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Article (Accepted version) (Refereed)

Original citation:
Baccini, Leonardo and Dür, Andreas (2015) *Investment discrimination and the proliferation of preferential trade agreements.* Journal of Conflict Resolution, 59 (4). pp. 617-644. ISSN 0022-0027

DOI: 10.1177/0022002713516844

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Investment Discrimination and the Proliferation of Preferential Trade Agreements

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The proliferation of bilateral and regional trade agreements has arguably been the main change to the international trading system since the end of the Uruguay Round in the mid-1990s. We argue that investment discrimination plays a major role in this development. Preferential trade agreements can lead to investment discrimination because of tariff differentials on intermediary products and as result of provisions that relax investment rules for the parties to the agreement. Excluded countries are sensitive to the costs that this investment discrimination imposes on domestic firms and react by signing a trade agreement that aims at leveling the playing field. We test our argument using a spatial econometric model and a newly compiled dataset that includes 166 countries and covers a period of 18 years (1990-2007). Our findings strongly support the argument that investment discrimination is a major driver of the proliferation of trade agreements.

Word count: 11,500 words (excluding the online appendix)

Introduction

Over the last few decades foreign direct investments (FDI) have increased rapidly. In 2009, the foreign affiliates of 82,000 transnational corporations contributed no less than 11 percent of global gross domestic product (UNCTAD 2010b, xviii). By contrast, in the early 1990s the number of transnational corporations stood at only 35,000 (UNCTAD 1992, 11). Much of the recent growth in FDI has been driven by developing and transition countries, which accounted for about half of the global FDI inflows by 2010 and also increasingly are home countries of transnational corporations that invest abroad. Scholars have analyzed both the reasons for the growth of FDI and the consequences of this trend for economic growth, tax competition and the environment. Interestingly, however, relatively little attention has been devoted to the question whether the growth and global spread of FDI has consequences for countries' trade policies.

Taking up this question, we argue that the internationalization of production has been one of the driving forces of the spread of bilateral and regional trade agreements across the globe that has taken place in parallel to the growth in FDI. In particular, we maintain that protection against the loss of foreign direct investments (FDI) has been an important rationale for the pursuit of preferential trade agreements (PTAs). Such agreements may produce investment discrimination if they lead to a spread in tariffs on intermediate goods from PTA partner countries and from third countries or contain provisions that preferentially liberalize investment policies for partners to the agreement. Governments in excluded countries are likely to react to the costs imposed by investment discrimination on their internationally active firms. An agreement with the country in which investors face discrimination helps domestic firms by reestablishing the competitive situation that existed before the conclusion of the initial agreement. The expectation thus is for trade agreements to spread in parallel to the growth of FDI, with capital exporting countries signing agreements with capital importing countries that recently concluded an agreement with another capital exporting country. Our

argument further suggests that a.) the investment discrimination effect should be strongest for dyads with a large amount of trade in intermediate goods and b.) PTAs with investment chapters should have a particularly large effect on third countries.

We test our argument quantitatively for 166 countries and a period of 18 years (1990-2007). Using spatial econometric tools, we find strong support for our hypothesis and three corollaries. The results are very robust to various changes in operationalization and estimation techniques. Moreover, we show that the effect of investment discrimination is substantively important. Interestingly, these results show that the domestic demand for PTAs depends not only on the on the size of the country's outward stocks of FDI, but also on other countries signing PTAs. The policies adopted by different countries thus are interdependent because societal interests respond to the policies pursued by other countries. This result speaks to a growing literature on the diffusion of policies (see, for example, Elkins et al. 2006).

Our paper also contributes to an emerging literature on the politics of FDI by highlighting the important role that the aim of protecting outward stocks of FDI (and not only of attracting foreign investments) plays in shaping countries' economic policies. In fact, we found little evidence that competition over the attraction of foreign investments plays a major role in the recent proliferation of PTAs. Finally, our results show that the design of PTAs matters. PTAs with investment provisions have a larger impact on third countries than PTAs without investment provisions.

Foreign Direct Investments and Preferential Trade Agreements

Companies invest abroad for one of three reasons: access to markets (market-seeking FDI), differences in factor prices and/or regulatory standards (efficiency-seeking FDI), and access to natural resources (resource-seeking FDI). Market-seeking FDI results from companies trying to get better access to a foreign market. In the manufacturing sector, such market-seeking FDI is likely if a country or trading entity has high tariffs on imports of manufactured

goods or if the costs of transport of a good are very high. Market-seeking FDI is also important in the services sector, as the provision of many services depends on the geographic proximity between provider and consumer. For example, the provision of telecommunication services nearly always requires investments in infrastructure in the foreign market. Differences in labor costs, production-related standards, political stability, and other locational advantages can drive efficiency-seeking FDI. Finally, resource-seeking FDI aims at the extraction and use of natural resources, including soil for agricultural production.

The past twenty years have seen a rapid increase in (stocks of) foreign investments (see Figure 1).[1] World outward stocks of FDI increased from $1,786 billion in 1990 to $16,227 billion in 2007, a growth by just over 800 percent, mainly driven by investments in the services sector. Importantly, over this period the share of FDI located in and originating from developing countries has increased as well. In 2010, developing and transition countries accounted for 35 per cent of FDI inward and 18 per cent of outward stocks as compared to about 25 percent of inward and 7 percent of outward stocks in 1990.[2]

FIGURE 1 ABOUT HERE

In parallel to the growth in FDI, the number of PTAs has also grown very rapidly, with 247 new free trade agreements being signed over the eighteen-year period from 1990 to 2007 (not counting agreements that deepen or replace existing commitments). Whereas following our data in 1990 only 245 dyads had a working preferential trade link between them, in 2007 this number stood at 2,123, a growth of about 750 percent. This development has continued

[1] We use stocks in our analysis; however, the trend for flows is very similar to the one shown in Figure 1, with the exception that values fluctuate more strongly over time, for example flows declined between 2000 and 2003.

[2] Data from http://unctadstat.unctad.org/ (December 1, 2011).

for the past few years, with member countries of the World Trade Organization (WTO) notifying that organization of no fewer than 15 new agreements in 2011.[3] Initially, most of these agreements were signed among geographically-close developed countries, especially in Europe. Increasingly, however, also countries outside of Europe and geographically-distant country pairs have participated in this wave of preferentialism in international trade (Manger et al. 2012). In fact, of the agreements notified in 2011, only one is purely located within Europe, and nine included countries from different continents.

The two trends for FDI stocks and PTAs thus share important similarities in terms of both monotonic growth and increasing globalization. Evidently, this correlation between the two developments alone is not sufficient to establish causality. There are, however, good theoretical reasons to expect a causal relationship between them. In fact, PTAs may be both a stimulus for further FDI (with companies drawn to countries with PTAs) and a reaction to an increase in FDI (with companies asking for a PTA after setting up production facilities in a country). Despite the theoretical plausibility of these relationships, only a relatively small number of studies have looked at the FDI-PTAs nexus.

On the one hand, a few studies argue that PTAs attract FDI inflows. The basic idea behind this argument is that to appeal to foreign investors, especially developing countries have "to provide certainty and credibility as to the direction of future policies and the economic environment more generally" (Fernández and Portes 1998, 217). Countries may then use PTAs as a commitment and signaling device that serves as a guarantee to potential foreign investors that the host government will pursue efficient economic policies in the future (Motta and Norman 1996; Medvedev 2006; Büthe and Milner 2008). On the other hand, some studies have advanced the idea that the protection of outward investments may be a motivation behind the conclusion of PTAs (Yarbrough and Yarbrough 1992; Manger 2009;

[3] http://rtais.wto.org/UI/PublicAllRTAList.aspx (January 5, 2012).

Hicks and Johnson 2011). Most importantly, Mark Manger (2009) argues that developed countries sign PTAs with developing countries for two main reasons. They may try to gain an edge over other developed countries by creating discrimination against foreign investments from these countries or to re-establish a playing field for their own multinational companies after another developed country signed a trade agreement with an emerging economy. Also following this line of reasoning, Raymond Hicks and Kris Johnson argue that PTAs with investment chapters (what they call "investment-inclusive PTAs") are a response to demands for protection by firms that engage in vertical FDI, that is, firms that fragment the production process across countries (Hicks and Johnson 2011).

Our paper builds on the second of these two strands of literature, without its results necessarily being in contradiction with the former. It advances on the state of the art by distinguishing two different pathways to investment discrimination. Most importantly, however, we derive several testable claims from the argument and expose these propositions to systematic, quantitative tests that build on new datasets of dyadic FDI stocks and the investment provisions included in PTAs.

Investment Discrimination and the Spread of Trade Agreements

We develop our argument in two steps: first, we show that PTAs can create investment discrimination and second we discuss why and how we expect foreign countries to react to this investment discrimination.

PTAs and Investment Discrimination

The creation of a PTA can impose costs on third countries through both trade diversion and investment discrimination. Trade diversion refers to the substitution of imports from outside the PTA with production from inside the PTA (Viner 1950). It occurs when tariff reductions inside the PTA make firms located in the PTA more competitive relative to firms from third countries. Investment discrimination takes place when investments from outside the trading

zone are put at a disadvantage when compared to investments from within the zone. While trade diversion has received much scholarly attention (and also the effects of trade diversion on the spread of trade agreements),[4] investment discrimination has hardly been studied so far.[5]

Investment discrimination can be a result of both the tariff differential between PTA insiders and outsiders and explicit investment provisions included in trade agreements. First, investment discrimination may result from tariff differentials that negatively affect market-seeking and efficiency-seeking FDI. As various studies have shown, most market-seeking and efficiency-seeking FDI is dependent on the importation of intermediate goods (for example, Irarrazabal et al. 2010). In this situation, a PTA that reduces the tariffs on imports of intermediate goods in a discriminatory manner can cause investment discrimination. This effect can best be illustrated by the example of two rivals, one from country A and the other from country B, who initially compete on a level playing field in country C. Both have production facilities in C to service that market, and both pay the same most-favored-nation tariff in importing to C intermediate goods from A and B respectively. Once countries A and C conclude a trade agreement that eliminates tariffs on the intermediate imports from A to C, however, the competitor from country A gets an edge over the competitor from country B. The PTA between countries A and C thus imposes costs on the firm from country B.

An empirical example is provided by Nippon Steel Corp. from Japan that makes steel pipes in India to serve the local car and motorcycle market.[6] The trade agreement signed between Korea and India in 2009 put Nippon Steel Corp. at a disadvantage because it allowed

[4] See for example Dür 2010; Baccini and Dür 2012.

[5] This is so because the economics literature is mainly concerned with the opposite effect that sees a trading zone attract FDI that would otherwise have gone to third countries, that is, investments moving from a more to a less efficient location.

[6] *Daily Yomiuri Online*, October 27, 2010.

its Korean competitors to import steel plates – an intermediate good needed in the production of steel pipes – tariff free from Korea, while Nippon Steel had to pay a 5 percent tariff on its imports of steel plates. The India-Japan agreement signed in 2010 re-established a level playing field for Nippon Steel by eliminating tariffs on Indian imports from Japan. The same agreement also helped Japanese producers of automobiles in India (Suzuki and Toyota) that directly compete there with producers from Korea (in particular, Hyundai). In the absence of an agreement between India and Japan, Suzuki and Toyota would have had to pay a 12.5 percent tariff on imports of automotive parts from Japan as compared to a 1 percent tariff for Hyundai on imports from Korea (spire 2009: 3).

Second, investment discrimination may also be the result of the inclusion of explicit investment provisions in a trade agreement. An increasing number of PTAs contain investment provisions that open up certain sectors of the economy to investors from the partner country, but not necessarily from third countries (Lesher and Miroudot 2006; Kotschwar 2009; Dür et al. 2013). A trade agreement may provide for preferential treatment by guaranteeing national treatment to investors from the partner country, waiving restrictions on foreign ownership in strategic sectors in a discriminatory manner, and eliminating screening and local content or other performance requirements (such as exporting a certain percentage of the production or transferring technology) for companies from the partner country. These investment provisions can be incorporated either in a separate investment chapter or in a services chapter that refers to commercial presence as a mode of supply for services. It is in the services sector that the investment provisions included in PTAs are most likely to create discrimination. Much FDI in services is aimed at accessing domestic markets (see, for example, Kolstad and Villanger 2008), and thus particularly vulnerable for investment discrimination. Moreover, often the right of establishment in sectors such as telecommunications, energy and water supply, and financial services is highly circumscribed

in domestic legislation (Hoekman 2006), whereas FDI in the manufacturing sector is generally not only allowed, but even invited.[7]

The Australia-U.S. free trade agreement (AUSFTA) offers an illustration of the many ways by which investment provisions in regional trade agreements can create discrimination (Westcott 2007). Foreign companies investing in Australia have to undergo government screening if the investment exceeds certain thresholds. AUSFTA either completely abolished these thresholds for U.S. companies (for greenfield investments) or increased them to a level that ensures that most investments can be made without government screening (for acquisitions in non-sensitive sectors). Not having to undergo government screening provides U.S. companies with an important advantage because screening implies a costly delay in investments and because in many cases the government imposes conditions on investments that underwent screening. Relying on a very different, but still discriminatory approach, the Comprehensive Economic Partnership Agreement between India and Korea (2010) grants South Korean banks "favorable consideration" when applying for the establishment of branches in India.

