Setting up Shop in Foreign Lands:
Do Investment Commitments in PTAs
Promote Production Networks?

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6 January 2017

Abstract

This paper analyzes the impact of investment commitments in preferential trade agreements (PTAs) on multinational firms' production networks. The analysis tests the hypothesis that that strong liberalization commitments in PTAs promote multinational firms' production networks. We employ several measures concerning the liberalization, protection, and integration in investment activities, constructed from PTA provisions. Our analysis of 317 PTAs supports the main hypothesis: strong investment commitments are associated with a higher number of common MNC affiliates among partner countries, controlling for a country's pre-existing level of investment restrictiveness. We also find a substitution effect for BITs and PTAs, in which investment commitment strength and the existence of a bilateral investment treaty alternatively promote production networks in agreement countries. This paper contributes to the scholarship on post-implementation effects of international treaties, the link between trade and investment in the era of global production, and the relationship between PTAs and BITs in governing investment.

Keywords: investment; preferential trade agreements; production networks; bilateral investment treaties

Trade and investment are increasingly connected as production becomes more internationalized through the investments of multinational firms and international economic exchange is dominated by trade along the international supply chain. Baldwin (2011) refers to this two-fold process as globalization's 'second unbundling,' in which advances in technology and communications facilitated the rapid and extensive offshoring of production at the end of the 20th century, especially since 1985.[1] Multinational firms fragment production in vertically integrated chains, in which specific tasks are separated geographically to take advantage of differences in technology and factor costs of host countries. Theoretically at least, this international division of labor would lead to productivity gains that translate to welfare gains for countries participating in the international supply chain.

The interconnections of trade and investment to support the international supply chain thus calls for liberalization of both. Institutionally, this has been increasingly achieved through PTAs, which contain commitments both for trade and for investment. Traditionally, investment by itself has been covered through bilateral investment treaties (BITs), of which there are more than 2500 currently in existence (UNCTAD, 2008). Perhaps because many countries already share a BIT and seek greater commitments that are integrated with market access, countries are increasingly turning towards PTAs. Indeed, while UNCTAD reports that the number of new BITS is declining since 2001, the number of PTAs with investment provisions has been on the rise (Miroudot (2011); Poulsen and Aisbett (2013)).

In this paper, we investigate the link between trade and investment through the impact of investment commitments in PTAs on the expansiveness of multinational firms' production networks. We advance the argument that for trading partners that have signed a PTA with strong investment commitments, their links through production networks will also tend to be stronger. Empirically, we test the hypothesis that agreement partners will tend to host affiliates of the same multinational firms in greater numbers when they also make strong commitments to toward protection and liberalization of investment, and even move toward greater integration through technical assistance and broader economic cooperation.

We contribute to the scholarship on the politics of trade agreements, investment, and production networks in three ways. First, we focus on the post-agreement implementation phase of PTAs. Second, we assess the strength of commitments concerning investment that vary across agreements and examine their impact on firm behavior. Third, we also control for the baseline level of investment restrictiveness in a country to take account of

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[1]According to Baldwin(2006, 9-22), the first unbundling – internationalization of production – took place in two waves, in the mid-19th century until World War I, and then again in the 1960s for another two decades.

the adjustment costs that attend implementation of PTA commitments. More broadly, this paper contributes to the scholarship on post-implementation effects of international treaties, the link between trade and investment in the era of global production, and the relationship between PTAs and BITs in governing investment.

We analyze pairs of PTA partners across 317 agreements, and we find support for our hypothesis that stronger commitments in investment protection, liberalization, and integration also strengthen production networks. For PTAs with strong and high-quality investment provisions, agreement partners also tend to host a larger number of common multinational corporations (MNCs) [2] than those in PTAs with weaker investment commitments. This result holds across a variety of specifications, including a control for the average level of investment restrictiveness in agreement partners as well as a set of conventional controls. We also find a substitution effect for BITs and PTAs, in which investment commitment strength and the existence of a bilateral investment treaty alternatively promote production networks in agreement countries.

Governing Investment and Trade

Investment as an area of governance has been largely dominated by bilateral and regional agreements, owing to the failure of efforts to forge a comprehensive multilateral regime. In this, investment is different from trade, whose architecture for governance has proceeded through the years of the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO). Investment issues became relevant for trade as it became a negotiating point in the Uruguay Round, resulting in the Trade-Related Investment Measures (TRIMs) agreement under the WTO. Investment and trade were also linked in the Canada-US Free Trade Agreement (CUSFTA), which featured one of the first instances of an investment chapter in a trade agreement.

The 1994 North America Free Trade Agreement (NAFTA) was the first PTA to include a chapter on investment with provisions that included the language of bilateral investment treaties (BITs) but also went beyond them in commitments toward protection and liberalization of investment (Kotschwar (2009), 366). Prior to NAFTA, the architecture for managing investment was dominated by BITs, which had flourished since the 1950s (Elkins et al. (2006)). NAFTA also provided for investor-state dispute settlement (ISDS), an institutional feature that has persisted in subsequent US trade agreements such as the most recent Trans-Pacific Partnership (TPP) Agreement and continues to be a controversial negotiating point in trade agreement negotiations.

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[2]We use multinational firms and multinational corporations (MNCs) interchangeably in this paper.

