misreporting is most likely for these excluded dyads.

Furthermore, the preferred use of *inward* FDI in our analysis minimizes the risk that 'fake' zeros result in seriously biased spatial weights. Typically, missing entries in the reporting of FDI by host countries are less likely for more important sources of their inward FDI. Hence, it is unlikely that the two FDI terms in our formula for specific target contagion become zero because of incomplete reporting as long as the source country *i* is important enough for host country *j* and, respectively, competing host countries *m*. On the other hand, if one of the FDI terms in this formula is zero because of incomplete reporting, this does not cause serious bias as the missing source country *i* is most likely to be unimportant for host country *j* and/or competing host countries *m*. In other words, 'fake' zeros are unlikely to result in biased FDI-related weights unless decision makers have better information on the importance of specific source countries and competing host countries, compared to the researcher relying on official statistics.