The example of NAFTA shows how the two pathways to investment discrimination play out in practice. After entry into force of NAFTA, European investors in Mexico suffered from discrimination because they had to pay tariffs when importing intermediate products into

[7] Importantly, the extent to which investment and service provisions in PTAs discriminate against third country firms depends on the rules of origin included in these agreements (Mattoo and Sauvé 2007, 251-52). The Closer Economic Partnership Agreement between Hong Kong and Mainland China (2003), for example, includes rules of origin for services and investments that limits the agreement's benefits to suppliers that "engage in substantive business operations in Hong Kong", which among other things is measured by the percentage of local residents in the company's staff. By contrast, the Australia-Singapore agreement (2003) follows a rather liberal approach to rules of origin for services and investments by extending benefits to enterprises established in a party and natural persons that have the right of permanent residence in a party.

Mexico. These tariffs even increased after the entry into force of NAFTA, putting European companies in Mexico (for example, Volkswagen in the automobile sector) at a disadvantage as compared to American producers (Dür 2007). NAFTA also contains detailed investment provisions. These can be found in a separate investment chapter (Chapter 11), Appendix 300-A on trade and investment in the automotive sector, and other chapters such as those on telecommunications (Chapter 13) and financial services (Chapter 14). Until the European Union's (EU) PTA with Mexico entered into force in 2000 (the goods part) and 2001 (services and investments), several of these provisions made it easier for U.S. companies to expand their investments in Mexico (Manger 2009).[8] For example, NAFTA grants national treatment to investors from all parties and prohibits performance requirements. Chapter 14 gives an advantage to American investors by allowing them to establish financial institutions in Mexico, even if the impact of this provision was eased by liberal rules of origin (Mattoo and Sauvé 2007, 251-52). It is not astonishing given this discussion that in the aftermath of the entry into force of NAFTA U.S. and Canadian FDI stocks in Mexico rose much more rapidly than FDI stocks from other countries (Lesher and Miroudot 2006, 32).

Investment discrimination, however, may not necessarily lead to a reduction in aggregate investments from a third country in the preferential trading zone. In fact, investment discrimination may require a company to *increase* investments within the trading zone, for example to comply with rules of origin or to avoid paying high tariffs on inputs. The discrimination stems from the fact that in this process the company has to incur costs. Moreover, a third country's aggregate FDI stocks in the preferential trading area may increase

[8] The EU-Mexico PTA only partly addressed the investment discrimination emanating from NAFTA, however, because before the entry into force of the Lisbon Treaty in 2009 the EU did not have exclusive competence to negotiate on FDI. Around the same time, therefore, several EU member countries signed Investment Promotion and Protection Agreements with Mexico that served the purpose of responding to FDI discrimination.

because of tariff jumping investments by companies that previously exported goods and services into this area or the attractions caused by a larger (and potentially more dynamic) market (Blomström et al. 2000). We thus expect that while investment discrimination may not necessarily affect the volume of FDI, it has an impact on firms' markup.[9] The argument that we set out then is also compatible with studies that suggest that at least some preferential trade areas have attracted FDI from third countries (see, for example, Büthe and Milner 2008).

Foreign Countries' Reaction to Investment Discrimination

The creation of a PTA thus is likely to impose costs on third-country companies with investments inside the new trading zone. Even if the costs from FDI discrimination are not particularly large for an individual company, they are likely to exceed the costs from lobbying for firms with established access to decision-makers. We thus expect these companies to respond to the discrimination by increasing their lobbying effort and asking governments for help to re-establish a "level playing field".[10] Governments should be responsive to this lobbying because business support is important for them in several ways.[11] First, supportive

[9] Anecdotal evidence supports this argument. Many European companies with investments in Mexico, for example, expected that NAFTA would undermine their competitiveness (Sanahuja 2000, 47). Similarly, Manger (2009, 146) mentions Toyota's concerns "that its investment plans in Mexico could become unprofitable" as a result of NAFTA.

[10] Alternatively, one could expect companies simply shifting their investments to a different country or making other adjustments. Doing so, however, may be costly in the case of efficiency-seeking FDI and counter-productive in the case of market-seeking FDI.

[11] Although we use election terminology in this reasoning, the argument applies to both democracies and autocracies. Evidently, the selectorate size differs between the two ideal types of political system (Bueno de Mesquita et al. 2003), but in both political systems governments want to stay in power and for that reason have an incentive to avoid creating business opposition.

business actors may share information with government actors that is essential for the formulation and implementation of policies (Wright 1996; Hall and Deardorff 2006). Such information may include information on market conditions, expected policy results and the amount of support or opposition to a policy. Second, supportive business may back the government in an election campaign, whereas non-supportive business is more likely to assist the opposition (Fordham and McKeown 2003). Assistance can be given in form of campaign contributions and information that helps the reelection effort. Finally, the ability to delay investments or relocate production facilities endows business with structural power (Lindblom 1977). Since such investment decisions impact on a country's economic growth and the economy influences election outcomes, governments have an incentive to ensure that business refrains from using its structural power.

The lobbying by outward investors that are put at a disadvantage in third markets hence should make governments pursue policies in support of these investors. Several examples from different regions of the world are evidence of the plausibility of this argument. The proposal by the European Commission for the EU's 2020 strategy, for example, stresses that re-establishing or maintaining a "level playing field vis-à-vis our external competitors should be a key goal" in international trade negotiations (European Commission 2010, 23). Canada's Ministry for Foreign Affairs and International Trade explicitly states that free trade agreements are designed to "help level the playing field for Canada vis-à-vis competitors that have agreements with markets of interest and also help to secure Canadian investments" (Foreign Affairs and International Trade 2009). The same report argues that Canada's negotiations for PTAs with the Central American countries, the Dominican Republic, Jordan, Korea, Morocco, and Panama are motivated by fear of discrimination, as existing PTAs put "Canadian businesses at a disadvantage." Similarly, Taiwan shows itself extremely concerned about the spread of PTAs especially in East Asia and the resulting threat of "marginalization" for Taiwanese business (Taiwan Bureau of Foreign Trade 2009).

Governments' policy of choice to respond to investment discrimination often is to sign a trade agreement with the member country of a PTA where domestic firms face discrimination. A PTA is preferable to a bilateral investment treaty (BIT) in this situation as only the former can offset the investment discrimination from the initial agreement by eliminating tariffs on intermediate goods, whereas BITs do not envisage tariff reductions. Moreover, the investment provisions included in BITs tend to be less far-reaching than those contained in PTAs.[12] BITs mainly comprise provisions that protect investments, for example by guaranteeing compensation in cases of expropriation and the repatriation of profits. Few BITs, by contrast, include provisions that liberalize foreign investors' access to a market.[13] Only a new PTA that includes explicit investment provisions can thus re-establish a level playing field with respect to the admission, operation, and protection of foreign investments. Obviously, signing such an agreement is not costless, as lower tariffs and better conditions for foreign multinational companies may hurt domestic import-competing firms. It is only when the pressure from exporters and internationally active firms outweighs these protectionist demands that a government will sign a trade agreement.

Summarizing this reasoning, our expectation is that a country's desire to sign a PTA with another country increases, the larger the investment discrimination that it faces in the other country's market. A trade agreement, however, can only be signed if at least two countries agree on its desirability; that is, one or more potential partner countries also need an incentive to sign the agreement. Our argument is that the probability of a PTA is highest,

[12] Kotschwar 2009, 375, for example, writes that "many RTA [regional trade agreement] provisions have been used to expand and to correct perceived deficiencies in BITs, often aiming for greater liberalization." The findings reported in Lesher and Miroudot 2006 also support this statement.

[13] Only the United States, Canada, and recently Japan have signed "liberalizing BITs", according to UNCTAD 2009a, 20.

when both partners face investment discrimination in each other's market. If only one country is concerned about investment discrimination in the other, then an agreement may still be possible if the former offers side-payments to the latter. Nevertheless, we consider the chances of an agreement in such a constellation less likely than in a situation in which both sides face at least some investment discrimination, as agreeing on side-payments tends to be difficult in the face of transaction costs and difficulties in the enforcement of such agreements. In form of a hypothesis, *we expect that the likelihood of countries A and B signing a PTA increases, as both the investment discrimination that A faces in B and the investment discrimination that B faces in A increase*. We should thus see a spread of trade agreements, with the amount of investment discrimination influencing the sequence in which dyads sign trade agreements.

A Spatial Econometric Test of the Argument

We test our argument quantitatively on a database including 166 countries for a time period of 18 years (1990-2007). The database includes all major countries for which data are available for the period under analysis (see the list of countries in the online appendix). We start our analysis in 1990, first, because the eighteen year period covered fully encompasses the most recent wave of regionalism. By contrast, only a small number of agreements were signed in the 1970s and 1980s. By extending our analysis to a period in which few agreements predict few agreements, we would bias the analysis in favor of our argument. Second, the availability and quality of FDI data is much worse for the time before 1990. Since our analysis starts in 1990, we drop country pairs from our analysis that already had a working trade agreement between them as of 1989. This is a result of our decision to only focus on the first agreement signed by a dyad (see below); dyads that already have a trade agreement between them as of 1989 (such as Australia and New Zealand or France and Germany) by definition cannot sign a new agreement in the 1990s or 2000s.

Our dataset on whether or not a dyad signed a trade agreement in a specific year encompasses 247 preferential trade agreements that were signed between 1990 and 2007 (this excludes agreements that either deepen or replace an existing agreement between two countries), of which 159 are bilateral ones (Baccini and Dür 2012). The 247 agreements translate into the number of 1,878 pairs of countries (out of 13,451 undirected dyads considered, so 14 percent) that signed a first PTA between 1990 and 2007. Opting for the year of signature rather than the year of entry into force of an agreement makes sense as it is in this moment that we expect firms in third countries to start worrying about the expected negative consequences for them.[14]

In only considering the first agreement between two countries, we omit the periodic treaty changes that have deepened integration in the EU, such as the Treaty of Maastricht (1991) that introduced European Economic and Monetary Union. Moreover, we exclude a substantial number of second and third-generation agreements among the countries that became independent after the Soviet Union dissolved (such as the 1999 Common Economic Zone or the 2003 free trade agreement between Belarus, Kazakhstan, the Russian Federation and Ukraine). Including these second and third agreements would be problematic for two reasons. First, it is difficult to establish a reliable list of agreements that deepened integration between two countries. Many of the agreements that we consider in our analysis have been revised at least once. For example, the agreement between Chile and Mercosur, signed in 1996, has been revised 53 times (as of late 2011).[15] Which of these revisions should be considered far-reaching enough to be included in the database? Second, it seems plausible that

[14] In fact, the difference between the date of signature and the date of entry into force is relatively small: using 215 agreements listed on the webpage of the World Trade Organization (as of May 2010), we calculated a mean difference of 453 days between the date of signature and the date of entry into force.

[15] See http://www.sice.oas.org/trade/msch/protocolos_s.asp (March 20, 2013).

both revisions of an existing agreement and a new agreement replacing an existing one may follow a logic that is different from the logic of signing a first agreement.

To empirically capture our argument about the external impact of PTAs, we need to measure the *potential* for an agreement to discriminate against FDI from third countries. According to our argument, this potential is mainly an effect of the presence or absence of a PTA and the strength of FDI links between countries. In particular, country A's investments in country B will be threatened by an agreement between countries B and C (D, E,…) if a.) country B is a major host of foreign investments, b.) for country A outward stocks of investments are important, and c.) country C is a large exporter of FDI. Items a.) and b.) are important to establish that A and B have an interest in each other's markets and thus in each other's trade policy. Item c.) captures the amount of threat that emanates from a specific agreement for the investment relationship between A and B.