Within the voluminous literature on the effects of PTAs, we are interested in how these institutions impact the internationalization strategies of multinational firms, in particular the expansion of their production networks in various countries. Multinational firms expand overseas by setting up subsidiaries, production plants, and factories in host countries. PTAs help facilitate this expansion through liberal investment provisions that guarantee the promotion of their investments and protection of their assets. Existing scholarship has investigated the impact of PTAs on the expansion of production activities of multinational firms along two main lines. The first group of studies examines the impact from the perspective of the host country by looking at inward foreign direct investments (FDI). The second group of studies takes the perspective of the firm by looking at the firms production network.

PTAs and Inward FDI. Earlier empirical studies have restricted their analyses to the effects of a single PTA on the investment inflows of a handful of countries in a region and theorized that the increase in market size and market opportunities that come with participating in a PTA will encourage investments (Blomstrom and Kokko, 1997; Sanchez and Karp, 1999; Waldkirch, 2003; Globerman and Shapiro, 1999; Duade et al., 2003). More recent studies start to examine the impact not of specific PTAs but of PTAs in general and have shifted from a regional to an international perspective (Büthe and Milner, 2008; Te Velde and Bezemer, 2006). Such studies have reasoned that beyond the increase in market size and market opportunities, participating in PTAs also allow governments to make commitments to foreign investors regarding the promotion and protection of their assets and thereby increasing inward investments. By looking at the membership of countries in PTAs, the above studies treat PTAs as homogenous instruments to attract investments. However, PTAs are vastly diverse in their design and provisions and would also differ in their ensuing implication on the inward investments of a country.

To overcome the limitation, the second strand of literature that has emerged has examined the impact of the design of PTAs on the inward FDI of countries. Most have looked at how the design of investment provisions explicitly 'lock in' the promises regarding investment liberalization (Adams et al., 2003; Berger et al., 2013; Büthe and Milner, 2014; Dee and Gali, 2003; Lesher and Miroudot, 2006; Te Velde and Bezemer, 2006). For instance, the most-favoured-nation treatment (MFN) and National Treatment provides assurance of non-discriminatory practices in the pre- and post-establishment phases. Other provisions allow for guaranteed market access for foreign investors and investment protection relating to expropriation and repatriation. Berger et al. (2013) and Büthe and Milner (2014) have, in addition to examining liberal investment provisions, also looked at the provision of dispute-settle mechanisms (DSM) in PTAs as a form of credible commit-

ment to foreign investors against discriminatory treatment. The DSM increases the cost on the part of the host countries of reneging on the agreement and help to safeguard the investments of foreign firms. Exploring the design of PTAs and the extent to which such agreements provide for certain investment liberalization or protection clauses allows us to better understand if and how PTAs alter or encourage the expansion of multinational firms. However, it is difficult to liken the FDI flows received by a host country to the increase in production facilities brought about by multinational firms. By aggregating the various production investments made by firms into the total volume of FDI flows, we lose the nuanced differences of the impact of PTA on different industries and firms. To establish that, we need to look at the production networks of firms.

PTAs and Production Networks. Similar to the earlier studies conducted on PTAs and FDI, studies on PTAs and production networks have limited their analysis to a single country, region and industry (Kessler, 1999; Lim, 2006; Oh and Moon, 2003). Other studies have looked at how the design and presence of provisions such as tariff reduction (Gopalakrishnan, Sen, and Srivastava, Gopalakrishnan et al.; Hew et al., 2009) and the rules of origin (Kawai and Wignaraja, 2011; Nag and De, 2011) help develop and expand production networks in Asia. The above studies produced in-depth case studies that illuminate the effectiveness of PTAs on the expansion decisions of firms. They detail the relocation and emergence of new production networks and also the resulting economic consequences for the firm, industry, and home and host countries. While informative, it is difficult to generalize this impact based on a small sample of PTAs and the corresponding strategies of a few firms. To the best of our knowledge, there is currently no large-n academic study that assesses the impact of multiple PTAs on the global production networks of multinational firms. In this paper, we analyze a large sample consisting of more than 300 PTAs and the production networks of 500 of the largest and most influential multinational firms in the world.

Layered Governance

Since the 1990s, investment continues to be managed as much through PTAs as through BITs. In this section, we develop a theoretical framework for why strong investment commitments in PTAs promote the production networks of multinational firms. We argue that as part of a deep integration PTA, investment provisions protect, liberalize, and to some extent integrate or harmonize the investment activities of partner countries. Investment provisions nested within a PTA with a broad range of commitments in trade issues provides for a multi-layered set of rule for managing both trade and investment, as well as other issue areas. The scope of a PTA allows for linkages across different areas

of trade, including not only trade and investment but also services, intellectual property rights, technical barriers to trade (TBTs), and new issues such as labor and environmental standards. These cross-cutting linkages promote deep integration, enhance market access, and provides for additional credibility to investors. We develop our expectation that this form of layered governance strengthens production networks through the extensive establishment of multinational firms' affiliates in agreement countries.

Deep Integration In cases of deep PTAs, which commit signatories to strong 'behind-the-border' liberalization of domestic trade regimes, investment promotes deep integration (Lawrence, 1996), in which participating countries move toward greater convergence in domestic regulatory regimes for managing international economic transactions. Investment commitments as part of a deep integration PTA (Kim, 2015) perform three main functions: protection of foreign firms' interests, liberalization of investment regulations, and harmonization of investment regimes.