Building on these ideas, we calculate a vector of spatial weights (that is, a measure of the strength of the effect of a policy change in one unit on all other units) using the following equation:

$$w_{\overline{AB}} = \sum_{C,D,\ldots} \left[\frac{\text{FDI\_out}_{\text{A}}}{\text{GDP}_{\text{A}}} * \frac{\text{FDI\_in}_{\text{B}}}{\text{GDP}_{\text{B}}} * \text{FDI\_out}_{\text{C,D,...}} * \text{PTA}_{\text{B\_C,D,...}} \right] \qquad (1)$$

where the subscripts A, B and so on denote countries, w is the weight for a directed dyad, FDI_out the outward stocks of FDI and FDI_in the inward stocks of FDI.[16]

The term PTA is a dummy variable that captures whether a dyad signed a trade agreement between *t-1* and *t-5*. Ideally, we would use a measure of the margin of preference for member countries (that is, the difference between most-favored-nation treatment and the treatment for members of the PTA) with respect to tariffs and investment provisions rather

[16] Below we show that the results do not change if we split the two components of our spatial term and estimate them using an interaction term, as suggested by Neumayer and Plümper (2012).

than a dummy variable in this equation. Unfortunately, the data that would be necessary to calculate this measure are not available and would be very difficult to collect. We partly compensate for this limitation by presenting and testing three corollaries of the argument below. Only considering agreements that were signed between t-1 and t-5 years makes sense for two reasons: on the one hand, lagging by one year helps us avoid simultaneity bias. On the other hand, it seems plausible that after some time companies that are not successful in getting a political solution will adapt to the new competitive situation. With their lobbying effort declining, governments "forget" about the issue. We check the robustness of our 5-year hunch in the empirical analysis below by running models with 3-year and 7-year cutoff points.

We divide the FDI inward and outward stocks of countries A and B by their respective GDP as we are interested in a measure of the importance of FDI outward and inward stocks relative to the size of the economy.[17] By contrast, we take the actual value for the outward FDI stocks of country C, as it clearly makes a difference for A if C is a large economy such as the U.S. or a smaller one such as Australia. In 2008, Australia and the U.S. had outward FDI stocks amounting to 19 percent and 22 percent of GDP, respectively. While these two values are very similar, in absolute terms the outward stocks of the U.S. were 16 times higher than those of Australia ($3,162 billion as compared to $195 billion).[18]

The spatial weight for the directed dyad BA is calculated equivalently:

[17] The data are from UNCTAD 2010. The data only capture long-term foreign investments where the investor has the intention of exercising influence over the management of a company. Short-term investments in stock or money markets thus do not distort the data. We use FDI stocks rather than flows because the latter are subject to exogenous short-term fluctuations and because endogeneity (that is, the signing of a PTA having an effect on FDI) is a more severe problem when using flows rather than stocks.

[18] Data from http://unctadstat.unctad.org/.

$$w_{\overline{BA}} = \sum_{C,D,...} \left[\frac{\text{FDI\_out}_{B}}{\text{GDP}_{B}} * \frac{\text{FDI\_in}_{A}}{\text{GDP}_{A}} * \text{FDI\_out}_{C,D,...} * \text{PTA}_{A\_C,D,...} \right] \quad (2)$$

We then calculate the undirected weights as follows:

$$w_{AB} = \ln(w_{\overline{AB}} + w_{\overline{BA}}) \quad (3)$$

The reasoning here is that an agreement between two countries is most likely if both countries face investment discrimination, that is, both $w_{\overline{AB}}$ and $w_{\overline{BA}}$ are high. An agreement, however, may also be possible if only one of these two terms is high, as the country that faces large investment discrimination would offer concessions to the other country to reach an agreement. We take the natural logarithm of the resulting value to deal with outliers. Below, we check the robustness of our findings by also running the analysis with the smaller of the two values for $w_{\overline{AB}}$ and $w_{\overline{BA}}$ as the value for the undirected dyad.

An example illustrates our approach. In 2003, the ratio between FDI outward stocks and GDP was 0.15 for the US and the ratio of FDI inward stocks and GDP was 0.63 for Chile. We calculate the pressure for the US to sign an agreement with Chile in 2003 as 0.15 times 0.63 times the outward FDI stocks of the countries with which Chile had signed an agreement between 1998 and 2002 (between t-1 and t-5). Concretely, Chile had signed agreements with Mexico and Peru in 1998, the Central American countries in 1999, and the EU in 2002. The expectation is that a PTA between Chile and the US is more likely in response to a PTA between Chile and the EU than in response to a PTA between Chile and Mexico, because the EU is a much larger exporter of FDI than Mexico. In adding this second component we capture an extra-dyadic relation between the US-Chile pair and the other countries in the dataset. The sum of these products amounts to the spatial weight for the directed dyad US-Chile (in this case, 984,000). We then calculate the spatial weight for the directed dyad Chile-US (1.96). The natural logarithm of the sum of the two values for the directed dyads is the

value of our variable *FDI Discrimination* (13.80). Figures 2a-d show how this variable changes over time for a series of countries.

FIGURES 2A-D ABOUT HERE

We cross-check our results with dyadic FDI data (that is, country A's FDI stocks in country B, country C's FDI stocks in country B, and so on). Unfortunately, the available dyadic data for outward and inward stocks of FDI are not very reliable for the number of countries and years that we are interested in. Even for the member countries of the Organization for Economic Co-operation and Development (OECD) data are sketchy (OECD 2010). For example, for the directed dyad Australia-Germany (two large and highly developed economies, for which data quality should be relatively high) outward stocks are missing for seven of the eighteen years from 1990 to 2007. The data are even worse for stocks in developing countries, explaining why the OECD classifies about 20 percent of Australia's outward FDI as unallocated.

In view of these difficulties, we created a new dataset on dyadic FDI stocks relying on UNCTAD data (UNCTAD 2010a). Since the outward stocks of country A in country B should be equal to the inward stocks of country B from country A, we merged the inward and outward stocks of countries with the purpose of having dyadic FDI data for as many country-dyads as possible. We also added data from the UNCTAD country reports to the data made available by UNCTAD's extraction service whenever we encountered missing values.[19] In doing so, we managed to double the number of dyads with non-missing observations as compared to the dataset provided by UNCTAD. Of all dyad years included in our dataset

[19] The UNCTAD country reports are available at http://www.unctad.org/Templates/Page.asp?intItemID=3198&lang=1 (last accessed May 15, 2011).

(239,119), 9 percent have a directed FDI value that is different from 0. Although the resulting data are far from ideal, with still a large number of missing values and occasional jumps in time series, they are an improvement compared to existing datasets. Below, we show that our results do not change when using this dataset.

In line with other studies in the field, we use a probit model to assess our argument (for example, Egger and Larch 2008; Mansfield and Milner 2012).[20] Our model includes a spatial lag to capture the FDI discrimination effect and control variables for both the dyad under consideration and potential external shocks.[21] Following Neumayer and Plümper's (2010) notation, we estimate the following equation:

$$y_{ij,t} = \alpha + \rho w_{ij,t-1} * \hat{y}_{ij,t-5} + \beta x_{ij,t-1} + \varepsilon_{ij,t} \quad (4)$$

where $y_{ij,t}$ indicates whether the undirected dyad encompassing countries i and j signed a trade agreement at time t, $w_{ij,t-1}$ is the connectivity matrix as described above, $\hat{y}_{ij,t-5}$ is the lagged dependent variable, which scores one if countries i and j formed a PTA over the previous five years, and $w_{ij,t-1} * \hat{y}_{ij,t-5}$ is the resulting spatial term.[22] Moreover, $x_{ij,t-1}$ are the values for the

[20] Below we show that the results do not change when relying on a Cox proportional hazard model (Table A8 in the Appendix). In fact, our probit model with cubic polynomials is virtually the same as a survival model (Beck et al. 1998). We opted for the former method in our main analysis because a.) doing so allows us to compare our results to those from previous studies on the formation of PTAs, which also used probit models (for example, Mansfield and Milner 2012); b.) contrary to the Cox model, a probit model does not rely on the proportional hazard assumption; and c.) a probit model makes the interpretation of the interaction term, which is tricky in non-linear models, more straightforward than in the case of the Cox model.

[21] We calculated the Moran index, using the total number of agreements signed by each country, to check whether the inclusion of a spatial lag is appropriate (Ward and Gleditsch 2008). The result confirms that there is statistically significant spatial correlation among countries.

[22] Neumayer and Plümper (2010: 158) note that "by using $\hat{y}$ rather than y in the spatial dependence variable, this is not strictly speaking a spatial lag model."

undirected dyad ij of a set of control variables that are lagged by a year to avoid contemporaneous correlation. Finally, ρ is the spatial autoregression parameter that gives the impact of the spatial term on the outcome variable, β is a coefficient, α is the constant, and $\varepsilon_{ij,t}$ is the error term. For the significance tests, we rely on Huber-White standard errors that can take account of possible heteroskedasticity or intra-group correlation of the data (Beck 2008). The clustering of these standard errors by dyad, and the use of cubic polynomials as suggested by Carter and Signorino (2010), allow us to account for time dependence. As a robustness check for this decision, we also employ bootstrap standard errors (see Table A9 in the Appendix).

The control variables that we include in the models capture important characteristics of the two countries that form a dyad and the context in which a dyad considers concluding an agreement.[23] Several of them are logged to deal with occasional high values in the data. For monadic variables, we use the smaller of the two values for the two countries as value for the dyad. The variables that capture the economic condition are the degree to which the two countries are involved in international capital flows (*FDI/GDP*, measured as the smaller of the two countries' outward stocks of FDI divided by GDP), the amount of trade between them (*Trade*), the size of the two economies (*GDP*), the per capita GDP (GDP_{pc}), and economic growth (*GDP Growth*). We expect greater international capital flows and trade, and larger economies, to be associated with a higher probability of a dyad signing an agreement. The expected effects of GDP_{pc} and *GDP Growth* are ambiguous. Furthermore, we include a dichotomous variable that is coded one for dyads that had an investment treaty between them in the year prior to the one under analysis in the model (*BIT*). The effect of this variable could go in both ways: it could reduce the threat of investment discrimination and thus lower the

[23] Univariate summary statistics and data sources for all of these variables are available in the online appendix.

probability of two countries signing a trade agreement (but see our discussion above) or signal large outward stocks of FDI and thus large potential for investment discrimination.

With respect to domestic and international political conditions, we include a dummy variable for military allies (*Alliance*) and a democracy score (*Democracy*, with data from Freedom House 2007).[24] The expectation is for military allies and democracies to show a higher propensity to sign trade agreements. The control variables that capture the geographic position of the two countries are contiguity (*Contiguity*, scoring one if two countries share a common border), distance (*Distance*, we use the natural logarithm of this variable), and island country (*Island*, scoring one if both countries are islands). Larger distance and geographic position as an island should decrease the likelihood of a trade agreement, whereas contiguity should increase it. Three control variables account for the position of the countries in, and the general state of, the international trading system: WTO membership (*WTO*), an ongoing WTO-sponsored multilateral trade negotiation (*WTO Round*, scoring one from 1990 through 1993 and from 2001 onwards), and whether the two countries had a trade dispute between them (*Trade Dispute*). Our expectations are for WTO membership and WTO negotiations to augment the chances of an agreement, and trade disputes between the two countries to reduce those chances. We also include three variables that capture the cultural distance between the two countries, namely earlier colonial relationship (*Colony*), common language (*Language*) and common religion (*Religion*), with the expectation that cultural proximity should positively influence the probability of two countries signing a PTA. Finally, we include the log of the number of PTAs that the two countries have signed with third countries prior to time *t* (*PTA Count*), with the aim of controlling for potential endogeneity resulting from the

[24] The results reported below do not change when using other data sources, such as the Polity IV score (Marshall and Jaggers 2008).

inclusion of a lagged dependent variable as an independent variable in our model (Plümper and Neumayer 2010).

Findings

The findings are very supportive of our argument. In our main model, the variable capturing the effect of investment discrimination is strongly statistically significant and has the right sign (see Model 1 in Table 1). Our variable of interest also has a sizeable substantive effect. A move from the smallest to the largest value on *FDI Discrimination* increases the number of dyads signing a PTA each year by 45 [20, 73].[25] When looking at the effect of a change from the mean minus a standard deviation to the mean plus a standard deviation the effect is still an additional 17 [8, 26] dyads that conclude a PTA each year. That this effect is large is illustrated by a comparison to the effect of *Trade*: a move on this variable from the mean minus to the mean plus a standard deviation only increases the number of dyads signing a PTA by 10 [3, 17].