Protection of multinational firms' investments include the range of property rights that ensure that foreign firms are not subject to expropriation, especially without compensation, and that they are not unduly restricted from the repatriation of profits. Liberalization of investment includes features such as MFN and National Treatment for investment from agreement partners. For PTAs that go beyond the GATS commitments, in which investment is covered under Mode 3 provisions on commercial presence, MFN and National Treatment may cover a wider range of investment activities including the previously excluded establishment and re-sale stages. PTAs may also adopt a negative-list approach to liberalization, in which all sectors except those under reservations are liberalized, in contrast to a positive-list approach in which only sectors specified in the agreement are liberalized. These measures toward protection and liberalization are perhaps the most basic of provisions for security of foreign firms' property rights and traditionally also covered in investment treaties but further expanded in PTAs.

Harmonization provisions in investment treaties have relevance in determining the regulatory space for investment in agreement partners, both in BITs (Brouder et al., 2016) and in PTAs. In this, the harmonization components of investment commitments are as relevant as those in other areas such as standards and technical regulations. Investment provisions concerning transparency contain mechanisms for rendering greater convergence in the kinds of information that agreement partners are required to provide and the administrative procedures and mechanisms for disseminating and disputing information. To this end, PTAs include provisions requiring agreement partners to publish relevant laws and regulations concerning investment and to establish a national inquiry point to which foreign investors have access. These provisions promote deep integration by harmonizing informational mechanisms among agreement partners.

Market Access The fact that investment commitments are found in conjunction with broader trade liberalization rules reflects the salience of links between trade and investment to multinational firms. Investment commitments in PTAs are positioned in an expansive set of obligations in related areas that also enhance market access for foreign firms, including but not limited to services, intellectual property rights, standards, and even subsidies and countervailing measures. Investment provisions on their own as well as part of the broader package of the PTA enhances market access through their protection and liberalization functions.

A trade agreement covers several issue areas that are integral to an overall investment framework that is designed to promote investment. Intellectual property rights are increasingly important as an area of investment protection and may be even be included in the definition of investment itself. As investment, consistent with the GATS approach, may be found under the mode 3 classification of services, strong commitments in this area support similar commitments in the investment chapter. The market access effect of PTAs for investment may also be found in commitments on subsidies and countervailing duties, which may prohibit investment incentives for local firms as a form of subsidy and are thus discriminatory toward foreign firms. Furthermore, in the context of production networks, which links firms along the international supply chain, technical barriers to trade and competition policy are also relevant provisions that support greater market access as trade and investment move together.

Credibility of Commitment to Investors. Finally, combining investment commitments with others in PTAs enhances the credibility of agreement countries, especially developing countries, toward investors (Kotschwar (2009), 366). A trade agreement that includes strong commitments not only toward investment protection, liberalization, and harmonization but also in other areas such as intellectual property rights, services, and competition indicates that the government is willing to tie its hands across a wide range of related governance areas. As such, investment commitments as part of the larger PTA package provides additional credibility that may be more attractive to investors. Moreover, deep PTAs also include transparency provisions that facilitate the flow of information concerning domestic regulations and provides for national points of inquiry, which serve to reduce uncertainty for foreign investors and are likely to promote greater predictability and stability in investment activities.

Expectations

We hypothesize that PTAs with strong investment commitments strengthen the participation of agreement countries in international production networks. Trade agreements with

strong investment provisions provide deep integration functions for investment, enhance market access through cross-issue linkages, and provide additional credibility to investors, which we expect will make agreement countries more attractive destinations for multinational firms to station affiliates. More broadly, different firms that are linked through the supply chain enhances the protection of their investments by deterring host governments from violating their property rights (Johns and Wellhausen, 2016). In testing our central hypothesis on the effect of investment commitments on production networks, we differentiate PTAs by the strength of their investment commitments, utilizing a template that evaluates provisions across 13 broad categories. The analysis examines the impact of investment commitments for states' participation in international production networks, measured in terms of the number of MNC affiliates common to agreement partners.

Production networks exemplify the most recent development in international trade, in which intermediate goods are traded along the international supply chain. They reflect the internationalization of production and the operations of multinational firms as they fragment production across borders in vertically integrated manufacturing processes. In this paper, we examine the extensiveness of PTA agreement countries' embeddedness in multinational firms' production networks. We offer an alternative to the conventional approach of employing trade in parts and components as a proxy for production networks, emphasizing instead the direct effect of PTAs on the investment behaviors of firms as they concern the establishment of multiple production facilities across agreement countries. We hypothesize that where countries negotiate PTAs that protect, liberalize, and integrate investment along with trade and other issue areas that would enhance the efficiency of production activities, multinational firms are likely to respond with higher levels of investment. We expect subsequently to observe larger numbers of affiliates of the same firm to be located in agreement countries.

This paper contributes to the existing scholarship on PTAs in several ways. First, the analysis focuses on the implementation phase of PTAs. The existing scholarship has generated significant insights into the formation of PTAs (Edward D. Mansfield (2012),Baier and Bergstrand (2007)).[3] Much less is known about the implementation of PTAs and how they affect economic behavior beyond trade in the post-agreement period, especially the behavior of multinational firms. Studies by Haftel (2013) and Gray (2014) offer first insights into the factors affecting the successful or unsuccessful implementation of commitments in economic agreements, in terms of measuring the success of implementation. We continue to build on these efforts to understand the extent to which PTAs are successful in motivating multinational firms to form extensive production networks.

Second, we develop a measure of the strength of commitments in investment provi-

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[3]See also (Kim, Mansfield, and Milner (Kim et al.); Johns and Peritz (2015)).

sions. This departs from studies that employ a dichotomous indicator for investment provisions but at the same time in keeping with the extensive mapping projects that can be found in the scholarship on PTAs (Dür et al. (2014); Estevadeordal et al. (2009)) that seek to identify the variation across the agreements. In utilizing a continuous measure in this paper, we seek to model more closely how differences in the degree to which PTAs commit partners to investment protection and liberalization affect multinational firms' behavior.

Third, we also take into account a baseline for the investment restrictiveness in agreement countries. An enduring question in examining the impact of PTAs is whether the PTAs actually commit signatories to change or whether they are simply formalizing the institutional status quo, much in the way that states arguably sign onto agreements to which they intend to comply (Downs et al. (1996)). In this latter case, the PTA itself entails minimal adjustment costs and would not be expected to yield extensive economic benefits. To take account of this baseline and thus the adjustment costs that implementation of PTA commitment would entail, the analysis controls for the investment restrictiveness of the agreement countries.

Analysis

We analyze the impact of 317 PTAs on the extensiveness of production networks in agreement countries. This sample of PTAs spans the years 1970-2012 and is delimited by the availability of data on the variables employed in the analysis. The unit of analysis is the dyad, and the sample of analysis consists of pairs of countries that are signatories to the same PTA. The dependent variable is the extensiveness of dyad members' ties in the production networks of firms, and the independent variable of interest is the strength of investment commitments in PTAs. Where countries are partners in overlapping PTAs, we report the effect of highest level of investment commitments across the agreement, which indicates the maximal extent of reform in investment regulations that can be expected from the signatories. The analysis controls for the baseline regulatory environment for investment, and other factors including economic size, trade, shared language, shared land border, distance, political heterogeneity, and years since the signing of the agreement. We also investigate the interaction effects of i) distance and trade; and ii) the existence of a bilateral investment treaty and strength in investment commitments in PTAs.

Dependent Variable: Common MNCs

The dependent variable of interest is the number of multinational firms with affiliates in both dyad members in the post-agreement period when the PTA is in effect. We take this as a measure of the partners' joint participation in the production networks of these firms. In terms of the firms themselves, we examine the production networks of the largest 500 firms in the world. A country participates in a firm's production network when it hosts entities of the firm that engage in production activities. As large multinational firms spread their production networks across borders, countries might come to be part of the same production network of a firm. The analysis employs the log-transformed total number of firms that two agreement partners have in common as a measure of their joint participation in production networks.

To determine the largest 500 firms in the world, we use market capitalization as a proxy for firm size. Market capitalization is defined as the total dollar value of all of a firms outstanding shares, and it is calculated by multiplying the total number of a firms outstanding shares by the current market price of one share. We choose to use market capitalization over other measures such as total sales or total assets of a firm as the former better reflects the equilibrium monetary worth of a firm. As retail and institutional investors buy and sell a firm's shares in global stock exchanges, they take into consideration all public information regarding the firm, including its financial status and future growth prospects, and collectively determine the total worth of a firm through the market. Alternatively, total sales and assets do not account for other financial information of firm, such as its total costs and liabilities, and is also subjected to different accounting standards and practices across different reporting countries. We nonetheless also acknowledge that market capitalization is not a perfect proxy for firm size as the sample would only include publicly listed companies and exclude private companies since they do not list their shares on global stock exchanges.

We collected data on the largest 500 firms in the world by market capitalization as of 31st December 2013 using the Financial Times Global 500 Data, and map the corporate family of those firms using the database OneSource.[4] The corporate family of a firm includes (1) the parent/headquarter, (2) subsidiaries, (3) divisions, (4) facilities, (5) joint ventures, (6) units, (7) branches, (8) affiliates, and (9) holding companies. We only use the information from (2) to (6) as these entities are more likely to engage in the production activities of the firm and constitute an integral part of the production network that is under the parent firm's control. In Appendix A, we include a brief discussion of the parts of the corporate family that we included and excluded from the analysis.

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[4]http://globalbb.onesource.com/homepage.aspx, last accessed January 9, 2015.

Independent Variable: Strength of Investment Commitments

The independent variable of interest – strength of investment commitments in PTAs – is operationalized as a 30-point index that covers 13 broad categories of investment provisions. The index is calculated on the basis of a coding template for investment provisions in PTAs developed by Barbara Kotschwar (2009) for a large-scale coding project for trade agreements (Estevadeordal et al., 2009). The Appendix details the actual coding scheme applied to calculate the index. Below we provide a brief discussion of the 13 categories.

1. Definition of Investment. The definition of investment may take the broad asset-based form, which includes both foreign direct investment (FDI) and portfolio investment. A narrower definition of investment takes the enterprise-based form, which covers only the establishment or acquisition of a business. This latter narrower definition follows the model of the General Agreement on Trade in Services (GATS), in which investment is covered under Mode 3 of services: commercial presence.[5]

2. Separate investment chapter. This category indicates whether investment commitments function as a stand-alone chapter rather than as part of another chapter on a related issue area.

3. Investment commitments in Services Chapter. This category indicates whether investment provisions are included in the Services chapter under mode 3 (commercial presence).

4. Endeavors without scope This category indicates whether the trade agreement includes only a general commitment to investment, such as in the preamble, or whether there are specific commitments as found in the first three categories. Categories 1-4 are generally known as provisions for sectoral coverage, with each provision capturing a different dimension of investment definition and coverage.

5. Investor-State Dispute Settlement. This category indicates whether the PTA provides for investor-state dispute settlement (ISDS).