TABLE 1 ABOUT HERE

Most control variables behave as expected. Country pairs with strong trade links and large economies are more likely to sign a trade agreement. Agreements are also more likely to be signed by countries experiencing slow economic growth. Dyads that have already signed a BIT, form part of the same alliance, and have democratic political institutions are more likely to conclude a trade agreement. Among the variables capturing geography, only the statistically significant negative coefficient for contiguity is counter-intuitive, but may be explained by the fact that several neighboring countries already signed trade agreements

[25] Throughout the numbers in brackets give the 95 per cent confidence intervals.

between them before 1990 (and these dyads are excluded from our analysis). The various variables that operationalize the effect of the international trading system have the expected sign. Also the three variables measuring cultural distance are positive and statistically significant. Finally, the coefficient for *PTA Count* is negative and statistically significant. The online appendix provides additional information on the fit of the model.

In a second model, we operationalize *FDI Discrimination* using dyadic FDI data. For this analysis we calculated the spatial weights as shown in equations 1 to 3 with the difference that FDI_out and FDI_in refer to the stocks of country A (B,...) in country B (C,...). The findings of this model again provide clear-cut support for our argument (see Model 2 in Table 1). The effect of the spatial weight term remains positive and statistically significant. The control variables also are remarkably similar to those reported for Model 1. According to this model, a move from a low to a high value on *FDI Discrimination* (mean minus/plus a standard deviation) increases the number of dyads signing a PTA by 83 [23, 163]. The model with dyadic stocks of FDI thus predicts a significantly larger effect of investment discrimination than the model with monadic FDI data. This result is encouraging as the operationalization of the dyadic model more closely approximates our theory than the one of the monadic model.

In the following, to further assess the empirical validity of our argument, we test three additional implications that we derive from our argument. They relate to the two pathways to investment discrimination that we discussed above, namely tariff differentials on intermediate products and provisions that relax investment rules for the parties to the agreement.

Trade in Intermediate Goods and the Spread of PTAs

A first implication of our model is that the FDI discrimination effect should be larger, the more two countries trade in intermediate goods (*Corollary 1*). This argument derives from our first pathway to investment discrimination discussed above, namely FDI discrimination that

results from tariff differentials that negatively affect market-seeking and efficiency-seeking FDI. To test this argument, we add to the model an interaction term between *FDI discrimination* and a variable capturing the amount of trade in intermediate goods between the two countries (*Intermediate*). We used the Broad Economic Categories (BEC) classification of the United Nations (2002) to distinguish such trade.[26] The results of this model again are very supportive (see Model 3 in Table 1). The coefficient for the interaction term is positive and statistically significant. What is more, the effect is substantively important as shown in Figure 3. As expected, the marginal effect of *FDI Discrimination* increases as trade in intermediate goods increases.

FIGURE 3 ABOUT HERE

Investment Chapters and the Spread of PTAs

Our argument also implies that agreements with substantive rules concerning foreign investments create greater pressure for excluded countries to sign a PTA than other agreements *(Corollary 2)*. This is so because narrow agreements that do not contain explicit rules on investments can create investment discrimination only via intermediate tariffs, whereas broad agreements produce discrimination through both tariffs and discriminatory investment provisions. We further expect that investment discrimination that is caused by investment provisions in trade agreements should motivate states to sign new trade agreements that also include investment provisions *(Corollary 3)*. The reasoning here is that only explicit investment rules can protect foreign investments against the discrimination emanating from investment provisions. For example, we expect countries that suffered from investment discrimination owing to the North American Free Trade Agreement (which

[26] The online appendix provides more detail on this variable.

contained substantive FDI provisions) to sign PTAs with Mexico that include investment chapters, as did Costa Rica (1994) and Chile (1998).

We rely on a new dataset on the design of a large number of preferential trade agreements to test these corollaries (Dür et al. 2013). This dataset allows us to distinguish between agreements with and without substantive investment provisions. A substantive provision can be a national treatment or a most favored nation clause. Such provisions may be found in the services chapter of a PTA or a separate, NAFTA-type investment chapter. Among the agreements that have substantive provisions are NAFTA, the U.S. agreements with Korea and Panama, the EU agreements with Chile and Mexico, several agreements negotiated by the European Free Trade Association, most of the agreements concluded by Japan, and the agreements signed by New Zealand with Singapore and Thailand. Of the 1,878 dyads that signed a first agreement in the period under analysis, 312 (17 percent) committed themselves to substantive investment provisions.[27]

Based on these data, we calculated a spatial term as shown in equations 1 and 2 above in which we replace $PTA_{A\_C,\ D,\ldots}$ and $PTA_{B\_C,\ D,\ldots}$ with variables that are coded one for dyads with substantive investment provisions and zero for all others (*FDI Discrimination chapter*). We then ran Model 1 with first all PTAs (Corollary 2) and then only PTAs with investment chapters as dependent variables (Corollary 3). The resulting models offer support for our argument (Models 4 and 5 in Table 1). The spatial term is positive and statistically significant at least at the 95 per cent level in both models.

Even more interesting given our argument is whether PTAs with investment chapter have a larger substantive effect than PTAs without investment chapter. To answer this question, we also calculated a spatial term for agreements without FDI provisions (*FDI Discrimination no chapter*) and then compared the substantive effects of *FDI Discrimination*

[27] The online appendix provides more information on these data.

chapter and *FDI Discrimination no chapter*. The results are encouraging. In Model 4, changing *FDI Discrimination chapter* from the mean minus a standard deviation to the mean plus a standard deviation increases the expected number of dyads signing a PTA by 8 [1, 16]. By contrast, an equivalent change in the variable *FDI Discrimination no chapter* increases the predicted number of PTAs by 16 [8, 26]. At first sight, therefore, the effect of the latter variable is larger than the effect of the former. Nevertheless, these numbers have to be assessed in light of the number of agreements that enter the equation on the right-hand side. From this perspective, a mere 312 dyads with investment chapters result in an additional 8 PTAs, whereas the remaining 1,566 dyads without investment chapter produce an additional 16 PTAs. Agreements with investment chapters thus have a stronger effect than agreements without. The result is even more clear-cut for the models with investment chapter as dependent variable. Here, an equivalent change in *FDI Discrimination chapter* increases the predicted number of dyads signing a PTA with investment chapter by 16 [11, 22], whereas (and this effect is only weakly statistically significant) the substantially larger number of agreements entering into *FDI Discrimination no chapter* only leads to an increase of 3 [0, 7] agreements. In short, the data support all three corollaries. Overall, Models 1 to 5 have offered significant support for the argument linking investment discrimination to the formation of PTAs.

Robustness checks

We have carried out a large number of checks to gauge the robustness of our findings.[28]

Endogeneity

[28] These tests produce substantially the same results when using dyadic FDI data. For lack of comparable data, however, we could not implement an instrumental variable analysis with dyadic FDI data.

First, we control for endogeneity in our model, that is, the imminent signature of a PTA stimulating an increase in FDI stocks. We instrument our spatial variables, following advice by Franzese and Hays (2008). In a regression without spatial term a good instrument z should be correlated with the variable to endogenize (in our case, this would be $W\hat{y}$), but not with the error term of the main model (Murray 2006). Under the condition of cross-spatial endogeneity, the requirement is for z_j not to affect y_i. If the exogeneity condition of z is not met, the cross-spatial estimation might perform worse than a regular estimation (Franzese and Hays 2008). An ideal candidate for instrumenting Wy_i is Wx_i, where x_i is a non-spatial regressor (Franzese and Hays 2008: 759). To achieve this, we first use a spatial term that includes FDI stocks lagged by ten years in the connectivity matrix as instrumental variable. FDI stocks at time t-10 are good predictors of FDI at time t (the correlation is 0.6), but are weakly correlated with the error term (the correlation is 0.1), and thus are good instruments to deal with potential endogeneity. Moreover, they are logically exogenous to the causal link we are interested in, namely the formation of a PTA ten years later.[29]

Second, we instrument our spatial variables by *Alliance* weighted by the connectivity matrix discussed above, as *Alliance* is a good predictor of the formation of PTAs.[30] In the case of three countries, Germany, Ghana, and the United Kingdom, *FDI Discrimination* between Germany and Ghana is instrumented by *Alliance* between Germany and Ghana. There is no evidence to believe that Germany and Ghana's *Alliance* has any effect on the United Kingdom's probability of forming a PTA with either Germany or Ghana outside the causal

[29] Baccini and Urpelainen (2012) show that negotiations of north-south PTAs last less than three years on average. Building on work by Jensen 2003, we also checked whether adding data from the human development index and natural resources as instruments in the first stage made a difference, but results are very similar.

[30] We obtain similar results if we use *Colony* weighted by the connectivity matrix as instrument. We are unable to include both *Alliance* and *Colony* weighted by the connectivity matrix because they are highly correlated.

channel of FDI discrimination and after controlling for the presence of *Alliance* between Germany and the United Kingdom and Ghana and the United Kingdom. Hence, this approach satisfies the main conditions for instrumenting spatial variables.[31]

Various tests confirm the validity of the instrument. In particular, the underidentification test (Anderson canonical test) leads us to reject the null hypothesis that models are underidentified, whereas both the Kleibergen-Paap Wald F statistic and the Stock and Yogo test lead us to reject the null hypothesis that the equations are weakly identified (Stock and Yogo 2002).[32] To implement the two-stage estimation, we first regress FDI diversion on FDI stocks lagged by 10 years and *Alliance* weighted by *FDI Discrimination*.[33] Second, we obtain the predicted values from these regressions and place them on the right-hand side of our model. Finally, we estimate again our main models with bootstrapped standard error (100 replications) to reduce correlation between the first stage and second stage.

The findings from the second stage of the instrumental variable model again support our argument (Model A1 in Table A5). The coefficient for investment discrimination is positive and statistically significant, while all other coefficients are similar to those reported for the other models. Importantly, the residuals from the first stage are not statistically significant in the second stage, confirming the validity of our instrument. As expected, the substantive effect that we predict based on this model is slightly smaller than for Model 1. Nevertheless, a move from a low to a high value on the FDI discrimination variable (mean

[31] The correlation between *FDI Discrimination* and *Alliance* weighted by the connectivity matrix is 0.4, whereas the correlation between *Alliance* weighted by the connectivity matrix and the Cox-Snell residuals of Model 1 is 0.

[32] These tests are carried out using IVREG2 in Stata 12.

[33] We note that both instruments are always statistically significant at the convectional level in the first stage of the regression.

minus/plus a standard deviation) still increases the expected number of dyads signing a PTA per year by 16 [7, 24]. This indicates that our causal mechanism has substantial explanatory power even after controlling for endogeneity.

Other Operationalizalizations of the Spatial Term

Second, following Neumayer and Plümper (2012), we split the main explanatory variable into two parts, one capturing the number of agreements signed with third countries and the FDI outward stocks of these third countries (*FDI Discrimination I*) and the other the outward and inward stocks of countries A and B respectively (*FDI Discrimination II*). We then interact these two terms in the model that we estimate. The advantage of doing so is that we can separately assess the impact of the various terms that enter the calculation of *FDI Discrimination*. As expected, the coefficient on the interaction term is positive and statistically significant (see Model A2). In the appendix, we show graphically that the marginal effect of *FDI Discrimination I* turns positive as *FDI Discrimination II* increases (see Figure A3). Again, this result supports our argument.

Third, we test whether PTAs are actually signed as a result of competition over *inward* stocks rather than to protect FDI *outward* stocks. Country A (an FDI importer) may value existing FDI inward stocks (for example, because of the tax income created by foreign investments) and fear that a PTA between country B (an FDI exporter) and country C (an FDI importer) could divert FDI stocks towards country C. Country A may then use a PTA with country B to protect its existing FDI inward stocks. We calculate the corresponding spatial weight for the directed dyad AB in line with equation 1 above, but replace $\text{FDI\_out}_{C,D,...}$ with $\text{FDI\_in}_{C,D,...}$. Here country A is not concerned about an agreement between B and a capital exporter but about one that includes B and a capital importer. We again take the sum of the two values for the directed dyads AB and BA as shown in equation

3. The evidence does not support this line of argument, however. The coefficient on the spatial term for attracting FDI is not statistically significant (Model A3). PTAs thus are an instrument that countries use to protect their outward stocks of FDI, rather than to compete for inward stocks of FDI.