6. MFN and National Treatment(NT). This category indicates whether the PTA provides for positive-list or negative-list (NAFTA-style) bindings in the application of MFN and National Treatment in investment. Positive-list bindings, following the GATS model, lists sectors to be liberalized while all others remain 'unbound' and not subject to commitments. Negative list bindings, consistent with the NAFTA model, apply MFN and NT across the board, with exemptions for sectors for which signatories take reservations.

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[5]Kotschwar(2009, 831) notes that most PTAs and BITs adopted the broader definition of investment to include both FDI and portfolio investment.

7. Scope of MFN and NT. This category specifies the phases of investment covered by MFN and NT: establishment, acquisition, post-establishment, and resale.

8. Investment Protection. This category includes provisions for safeguarding of investments. Specifically, the coding scheme identifies specific provisions for 'fair and equitable treatment' under the law; free transfer of funds that affect the ability of investors to repatriate profits; and expropriation on non-discriminatory bases and with adequate compensation.

9. Transfers and Payments. The components in this category include restrictions on the transfer of funds in the event of balance of payments difficulties faced by the host country or other reasons. Other reasons may include cases such as restrictions arising out of laws concerning bankruptcy, criminal or penal offenses, or adjudicatory judgments.

10. Performance Requirements. This set of provisions concerns the level of restrictions imposed on foreign firms' activities following investment, such as export and local content usage requirements, transfer of technology, or the obligation to employ exclusive suppliers of goods and services, or others. The level of restrictions ranges high to low: from no prohibitions on performance requirements, with commitments even more limited than the WTO's Trade-Related Investment Measures (TRIMs) agreement (0); prohibitions allowed on local content or trade requirements only (1), to prohibitions on local content, trade, and other specified requirements (2). Higher values indicate that the PTA prohibits performance requirements, thus further liberalizing the regulations that govern investment activities.

11. Senior Management/Board of Directors. These provisions capture the restrictions on the nationality of managers and members of the board and the temporary entry of key personnel. The provisions include whether the PTA allows for the temporary entry of key personnel; and whether a signatory can place restrictions on the hiring of personnel for senior management and/or the Board of Directors based on nationality. Provisions allow i) partial nationality restrictions on senior management or both senior management and Board of Directors; ii) nationality restrictions for members of the Board of Directors; or iii) prohibit nationality restrictions for both senior management and Board of Directors.

12. Denial of Benefits. This category of provisions concerns the rights of third-party investors, that is, investors from non-PTA countries, that invest in PTA partner countries. The core issue is whether these third-party investors have the same rights as investors from agreement countries. Strong provisions in this area imply that *de facto* investor rights are not transferred to investors from non-PTA countries. The provisions for this category range from i) denial of benefits to third-party investors generally; ii) denial of

benefits to third-party investors for specific reasons such as the absence of diplomatic relations between the denying party and the third-party investor; or iii) denial of benefits only to third-parties without substantial business operations in the agreement country.

13. Transparency. This set of provisions allows for the dissemination of information concerning investment regulations. GATS-consistent provisions obligate parties to publish all relevant laws and to establish inquiry points for obtaining information. More advanced provisions allow for prior comment: parties are obligated to notify each other of prospective laws and regulations that may affect PTA partners. This category consists of an additive measure combining i) provision of inquiry/contact points for information; ii) publication of laws and regulations. These follow GATS provisions. PTAs may also go further with a WTO/GATS-plus provision for prior comment, which requires prior notification of prospective measures concerning investment.

Measures

In operationalizing the strength of investment commitments in PTAs, we employ three different measures. First, a summative measure provides a simple unweighted additive index that sums the scores across the 13 categories. Second, we employ principal components anlaysis (PCA) to derive a weighted index based on correlations among the components. Finally, we examine the impact of what we call 'core commitments', those provisions central to the protection and liberalization of investment.

Additive Index of Commitments. The categories and their respective components were coded to construct a 30-point index of strength in investment commitments. The index comprises the simple unweighted sum of individual component scores. There were no agreements that provided positively for all 30 individual components. The highest score for strength in investment commitments was 25. The analysis employs this unweighted score as one of the measures.

Principal Components Analysis. We also employ a weighted measure derived from a principal components analysis of the variables representing the 13 categories of provisions. This measure weighs more heavily the categories that explain the largest amount of variance of the principal component, and it provides an alternative index to the additive index. Figure 1 illustrates the cumulative proportion of variance explained by each principal component, from the 1st to 13th. The 1st principal component explains the largest proportion of total variance – approximately 51%, while each subsequent principal component contributes only marginally to the variance explained.[6] We employed the 1st

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[6]As a point of comparison, the 2nd factor explains about 15% of the variance in the data.

principal component and determined its factor loadings, or weights, with respect to the 13 categories. All 13 categories have a positive loading (Figure 2), signifying their positive impact on the total variance in the data. We then used the factor loadings of the 1st principal component and constructed a weighted index as an alternative to the additive index.[7]
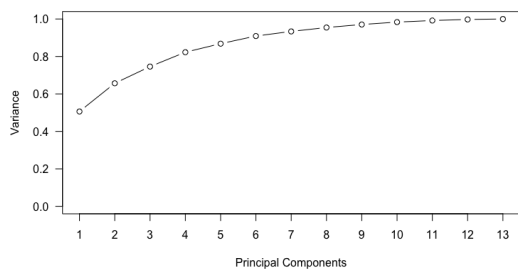

Figure 1: Cumulative Proportion of Variance Explained by Principal Components
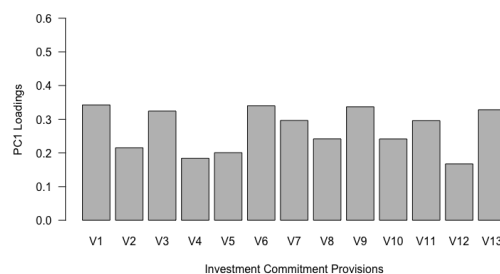

Figure 2: Factor Loadings of 1st Principal Component

Core Provisions. We also focus our analysis on the impact of a group of core provisions for investment liberalization and protection: i) the presence of a provision for investor-state dispute settlement; ii) the mode of investment liberalization – positive- or negative-list for the MFN and NT provisions; and iii) the scope of MFN and NT, which includes establishment, acquisition, post-establishment, and resale. Rather than all 13 categories as factors affecting multinationals' production network activities, we focus on these three categories as the most central provisions affecting investment liberalization and protection.

MFN and NT provisions for investment secure commitments for non-discrimination of foreign firms by host countries. They commit host countries to provide the most advantageous conditions and to treating foreign firms as no different from domestic firms in the area of investment. Positive- and negative-list modes of liberalization indicate, respectively, whether commitments specify sectors of inclusion or exclusion. Adopting a positive-list approach commits signatories to liberalization only of the sectors specified in the agreement, while for the negative-list approach commitments are made to liberalize all sectors except those for which exemptions are declared. The scope of MFN and NT refer to liberalization in the stages of investment, covering establishment, acquisition, post-establishment, and resale. Among these provisions, adopting the negative-list approach, as well as applying MFN and NT to post-establishment and resale phases of investment

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[7]Tables 7 and 8 in the Appendix shows the factor loadings or weights of the 13 categories of investment commitments for the 1st factor, which is employed in this analysis, and the variance explained by the 1st 5 principal components.

are WTO-plus, that is, they go beyond current obligations under the WTO. In addition, the scope of MFN and NT are core provisions under Standards of Treatment covered in bilateral investment treaties.[8] Combined with the provision for investor-state dispute settlement (ISDS), these provisions are core commitments for investment liberalization that are likely to encourage the establishment and expansion of production networks by multinational firms.

These core provisions can also be placed in the context of the remaining provisions governing investment in PTAs. Figure 3 shows the frequencies of provisions in all categories in the PTAs sampled. Looking in turn at the provisions related to the 13 broad categories, more agreements have adopted a definition of investment that includes both portfolio investment and foreign direct investment (FDI) than the more restrictive FDI-only definition, and more agreements contain a separate investment chapter rather than follow the WTO convention of including investment under the services chapter as mode 3 provision. However, a significant number of agreements – 119 (of 317) – have only 'endeavours without specific scope,' that is, symbolic commitments to liberalization and protect investment, perhaps in the preamble, without making any specific commitments in dedicated sections of the agreement.

Where specific commitments do appear, which is still in the majority of PTAs, other investment provisions such as the 3 categories of core commitments, Investment Protection, Transfers and Payments, Performance Requirement, Senior Management/Board of Directors, Denial of Benefits, and Transparency have been adopted by agreement partners. On the core commitments, what is noteworthy is that agreements have overwhelmingly adopted the negative-list approach when it comes to MFN and NT, thus showing that a significant number of PTAs have advanced the international investment regime well beyond current levels of obligation under the WTO, in particular the General Agreement on Trade in Services (GATS) governing mode 3 (commercial presence). Moreover, PTAs have also expanded the scope of MFN and NT to activities in the post-investment stage to cover the post-establishment and resale phases of investment, which also go beyond current commitments under the WTO's GATS. On the provision for investor-state dispute settlement, which we include as a core commitment, 56 PTAs have this provision out of 198 PTAs that have investment provisions of 'specific scope,' that is, provisions that are neither symbolic nor general in nature. This indicates that the majority of PTAs do not include the ISDS provision, though the provision itself is notable in NAFTA, the Trans-Pacific Partnership (TPP) agreement, and most recently the Canada-EU Comprehensive Economic and Trade Agreement (CETA) in which ISDS has been replaced by a permanent investment court system.