Other Model Specifications

Furthermore, we include year (Model A4 in the online appendix) and region (Model A5) fixed effects. Moreover, we treat the EU as a single actor (by taking the median spatial weight across all member countries as weight for the EU, see Models A6-A8). We also use the smaller of the two directed dyad values for the undirected dyad rather than taking the sum (Model A9) and vary the cut-off point to three (Model A10) and seven years (Model A11) respectively. We also include measures of spatial distance (spatial distance and spatial distance^2) in line with Baldwin and Jaimovich (2012) to capture other diffusion effects, including ones deriving from trade diversion (Model A12). Lastly, following advice by Achen (2005), we estimate a model with only three covariates (Model A13). For all of these alternative specifications, the results are very similar. Most importantly, the coefficient for the investment discrimination variable is positive and strongly statistically significant in all of these models. In short, our findings are very robust to a variety of changes in operationalization and specification.

Conclusion

We have argued that the growth in FDI has had important consequences for international economic cooperation. By creating fear of investment discrimination, it has contributed to the new regionalism. Countries react to the PTAs signed by other countries to protect the outward investments of domestic companies. This reaction contributes to the spread of bilateral and regional trade agreements. A quantitative test of this argument has provided robust support for

our argument. The evidence has also supported our argument's implication that dyads with a large share of trade in intermediate goods face greater pressure to react to the signing of a PTA than dyads that mostly trade capital goods. Moreover, PTAs with investment provisions have a particularly large effect on other countries' decisions whether or not to conclude an agreement. Finally, as expected by our argument, PTAs with investment provisions stimulate the signing of new agreements that also include investment provisions.

Our contribution to the growing literature on foreign direct investment policy thus is to show that international cooperation in this field is not only driven by countries' desire to attract FDI, but also by their attempts at avoiding investment discrimination.[34] Of relevance for the literature on PTAs, our paper provides ample evidence that modern trade agreements are about more than only trade. PTAs clearly also are a tool used by governments to influence FDI. Moreover, the scope of PTAs matters for the economic effects of the agreements (see also Kono and Rickard 2010). The design of PTAs, in turn, can again at least partly be explained as a result of competitive dynamics. If a similar competitive effect also influences other features of these agreements, we should expect an increasing convergence on a relatively comprehensive model for new trade agreements. That is, we should see always fewer agreements that are limited to trade in goods and an increasing share of new agreements that contain provisions relating to investments, trade in services, competition and other policy fields (as indeed we can observe, see Dür et al. 2013).

On the broadest level, our paper speaks to a literature that sees international outcomes – even systemic ones, such as the new regionalism – as a result of a combination of domestic preference formation and strategic interaction in international negotiations (Lake and Powell 1999; Oatley 2011). Governments clearly take domestic preferences into account when

[34] For studies stressing the FDI attraction aspect, see Büthe and Milner 2008; Haftel 2010; Tobin and Busch 2010; Jandhyala et al. 2011.

considering the pursuit of PTAs. The domestic preferences of countries, however, are interdependent: the pursuit of PTAs by some countries influences the domestic preferences in other countries, making these also eager to sign PTAs. In explicitly modeling this interdependence, the present paper is a contribution to a "nonreductionist IPE" (for this term, see Oatley 2011, 335).

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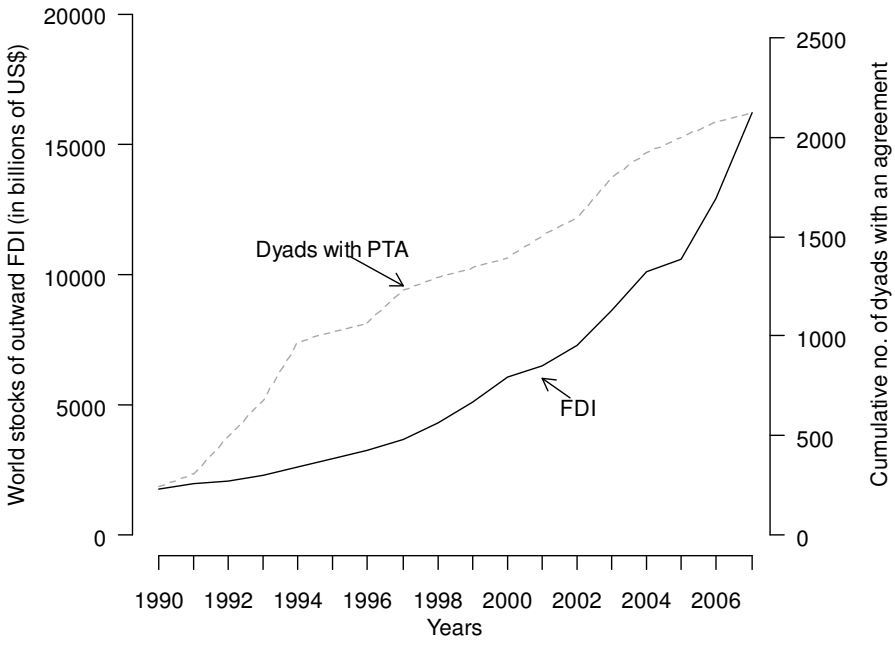
Table 1: Investment Discrimination and the Spread of Trade Agreements

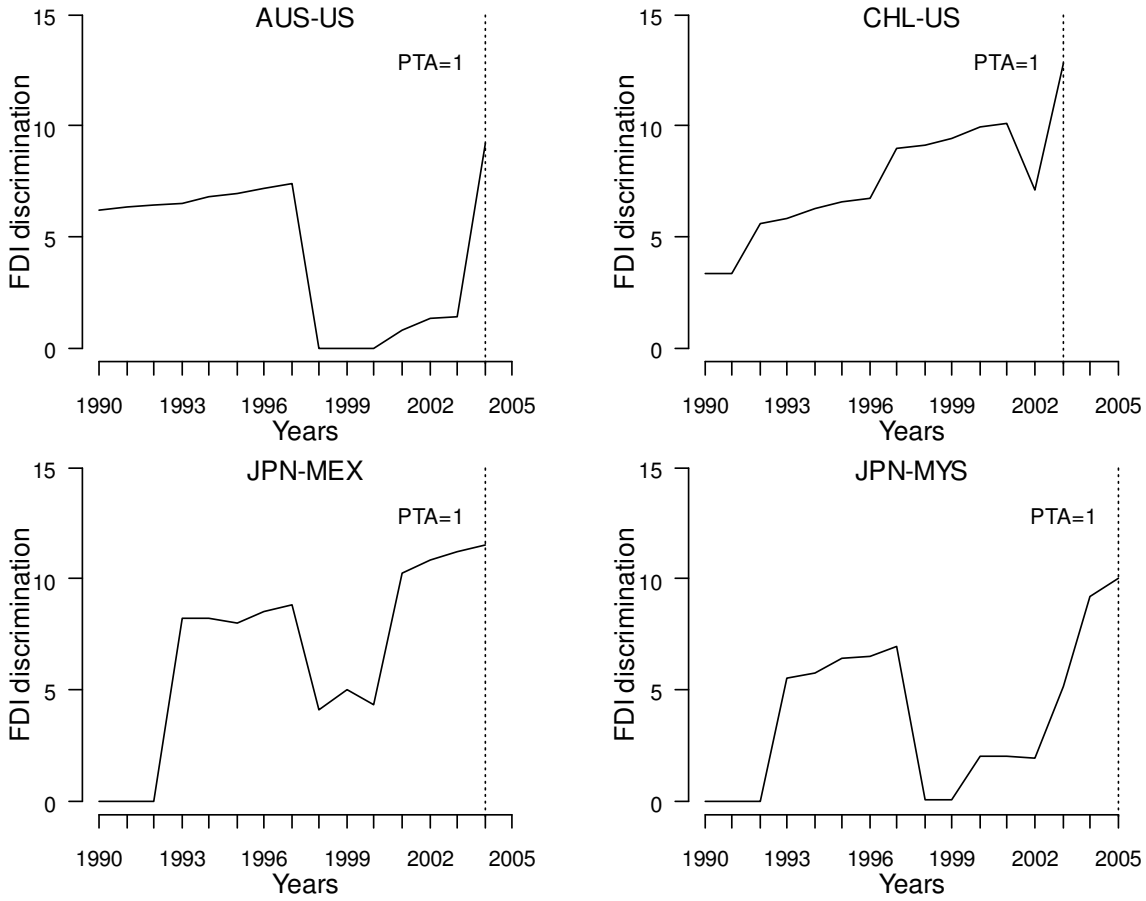
Covariates	*Model 1*	*Model 2 (dyadic FDI)*	*Model 3 (intermediate goods)*	*Model 4 (inv. chapter)*	*Model 5 (inv. chapter dependent)*
FDI Discrimination	0.01**	0.06**	-0.01		
	(0.00)	(0.01)	(0.00)		
Intermediate			-0.02**		
			(0.00)		
FDI Discrimination Intermediate*			0.003**		
			(0.00)		
FDI Discrimination chapter				0.02**	0.09**
				(0.01)	(0.01)
FDI/GDP	1.11**	1.15**	0.80**	0.99**	1.27**
	(0.29)	(0.30)	(0.31)	(0.31)	(0.36)
Trade	0.02**	0.02**	0.02**	0.02**	0.03**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
GDP	0.05**	0.05**	0.06**	0.05**	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
GDPpc	0.03**	0.03*	0.03**	0.03**	-0.03*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
GDP Growth	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
BIT	0.21**	0.21**	0.23**	0.23**	0.14*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.06)
Alliance	0.20**	0.19**	0.21**	0.20**	-0.06
	(0.02)	(0.02)	(0.02)	(0.02)	(0.06)
Democracy	0.03**	0.03**	0.02**	0.03**	0.08**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Contiguity	-0.15*	-0.16*	-0.16*	-0.13*	-0.01
	(0.07)	(0.06)	(0.07)	(0.07)	(0.12)
Distance	-0.58**	-0.59**	-0.59**	-0.58**	-0.30**
	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)
Island	-0.17	-0.16	-0.16	-0.16	
	(0.11)	(0.11)	(0.11)	(0.11)	
WTO	0.13**	0.13**	0.12**	0.13**	-0.13**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.05)
WTO Round	0.58**	0.58**	0.59**	0.56**	0.80**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.06)
Trade Dispute	-1.00**	-1.20**	-1.03**	-1.00**	
	(0.32)	(0.35)	(0.32)	(0.32)	
Colony	0.10**	0.09**	0.11**	0.10**	0.13*
	(0.04)	(0.04)	(0.03)	(0.04)	(0.05)
Language	0.15**	0.15**	0.15**	0.15**	0.17**
	(0.04)	(0.04)	(0.04)	(0.04)	(0.07)
Religion	0.10**	0.11**	0.10**	0.10**	0.09*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.05)
PTA Count	-0.01	-0.005	-0.01	-0.01	0.13**
	(0.01)	(0.01)	(0.02)	(0.01)	(0.03)
Constant	0.81**	0.87**	0.89**	0.88**	-2.09**
	(0.24)	(0.24)	(0.24)	(0.25)	(0.33)
Cubic Polynomials	yes	yes	yes	yes	Yes
Observations	217,921	217,921	217,921	217,921	215,400
Number of dyads	13,451	13,451	13,451	13,451	13,451
PTAs signed	1,878	1,878	1,878	1,878	312
Log likelihood	-8,492	-8,487	-8,459	-8,317	-1,951

Robust standard errors in parentheses clustered by dyads. ** $p < 0.01$, * $p < 0.05$.

Figure 1: FDI outward stocks and the cumulative number of dyads with a preferential trade link, 1990-2007

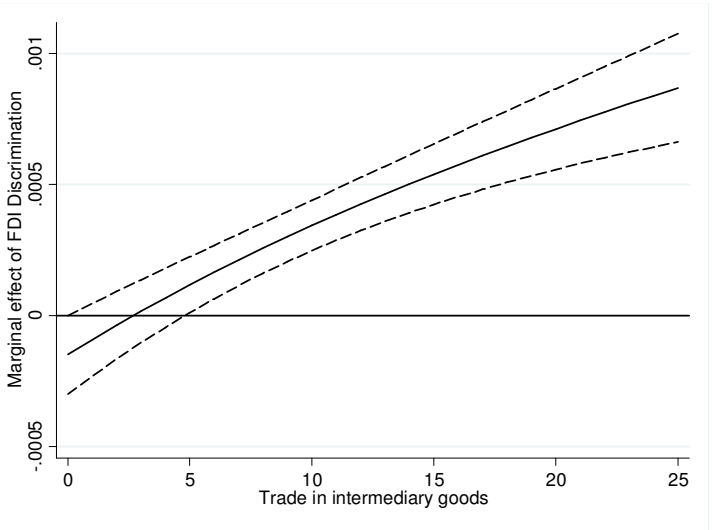


Figures 2a-d: Spatial weights for a series of undirected dyads (natural log)



The vertical dotted lines indicate the years in which the dyads signed a PTA.

Figure 3: Trade in intermediate goods and FDI Discrimination (Model 3)



Online Appendix

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1.) List of preferential trade agreements included in the analysis (Baccini and Dür 2012)

Table A1: **List of PTAs included in the analysis**

Preferential Trade Agreement	Year signed	Preferential Trade Agreement	Year signed
Afghanistan India	2003	Bulgaria Bosnia and Herzegovina	2003
Albania Bulgaria	2003	Bulgaria Czech Republic	1995
Albania Croatia	2003	Bulgaria EC	1993
Albania Moldova	2003	Bulgaria EFTA	1993
Albania Romania	2003	Bulgaria Estonia	2001
Albania Serbia	2003	Bulgaria Israel	2001
Albania Turkey	2006	Bulgaria Latvia	2002
Algeria EC	2002	Bulgaria Lithuania	2001
Andean Community	1996	Bulgaria MKD	1999
Andean countries MERCOSUR	2004	Bulgaria Serbia	2003
Argentina Brazil	1990	Bulgaria Slovakia	1995
Argentina Chile	1991	Bulgaria Slovenia	1996
Argentina Mexico	1993	Bulgaria Turkey	1999
Armenia Russia	1992	Canada Chile	1996
Association of Southeast Asian Nations China	2004	Canada Costa Rica	2001
Association of Southeast Asian Nations Korea	2006	Canada Israel	1996
Association of Southeast Asian Nations FTA	1992	CARICOM Colombia	1994
Asia Pacific Trade Agreement	2005	CARICOM Costa Rica	2004
Australia Singapore	2003	CARICOM Cuba	2000
Australia Thailand	2004	CARICOM Dominican Republic	1998
Australia US	2004	CARICOM Venezuela	1992
Bahrain US	2004	CEN-SAD	1998
Baltic FTA	1993	Central America Chile	1999
Bhutan India	2006	Central America Dominican Republic	1998
Bosnia and Herzegovina Croatia	2000	Central American Integration System	1991
Bosnia and Herzegovina MKD	2002	Central European FTA	1992
Bosnia and Herzegovina Moldova	2002	Chile China	2005
Bosnia and Herzegovina Romania	2003	Chile Colombia	1993
Bosnia and Herzegovina Slovenia	2001	Chile EC	2002
Bosnia and Herzegovina Turkey	2003	Chile Ecuador	1994
Bolivia Chile	1993	Chile EFTA	2003
Bolivia MERCOSUR	1996	Chile Hong Kong	2005
Bolivia Mexico	1994	Chile India	2006
Bolivia Peru	1997	Chile Japan	2007
Brazil Guyana	2001	Chile Korea	2003
Brazil Mexico	2002	Chile MERCOSUR	1996
Brunei Japan	2007	Chile Mexico	1998

Chile Panama	2006	EC Slovenia	1996
Chile Peru	1998	EC South Africa	1999
Chile US	2003	EC Syria	2004
Chile Venezuela	1993	EC Tunisia	1995
China Hong Kong	2003	EC Turkey	1995
China Pakistan	2006	ECO (Economic Cooperation Organization)	2003
China Thailand	2003	Economic and Monetary Community of Central Africa (CEMAC)	1994
CIS (Commonwealth of Independent States)	1994	ECOWAS	1993
Colombia Northern Triangle	2007	Ecuador Paraguay	1994
Colombia Panama	1993	Ecuador Peru	1997
Colombia Peru	1997	Ecuador Uruguay	1994
Colombia US	2006	EFTA Egypt	2007
COMESA	1994	EFTA Estonia	1995
Costa Rica Mexico	1994	EFTA Hungary	1993
Costa Rica Panama	2002	EFTA Israel	1992
Croatia EC	2001	EFTA Jordan	2001
Croatia EFTA	2001	EFTA Korea	2005
Croatia Lithuania	2002	EFTA Latvia	1995
Croatia MKD	1997	EFTA Lebanon	2004
Croatia Moldova	2004	EFTA Lithuania	1995
Croatia Serbia	2004	EFTA Mexico	2000
Croatia Turkey	2002	EFTA MKD	2000
Cuba Ecuador	2000	EFTA Morocco	1997
Cuba Peru	2000	EFTA Poland	1992
Czech Republic EC	1992	EFTA Romania	1992
Czech Republic EFTA	1992	EFTA SACU	2006
Czech Republic Israel	1996	EFTA Singapore	2002
Czech Republic Latvia	1993	EFTA Slovakia	1992
Czech Republic Romania	1994	EFTA Slovenia	1995
Czech Republic Slovenia	1993	EFTA Tunisia	2004
Czech Republic Turkey	1998	EFTA Turkey	1991
D8 PTA	2006	Egypt Turkey	2005
DR-CAFTA	2004	El Salvador Mexico	1993
EC Egypt	2001	Estonia Hungary	1998
EC Estonia	1995	Estonia Slovakia	1998
EC Hungary	1992	Estonia Slovenia	1997
EC Jordan	1997	Estonia Turkey	1996
EC Latvia	1995	Estonia Ukraine	1995
EC Lebanon	2002	Estonia Latvia Lithuania Norway	1992
EC Lithuania	1995	Estonia Latvia Lithuania Switzerland	1992
EC Mexico	2000	GAFTA	1997
EC MKD	2001	Georgia Turkey	2007
EC Morocco	1996	Group of Three	1994
EC Poland	1992	Guatemala Mexico	1993
EC Romania	1993	Gulf Cooperation Council	2001
EC Slovakia	1992	Guyana Venezuela	1990

Honduras Mexico	1993	Malaysia Pakistan	2007
Hungary Israel	1998	Mauritius Pakistan	2007
Hungary Latvia	1999	Melanesian Spearhead Group (MSG)	1997
Hungary Lithuania	1998	MERCOSUR Mexico	2002
Hungary Poland	1991	MERCOSUR	1991
Hungary Serbia	2002	Mexico Nicaragua	1997
Hungary Slovakia	1991	Mexico Peru	1995
Hungary Turkey	1998	Mexico Uruguay	2003
India MERCOSUR	2004	MKD Romania	2003
India Nepal	1991	MKD Slovenia	1996
India Singapore	2005	MKD Turkey	2000
India Sri Lanka	1998	MKD Ukraine	2001
Indonesia Japan	2007	Moldova MKD	2004
Iran Pakistan	2004	Moldova Romania	1995
Israel MERCOSUR	2007	Moldova Serbia	2003
Israel Mexico	2000	Morocco Turkey	2004
Israel Poland	1998	Morocco US	2004
Israel Romania	2001	NAFTA	1992
Israel Slovakia	1997	New Zealand Singapore	2000
Israel Slovenia	1998	New Zealand Thailand	2005
Israel Turkey	1997	Oman US	2006
Japan Malaysia	2005	Pakistan Sri Lanka	2002
Japan Mexico	2004	Panama Singapore	2006
Japan Philippines	2006	Panama US	2007
Japan Singapore	2002	Peru Singapore	2007
Japan Thailand	2007	Peru US	2006
Jordan Singapore	2004	Peru Venezuela	1997
Jordan US	2000	Poland Turkey	2000
Korea Singapore	2005	Romania Serbia	2004
Korea US	2007	Romania Slovakia	1994
Laos Thailand	1991	Romania Turkey	1997
Latvia Poland	1999	SADC	1992
Latvia Slovakia	1997	SAPTA	1993
Latvia Slovenia	1996	Singapore US	2003
Latvia Turkey	2000	Slovakia Slovenia	1993
Latvia Ukraine	1995	Slovakia Turkey	1998
Lithuania Poland	1997	Slovenia Turkey	2000
Lithuania Slovakia	1997	Syria Turkey	2004
Lithuania Slovenia	1997	Trans Pacific Strategic EPA	2005
Lithuania Turkey	1998	Tunisia Turkey	2004
Lithuania Ukraine	1995		

2.) Countries in the dataset

Table A2: **List of countries included into the analysis.**

Country		
Afghanistan	Dominica	Kazakhstan
Albania	Dominican Republic	Kenya
Algeria	Ecuador	Korea (Republic of)
Angola	Egypt	Kuwait
Argentina	El Salvador	Kyrgyzstan
Armenia	Equatorial Guinea	Lao People's Democratic Republic
Australia	Eritrea	Latvia
Austria	Estonia	Lebanon
Azerbaijan	Ethiopia	Lesotho
Bahamas	Fiji	Libyan Arab Jamahiriya
Bahrain	Finland	Lithuania
Bangladesh	France	Luxembourg
Barbados	Gabon	Madagascar
Belarus	Gambia	Malawi
Belgium	Georgia	Malaysia
Belize	Germany	Mali
Benin	Ghana	Malta
Bhutan	Greece	Mauritania
Bolivia	Grenada	Mauritius
Bosnia and Herzegovina	Guatemala	Mexico
Botswana	Guinea	Moldova (Republic of)
Brazil	Guinea-Bissau	Mongolia
Brunei Darussalam	Guyana	Morocco
Bulgaria	Haiti	Mozambique
Burkina Faso	Honduras	Namibia
Burundi	Hungary	Nepal
Cambodia	Iceland	Netherlands
Cameroon	India	New Zealand
Canada	Indonesia	Nicaragua
Cape Verde	Iran (Islamic Republic of)	Niger
Central African Republic	Iraq	Nigeria
Chad	Ireland	Norway
Chile	Israel	Oman
China	Italy	Pakistan
Colombia	Lebanon	Panama
Comoros	Libyan Arab Jamahiriya	Papua New Guinea
Congo	Sri Lanka	Paraguay
Congo (Democratic Republic of the)	Lesotho	Peru
Costa Rica	Lithuania	Philippines
Côte d'Ivoire	Luxembourg	Poland
Croatia	Latvia	Portugal
Cuba	Morocco	Qatar
Cyprus	Moldova (Republic of)	Romania
Czech Republic	Jamaica	Russian Federation
Denmark	Japan	Rwanda
Djibouti	Jordan	Saudi Arabia

Senegal	Swaziland	Turkmenistan
Serbia	Sweden	Uganda
Seychelles	Switzerland	Ukraine
Sierra Leone	Syrian Arab Republic	United Arab Emirates
Singapore	Tajikistan	United Kingdom
Slovakia	Tanzania (United Republic of)	United States
Slovenia	Thailand	Uruguay
Somalia	The former Yugoslav Republic of Macedonia	Uzbekistan
South Africa	Togo	Venezuela (Bolivarian Republic of)
Spain	Trinidad and Tobago	Viet Nam
Sri Lanka	Tunisia	Zambia
Sudan	Turkey	Zimbabwe
Suriname		

3.) Descriptive statistics

Table A3: **Descriptive statistics**

Variables	Mean	Std. Deviation	Minimum	Maximum	Data sources
FDI DISCRIMINATION (MONADIC)	3.51	3.53	0	16.37	(1) (2)
FDI DISCRIMINATION (DYADIC)	0.11	0.71	0	12.27	(1) (2)
FDI DISCRIMINATION (MONADIC) – INV.	1.18	2.72	0	16.20	(1) (2)
FDI DISCRIMINATION (DYADIC) –INV.	0.03	0.39	0	12.15	(1) (2)
FDI/GDP	0.01	0.03	0	0.83	(2)
TRADE (LOGGED)	1.96	2.37	0	12.46	(3)
GDP (LOGGED)	2.88	1.94	0.10	9.49	(3)
GDP PER CAPITA (LOGGED)	6.55	1.22	4.24	10.59	(3)
GDP GROWTH	0.57	6.45	-50.25	38.00	(3)
BIT	0.11	0.31	0	1	(4)
ALLIANCE	0.15	0.37	0	1	(5)
DEMOCRACY	2.42	1.71	1	7	(6)
CONTIGUITY	0.02	0.14	0	1	(7)
DISTANCE (LOGGED)	8.71	0.75	2.44	9.89	(7)
ISLAND	0.13	0.33	0	1	(7)
WTO	0.54	0.50	0	1	(8)
WTO ROUND	0.66	0.47	0	1	(8)
TRADE DISPUTE	0.01	0.07	0	1	(9)
COLONY	0.16	0.37	0	1	(7)
LANGUAGE	0.09	0.29	0	1	(7)
RELIGION	0.16	0.37	0	1	(10)
PTA COUNT (LOGGED)	2.59	1.30	0	4.79	(1)
FDI ATTRACTION	4.74	3.90	0	15.84	(1) (2)
SPATIAL DISTANCE	0.001	0.01	0	2.19	(1) (7)
SPATIAL DISTANCE^2	0.0001	0.02	0	4.80	(1) (7)

Sources: (1) Baccini and Dür 2013; (2) UNCTAD 2010b; (3) IMF 2008; (4) UNCTAD 2010a; (5) Correlates of War dataset; (6) Freedom House 2007; (7) CEPII 2006; (8) World Trade Organization 2008; (9) Horn and Mavroidis 2006; (10) Encyclopedia Britannica 2001.