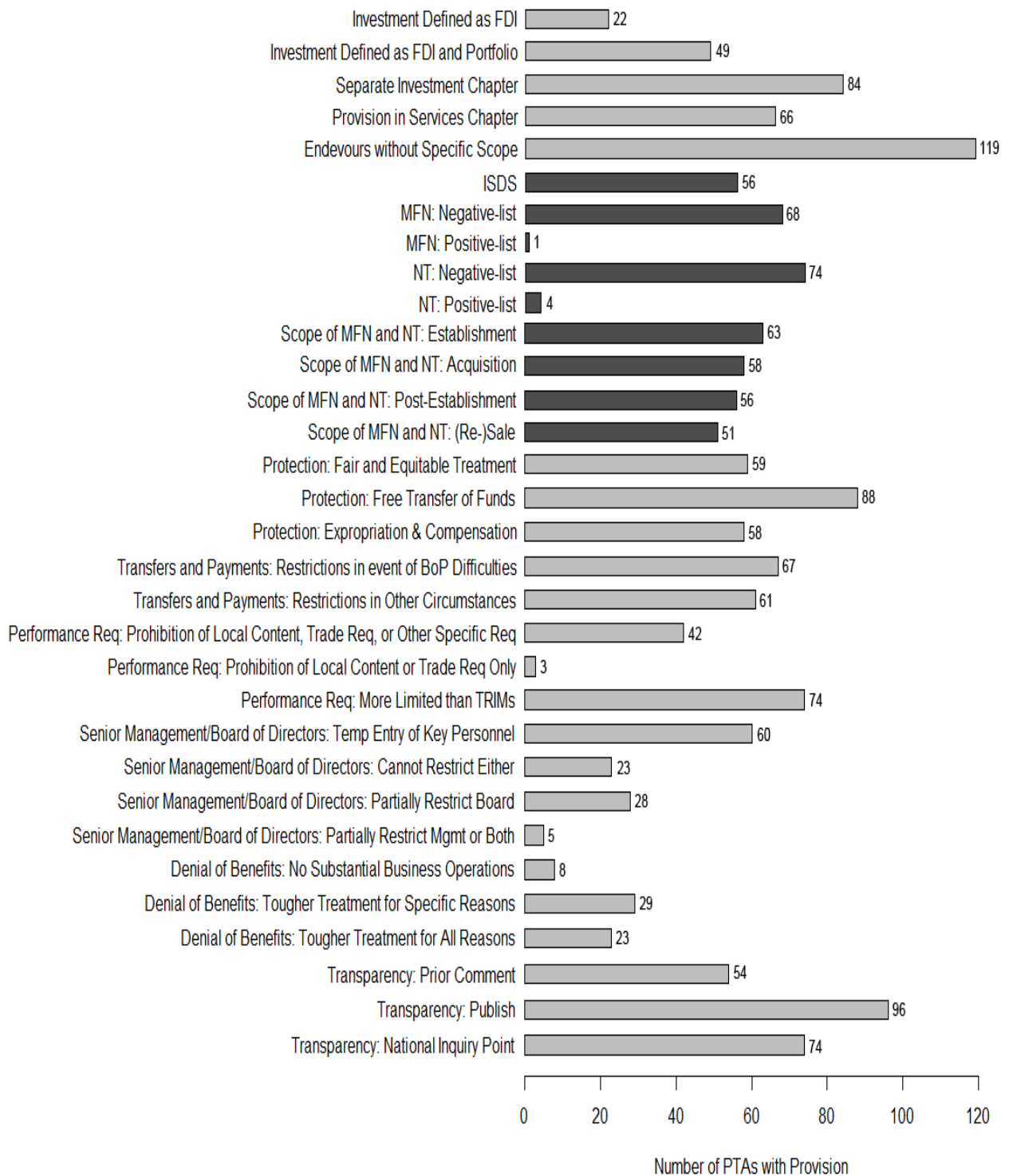[8]UNCTAD IIA Mapping Project: http://investmentpolicyhub.unctad.org/.

Figure 3: Frequency of Provisions in All PTAs

Controls

The analysis controls for a number of factors that are found in studies that employ the gravity model approach or its variant to examine the effect of PTAs on trade and investment. The control variables include: investment restrictiveness, the existence of a bilateral investment treaty (BIT), political distance, GDP, trade, geographic distance, years since PTA signing, land contiguity, and common language. Below we provide a brief description of the controls.

Investment Restrictiveness. This measure controls for the baseline level of investment restrictiveness in the agreement partners. We employ data from the World Bank's Investing Across Borders (IAB) project (2014), which provides cross-country comparisons of regulation of foreign direct investment in 87 countries for the years spanning 2011/2012.[9]. We employ the indices on i) Investing Across Sectors, which measures overt statutory restrictions on foreign ownership for greenfield investments and for mergers and acquisitions across 11 broad sectors; and ii) Staring a Foreign Business, which indicates the procedural burden and regulatory regime for foreign companies entering the market.[10] Each index consists of a scale with range 0-100, from the most restrictive (0) to least restrictive (100). For each dyad member, we take the average of the two index scores and then the lower score between the dyad members, representing the more restrictive or 'weak link' of the two. This represents the lowest common regulatory environment for the members of the dyad, a more conservative measure that reflects multinational firms' considerations in engaging in production in both countries.

We note that these cross-sectional data on investment restrictiveness would largely fall in the post-PTA period; however, this control is included in the analysis for two reasons. First, states' regulatory regimes are likely to be stable over time and therefore our measure dated 2011/2012 are likely to be a good proxy for historical levels. Second, this measure is an indicator of countries' regulatory regimes for investment at the national level rather than specifically directed to particular PTA-partners. They are applied to all foreign investors rather than those specifically from PTA partners and thus may be considered as separate from PTA-level commitments. They are an appropriate control to examine the PTA-specific effects on multinational firms' production network activities.

BIT. This dummy variable indicates the presence of a signed bilateral investment treaty (BIT) between dyad members. The data were obtained from UNCTAD.[11]. The variable takes on a value of 1 if the dyad members have signed a BIT and 0 otherwise.

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[9]http://iab.worldbank.org/Data/

[10]For the Investing Across Sectors data, we employ the average level of restrictiveness across the 11 broad sectors. For the Starting a Foreign Business data, we employ the ease of establishment scale.

[11]http://investmentpolicyhub.unctad.org/IIA

We expect an existing BIT between two countries to have a positive effect on the number of common MNCs as they include provisions that liberalize and protect investments to encourage firms to establish production facilities in partner countries. [12]

We also include in our analysis an interaction term for the strength of investment commitments and the existence of a bilateral investment treaty (*BIT*Investment Commitment*). In doing so, we examine the effect of overlapping treaty commitments across these two institutional forms for governing investment (and trade). We expect that PTAs and BITS may function as complements or substitutes, either further promoting multinational firms' production networks together or the one substituting for the other as the lead legal instrument for regulating investment.