4.) Model Fit

We assess the overall fit of our model by looking at the percent of correctly predicted PTAs. Wooldridge (2002) notes that this percentage may be misleading if the two outcomes of the dependent variable, i.e. zero and one, are examined at the same time. Put simply, although the model might correctly predict very few 1s (so called "true positives"), the percentage of correctly predicted 0s might be high (so called "true negatives"), leaving the impression that the model has high explanatory power. Following his suggestion, we separately examine the percentage of correctly 0s and 1s. Furthermore, we also report the percentage of "false positive", i.e. dyads without a PTA for which our model would predict one.[35]

As Baier and Bergstrand (2010: 40) point out, "a critical issue in classification is the choice of the 'cutoff' on the probability continuum." In the case of predicting PTAs, the usual cutoff point of 0.5 is not very relevant, since PTAs are rare events (Baier and Bergstrand 2010: 41). Thus, we follow Cohen et al. (2003) who suggest using *a priori* information about the proportion of 0s and 1s in the population. Using that measure, our cutoff point is 0.01 for the whole sample of PTAs and 0.001 for the PTAs that include investment provisions. Table A4 reports the number and the percentage of PTAs correctly predicted, true negatives, and false positives for both all PTAs (Model 1) and PTAs with investment provisions (Model 4). Our models provide excellent fits in both cases.

Finally, we follow Fawcett (2006) in measuring the overall fit of our models by examining the area underneath the "ROC" curve. An ROC curve graphs the true positive rate against the false positive rate, which is one minus the true negative rate. The fit of a model is perfect when the area under the curve is 1. In this ideal case the "true positive" rate is one,

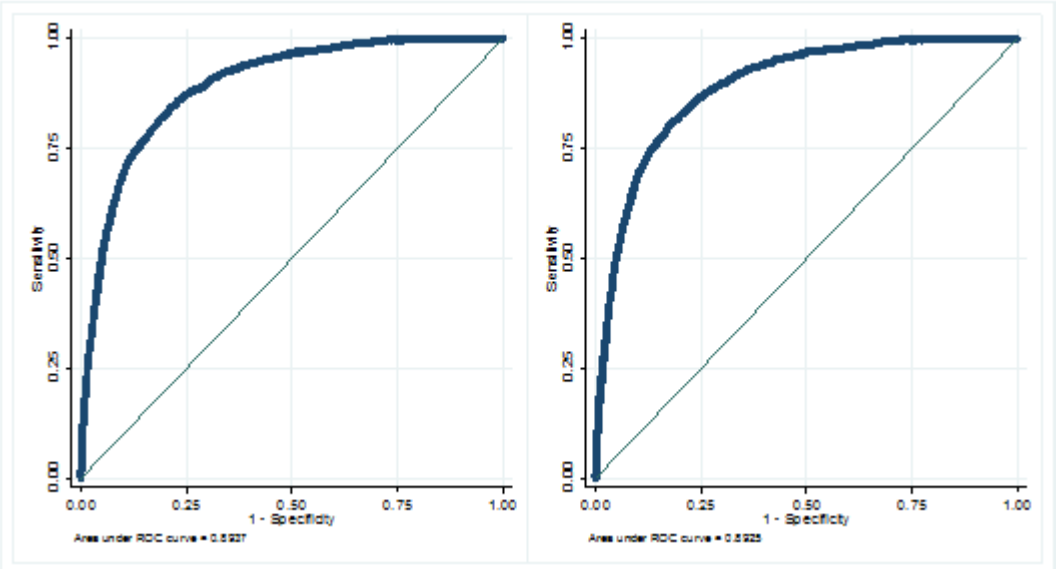
[35] We categorize observations as false positive if and only if dyads do not form a PTA over the entire period under investigation.

whereas the "false positive" rate is zero. Figures A1 and A2 provide the ROC curves for Models 1 and 5, respectively. In both cases, the area under the ROC curve is 0.89. This confirms the good fit of our models.

Table A4: Correctly predicted PTAs

	True Positive		True Negative		False Positive	
	Percent	*Number*	*Percent*	*Number*	*Percent*	*Number*
All PTAs	79	1,484	83	180,026	13	27,963
PTAs with investment provisions	78	243	74	161,869	21	46,579

Figures A1 and A2: ROC curves for Models 1 and 5



5.) Further Results

Table A5: Robustness checks I

Covariates	*A1 (instrumental variables)*	*A2 (interaction term)*	*A3 (FDI attraction)*	*A4 (Year fixed effects)*	*A5 (Region fixed effects)*
FDI Discrimination	0.02**			0.01**	0.02**
	(0.00)			(0.00)	(0.00)
FDI Discrimination I		-2.96**			
		(0.83)			
FDI Discrimination II		-0.001			
		(0.00)			
*FDI Discrimination I * FDI DiscriminationII*		0.22**			
		(0.06)			
FDI Attraction			0.004		
			(0.00)		
FDI/GDP	1.05**	1.52**	1.24**	1.06**	0.34
	(0.29)	(0.37)	(0.29)	(0.30)	(0.36)
Trade	0.01**	0.02**	0.02**	0.02**	0.02**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GDP	0.06**	0.05**	0.05**	0.05**	0.09**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
GDPpc	-0.02**	0.04**	0.04**	0.03*	0.15**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
GDP Growth	-0.01**	-0.01**	-0.01**	-0.00	-0.01**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
BIT	0.20**	0.22**	0.21**	0.25**	0.29**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Alliance	0.17**	0.21**	0.20**	0.22**	0.28**
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Democracy	0.02**	0.02**	0.03**	0.03**	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Contiguity	-0.15**	-0.16*	-0.15*	-0.18**	-0.20**
	(0.06)	(0.07)	(0.06)	(0.07)	(0.07)
Distance	-0.62**	-0.58**	-0.58**	-0.62**	-0.62**
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
Island	-0.28**	-0.17	-0.17	-0.19	-0.17
	(0.09)	(0.11)	(0.11)	(0.11)	(0.10)
WTO	0.10**	0.14**	0.13**	0.15**	0.11**
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)
WTO Round	-1.13**	0.58**	0.58**	-0.57	0.55**
	(0.14)	(0.03)	(0.03)	(0.42)	(0.03)
Trade Dispute	0.57**	-1.01**	-1.00**	-1.06**	-1.01**
	(0.04)	(0.32)	(0.32)	(0.32)	(0.33)
Colony	0.12**	0.10**	0.10**	0.08*	0.09*
	(0.02)	(0.04)	(0.04)	(0.04)	(0.04)
Language	0.16**	0.16**	0.15**	0.11*	0.03
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)
Religion	0.09**	0.10**	0.11**	0.10**	0.17**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
PTA Count	-0.04*	-0.01	-0.01	0.01	-0.04*
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)
Residuals	0.01*				
	(0.00)				
Constant	1.47**	0.77**	0.79**	0.95**	0.95**
	(0.13)	(0.24)	(0.24)	(0.26)	(0.32)
Cubic Polynomials	yes	yes	yes	yes	yes
Observations	217,921	217,921	217,921	217,921	217,921
Number of dyads	13,451	13,451	13,451	13,451	13,451
PTAs signed	1,878	1,878	1,878	1,878	1,878
Log likelihood	-8,420	-8,489	-8,425	-8,161	-8,137

Table A6: EU as single actor

Covariates	*A6 Main model*	*A7 (Invest Ch.)*	*A8 (Invest ch. dependent variable)*
FDI Discrimination	0.02**		
	(0.00)		
FDI Discrimination chapter		0.03**	0.09**
		(0.01)	(0.01)
FDI/GDP	2.24**	1.95**	1.91**
	(0.44)	(0.44)	(0.53)
Trade	0.02**	0.02**	0.03**
	(0.01)	(0.01)	(0.01)
GDP	0.03*	0.02	-0.03
	(0.01)	(0.01)	(0.02)
GDPpc	-0.00	-0.01	-0.04
	(0.01)	(0.01)	(0.02)
GDP Growth	-0.01**	-0.01**	-0.01**
	(0.00)	(0.00)	(0.00)
BIT	0.21**	0.22**	0.09
	(0.04)	(0.04)	(0.07)
Alliance	0.19**	0.19**	-0.11
	(0.03)	(0.03)	(0.06)
Democracy	0.01*	0.02**	0.05**
	(0.01)	(0.01)	(0.01)
Contiguity	-0.11	-0.09	-0.09
	(0.06)	(0.06)	(0.13)
Distance	-0.58**	-0.59**	-0.35**
	(0.03)	(0.03)	(0.03)
Island	-0.11	-0.10	
	(0.12)	(0.12)	
WTO	0.11**	0.10**	-0.15**
	(0.04)	(0.04)	(0.05)
WTO Round	0.61**	0.60**	0.78**
	(0.03)	(0.03)	(0.06)
Trade Dispute	-0.51	-0.50	
	(0.39)	(0.39)	
Colony	0.09*	0.09*	0.09
	(0.04)	(0.04)	(0.06)
Language	0.16**	0.15**	0.18*
	(0.05)	(0.05)	(0.07)
Religion	0.08**	0.07*	0.05
	(0.03)	(0.03)	(0.05)
PTA Count	-0.03*	-0.02	0.13**
	(0.02)	(0.02)	(0.03)
Constant	1.09**	1.16**	-1.49**
	(0.29)	(0.30)	(0.35)
Cubic Polynomials	yes	yes	yes
Observations	182,336	179,982	179,982
Number of dyads	11,865	11,712	11,712
PTAs signed	1,561	1,561	293
Log likelihood	-7,064	-6,919	-1,815

Robust standard errors in parentheses clustered by dyads. ** $p < 0.01$, * $p < 0.05$.

Table A7: Robustness Checks II

Covariates	*A9 (smaller value)*	*A10 (3 years)*	*A11 (7 years)*	*A12 (distance)*	*A13 (few controls)*
FDI Discrimination	0.03**	0.02**	0.01**	0.01**	0.01**
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
FDI/GDP out	1.19**	1.10**	1.11**	1.22**	0.76**
	(0.29)	(0.29)	(0.29)	(0.28)	(0.23)
Trade	0.02**	0.02**	0.02**	0.02**	
	(0.00)	(0.00)	(0.00)	(0.00)	
GDP	0.05**	0.05**	0.05**	0.05**	
	(0.01)	(0.01)	(0.01)	(0.01)	
GDPpc	0.03**	0.03**	0.03**	0.03**	
	(0.01)	(0.01)	(0.01)	(0.01)	
GDP Growth	-0.01**	-0.01**	-0.01**	-0.01**	
	(0.00)	(0.00)	(0.00)	(0.00)	
BIT	0.22**	0.21**	0.21**	0.20**	
	(0.03)	(0.03)	(0.03)	(0.03)	
Alliance	0.20**	0.20**	0.20**	0.20**	
	(0.02)	(0.02)	(0.02)	(0.02)	
Democracy	0.03**	0.03**	0.03**	0.03**	
	(0.01)	(0.01)	(0.01)	(0.01)	
Contiguity	-0.16*	-0.16*	-0.15*	-0.12	
	(0.06)	(0.07)	(0.07)	(0.06)	
Distance	-0.58**	-0.58**	-0.58**	-0.58**	
	(0.02)	(0.02)	(0.02)	(0.02)	
Island	-0.16	-0.17	-0.17	-0.17	
	(0.11)	(0.11)	(0.11)	(0.11)	
WTO	0.13**	0.13**	0.13**	0.12**	
	(0.03)	(0.03)	(0.03)	(0.03)	
WTO Round	0.58**	0.57**	0.58**	0.59**	
	(0.03)	(0.03)	(0.03)	(0.03)	
Trade Dispute	-1.01**	-0.99**	-1.00**	-0.99**	
	(0.32)	(0.32)	(0.32)	(0.32)	
Colony	0.10**	0.10**	0.10**	0.09**	
	(0.04)	(0.04)	(0.04)	(0.03)	
Language	0.15**	0.15**	0.15**	0.17**	
	(0.04)	(0.04)	(0.04)	(0.04)	
Religion	0.11**	0.10**	0.10**	0.11**	
	(0.03)	(0.03)	(0.03)	(0.03)	
PTA Count	-0.01	-0.01	-0.01	-0.03	-0.04**
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Spatial distance				28.97**	
				(6.37)	
(Spatial distance)^2				-753.74**	
				(173.22)	
Constant	0.83**	0.82**	0.81**	0.82**	-2.43**
	(0.24)	(0.24)	(0.24)	(0.17)	(0.02)
Cubic polynomials	yes	yes	yes	yes	yes
Observations	217,921	217,921	217,921	217,921	217,921
Number of dyads	13,451	13,451	13,451	13,451	13,451
PTAs signed	1,878	1,878	1,878	1,878	1,878
Log likelihood	-8,493	-8,490	-8,491	-8,453	-10,754

Robust standard errors in parentheses clustered by dyads. ** $p < 0.01$, * $p < 0.05$.

Table A8: Survival analysis (Cox model)

Covariates	*A14*	*A15 (dyadic FDI)*	*A16 (intermediate goods)*	*A17 (inv. chapter)*	*A18 (inv. chapter dependent)*
FDI Discrimination	0.02**	0.13**	-0.01		
	(0.00)	(0.02)	(0.01)		
Intermediate			-0.03**		
			(0.01)		
*FDI Discrimination**			0.01**		
Intermediate			(0.00)		
FDI Discrimination				0.04**	0.25**
Chapter				(0.01)	(0.02)
FDI/GDP	1.10**	1.52	0.68	1.27	4.07**
	(0.26)	(0.80)	(0.83)	(0.81)	(0.77)
Trade	0.02**	0.04**	0.04**	0.04**	0.05
	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)
GDP	0.05**	0.11**	0.11**	0.09**	-0.06
	(0.01)	(0.03)	(0.03)	(0.03)	(0.06)
GDPpc	0.03*	0.11*	0.11**	0.11**	-0.17**
	(0.01)	(0.04)	(0.04)	(0.04)	(0.06)
GDP Growth	-0.01**	-0.01**	-0.01**	-0.01**	-0.02**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
BIT	0.21**	0.61**	0.63**	0.65**	0.25
	(0.03)	(0.08)	(0.08)	(0.08)	(0.19)
Alliance	0.20**	0.50**	0.53**	0.50**	-0.27
	(0.02)	(0.06)	(0.06)	(0.06)	(0.17)
Democracy	0.03**	0.07**	0.06**	0.07**	0.20**
	(0.01)	(0.02)	(0.02)	(0.02)	(0.03)
Contiguity	-0.16**	-0.70**	-0.70**	-0.65**	-0.31
	(0.05)	(0.15)	(0.15)	(0.15)	(0.32)
Distance	-0.58**	-1.09**	-1.08**	-1.08**	-0.59**
	(0.01)	(0.07)	(0.07)	(0.07)	(0.07)
Island	-0.17	-0.46	-0.48	-0.48	
	(0.12)	(0.26)	(0.26)	(0.27)	
WTO	0.13**	0.40**	0.39**	0.41**	-0.28
	(0.03)	(0.10)	(0.10)	(0.10)	(0.15)
WTO Round	0.58**	1.18**	1.21**	1.16**	1.64**
	(0.02)	(0.11)	(0.11)	(0.11)	(0.17)
Trade Dispute	-1.00**	-3.11**	-2.82**	-2.75**	
	(0.15)	(1.03)	(1.01)	(1.01)	
Colony	0.10**	0.35**	0.36**	0.36**	0.32*
	(0.02)	(0.11)	(0.11)	(0.12)	(0.15)
Language	0.15**	0.02	0.04	0.04	0.28
	(0.03)	(0.14)	(0.14)	(0.14)	(0.18)
Religion	0.10**	0.26**	0.25**	0.24**	0.21
	(0.02)	(0.07)	(0.07)	(0.07)	(0.14)
PTA Count	-0.01	-0.05	-0.06	-0.06	0.07
	(0.02)	(0.04)	(0.04)	(0.04)	(0.09)
Observations	217,921	217,921	217,921	215,400	228,978
Number of dyads	13,451	13,451	13,451	13,451	13,451
PTAs signed (failures)	1,878	1,878	1,878	1,878	312
Log likelihood	-15,796	-15,795	-15,771	-15,401	-2,700

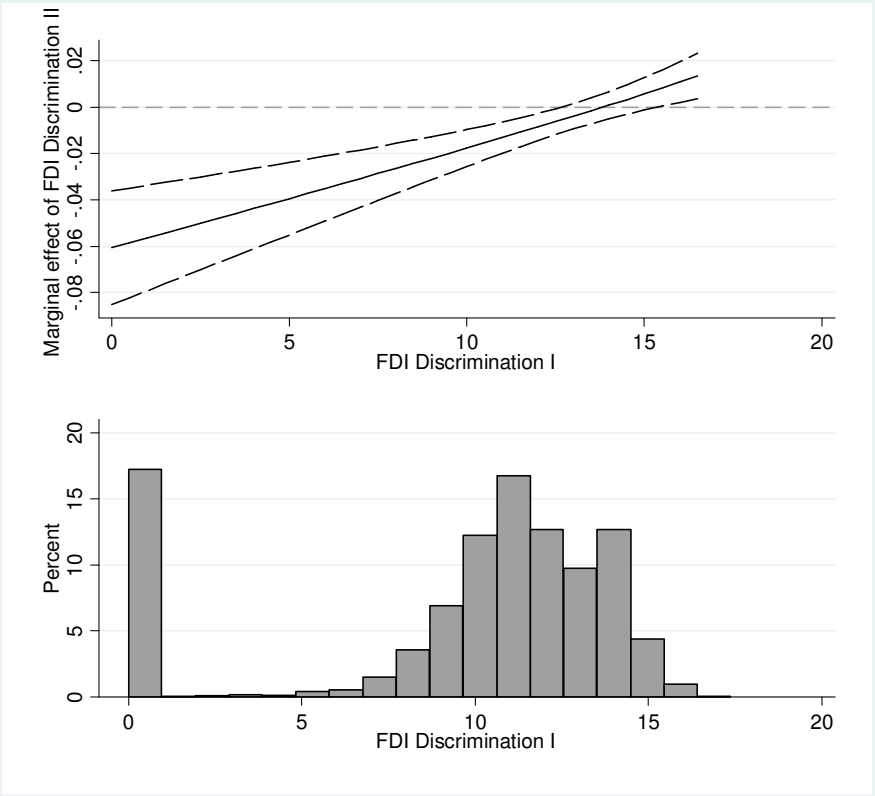
Robust standard errors in parentheses clustered by dyads. ** p<0.01, * p<0.05

Table A9: Bootstrap standard errors

Covariates	*A19*	*A20 (dyadic FDI)*	*A21 (intermediate goods)*	*A22 (inv. chapter)*	*A23 (inv. chapter dependent)*
FDI Discrimination	0.01**	0.06**	-0.01		
	(0.00)	(0.01)	(0.00)		
Intermediate			-0.02**		
			(0.00)		
FDI Discrimination Intermediate*			0.003**		
			(0.00)		
FDI Discrimination chapter				0.02**	0.09**
				(0.01)	(0.01)
FDI/GDP	1.11**	1.15**	0.80**	0.99**	1.27**
	(0.26)	(0.26)	(0.27)	(0.26)	(0.34)
Trade	0.02**	0.02**	0.02**	0.02**	0.03**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
GDP	0.05**	0.05**	0.06**	0.05**	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
GDPpc	0.03**	0.03**	0.03**	0.03**	-0.03
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
GDP Growth	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
BIT	0.21**	0.21**	0.23**	0.23**	0.14*
	(0.03)	(0.03)	(0.04)	(0.03)	(0.07)
Alliance	0.20**	0.19**	0.21**	0.20**	-0.06
	(0.02)	(0.02)	(0.02)	(0.03)	(0.05)
Democracy	0.03**	0.03**	0.02**	0.03**	0.08**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Contiguity	-0.15*	-0.16**	-0.16**	-0.13*	-0.01
	(0.06)	(0.06)	(0.06)	(0.06)	(0.10)
Distance	-0.58**	-0.59**	-0.59**	-0.58**	-0.30**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Island	-0.17	-0.16	-0.16	-0.16	
	(0.10)	(0.11)	(0.12)	(0.09)	
WTO	0.13**	0.13**	0.12**	0.13**	-0.13*
	(0.04)	(0.03)	(0.04)	(0.03)	(0.05)
WTO Round	0.58**	0.58**	0.59**	0.56**	0.80**
	(0.02)	(0.03)	(0.03)	(0.03)	(0.06)
Trade Dispute	-1.00**	-1.20**	-1.03**	-1.00**	
	(0.14)	(0.14)	(0.14)	(0.15)	
Colony	0.10**	0.09**	0.11**	0.10**	0.13*
	(0.03)	(0.03)	(0.02)	(0.03)	(0.06)
Language	0.15**	0.15**	0.15**	0.15**	0.17**
	(0.03)	(0.03)	(0.04)	(0.03)	(0.06)
Religion	0.10**	0.11**	0.10**	0.10**	0.09
	(0.02)	(0.02)	(0.02)	(0.03)	(0.05)
PTA Count	-0.01	-0.00	-0.01	-0.01	0.13**
	(0.02)	(0.02)	(0.01)	(0.02)	(0.03)
Constant	0.81**	0.87**	0.89**	0.86**	-2.09**
	(0.13)	(0.16)	(0.15)	(0.12)	(0.29)
Cubic Polynomials	yes	yes	yes	yes	yes
Number of dyads	13,451	13,451	13,451	13,451	13,451
PTAs signed	1,878	1,878	1,878	1,878	312
Log likelihood	-8,492	-8,487	-8,459	-8,317	-1,951
Observations	217,921	217,921	217,921	215,400	215,400

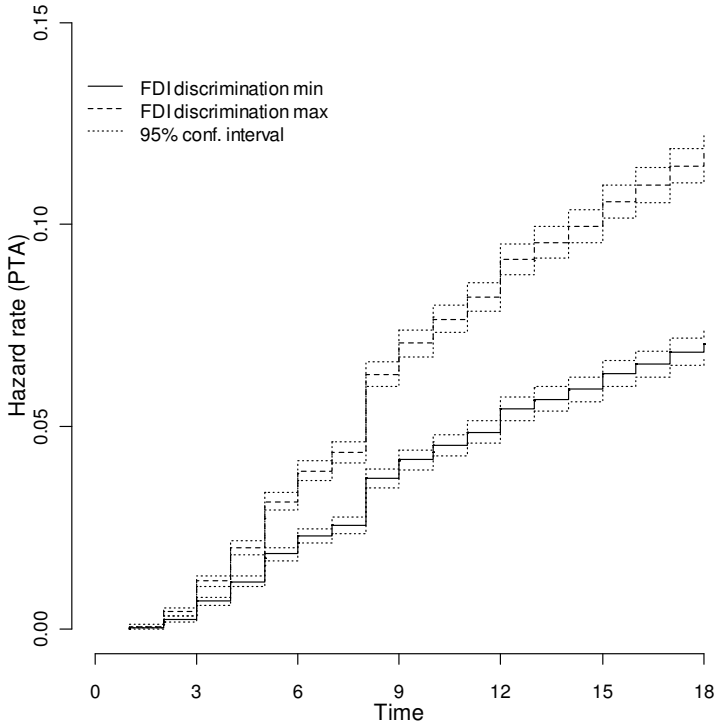
Bootstrapped standard errors (100 replications). ** p<0.01, * p<0.05

Figure A3: The interaction effect between FDI Discrimination I and FDI Discrimination II



The dotted lines are the 95% confidence intervals. The histogram at the bottom shows the distribution of the variable FDI Discrimination I.

Figure A4: The hazard rate (Model A8)



6.) Intermediate Goods

BEC data were only available consistently from 1998 on. For years before 1998 we rely on two types of data. First, for the years 1996 and 1997 we use a correspondence between HS96 and BEC to convert HS data to BEC data. Second, the years before 1996 are in the original HS coding system. We used the aforementioned concordance to convert these data first to HS96 data and then to BEC data. Because an HS88 category could be in several HS96 categories, we divided imports and exports by the number of duplicated HS88 categories, assuming that the goods divided equally into the new category. Finally, we note that there are three BEC categories that do not map nicely onto the capital goods, intermediate goods, and consumption goods categories (they are categories 32, 51, and 7). We left those categories out of intermediate goods and include each of them in a separate category.[36]

[36] Our results are not sensitive to this decision, that is, we obtain similar results if we include these three categories in the category of intermediate goods.

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