Political Distance (POLITY IV). This measure captures the difference in regime types of dyad members. We take the absolute value of the difference between the two countries' Polity IV scores, where individual scores vary along a 20-point scale from institutionalized autocracy (-10) to democracy (+10) Marshall et al. (2015).[13]. A lower value indicates that the regimes of the two countries in a dyad are more similar, while a higher value denotes greater differences. We expect two countries with greater differences in political regimes to have a negative effect on the number of common MNCs as a result of divergent institutional capacities for hosting multinational firms' affiliates.

Gross Domestic Product (GDP). This economic control variable is the log-transformed value of the combined GDPs of dyad members that represents their combined market size. We expect two countries that have a larger combined market size to host more MNCs in common by virtue of their market opportunities. Data on GDP were collected from the World Development Indicators (WDI) of the World Bank.[14].

Trade. This variable is the log-transformed value of bilateral trade between between dyad members. Data were obtained from UN COMTRADE.[15]. This measure controls for overall bilateral trade, inclusive of both intermediate and final goods. We expect overall bilateral trade flows to have a positive impact on the number of common MNCs in partner countries.

Distance. This measure is the log-transformed value of the geographic distance, measured in kilometers, between the capital cities of the dyad members(Mayer and Zignago,

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[12]See Busse et al. (2010); Haftel (2010); Kerner (2009); Neumayer and Spess (2005). Belgium and Luxembourg represent a single party when signing a BIT with a third country (X), thus we disaggregate the relationship into three dyads: Belgium-Country X, Luxembourg-Country X, and Belgium-Luxembourg. For all three cases, the value of this variable would be 1, indicating the presence of an existing BIT.

[13]We employ the weighted values from the Polity IV Projects Political Regime Characteristics and Transitions for year 2014.

[14]http://data.worldbank.org/data-catalog/world-development-indicators

[15]https://comtrade.un.org/

2011). This measure is a proxy for transportation costs as firms need to move goods across countries in a production network. We expect firms to establish their entities for production in close geographic proximity for ease of transportation. Data were obtained from the CEPII database.[16]. The analysis also includes an interaction term for trade and distance (*Trade*Distance*).

Years Since PTA Signing. This variable indicates the number of years passed since the PTA's signature year. We expect this to have a positive effect on the dyad members' participation in production networks because MNCs take time to adjust their internationalization strategies to shift and establish production entities in partner countries. We calculate this variable as number of years passed between the PTA signature year and 2014, which is the year for which we gathered information on the production networks of firms.

Land Contiguity. This dichotomous variable measures whether the dyad members share a common land border, taking a value of 1 in the presence of a common land border and 0 otherwise. We expect, along the lines of gravity model studies, that a shared land border will have a positive effect on the number of common MNCs that two countries will host, as the geographical proximity of the two countries will facilitate intra-firm exchange. The data were obtained from CEPII.

Common Language. This dummy variable indicates whether dyad members share a common official language. It takes on a value of 1 if dyad members share the same official language and 0 otherwise. A common official language is likely to have a positive effect on the production network of MNCs as it would be relatively easy for firms to conduct business across PTA-partner countries without the need for translation. Official corporate documents can be drafted in the same language and business managers find it effortless to communicate with their counterparts in the other country. These data were also obtained from CEPII.

The Appendix provides summary statistics for all variables employed in the analysis. We include descriptive statistics for two main samples: one without the control for the level of investment restrictiveness and the other with this control. The reason for providing two sets is the substantial difference in sample sizes. The sample with the control is much smaller due to limited availability of investment restrictiveness data.

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[16]GeoDist database, http://www.cepii.fr. Data on *Land Contiguigy* and *Common Language* were also obtained from the GeoDist and Language databases, respectively.

Findings

The analysis employs OLS regression to examine the effect of investment commitments in PTAs on the number of common MNCs in agreement countries. Table 1 reports the main results. Among the four model specifications, Model (1) does not include a control for the existing investment restrictiveness of dyad members while Model (2) includes this control; Model (3) employs scores from the principal component analysis to proxy for strength of investment commitment; and Model (4) employs the core provisions measure. For each set of results, we also distinguish between specifications without and with an interaction term for BIT and investment commitments.

Strength of Investment Commitments. The results support our hypothesis that strong investment commitments in PTAs also strengthen production networks: country pairs that are signatories to a PTA with higher scores on the investment commitments index have a higher number of common MNC affiliates, and this result is statistically significant. Among the three measures of the strength of investment commitments in PTAs, the estimate for the simple unweighted index is the lowest in magnitude. As the dependent variable takes log-transformed values, a one-unit increase in the unweighted investment commitments score is associated with approximately an 0.8% increase in the number of common MNC affiliates for PTA members. The estimate for the weighted PCA measure is the highest among the three, with a one-unit increase translating to a 5.8% difference in the number of common MNC affiliates. The magnitude of the effect for core commitment is substantial too, where a one-unit increase is associated with 3.6% more common MNC affiliates among PTA partners. All of the estimates for strength of investment commitment are statistically significant. Moving from the lowest (0) to highest (25) investment scores in PTAs, agreement pairs in the highest-score PTAs would thus increase common MNCs in their respective territories by 20%, 145%, and 90%.

The results also suggest that some commitments matter more for multinational firms' decisions to establish or expand their production networks in PTA partner countries. The PCA-derived weighted measure shows a stronger effect for investment commitments than does the unweighted measure. Core commitments have an impact on common MNC affiliates that is at least two times in magnitude as compared with the unweighted measure. This result for core commitments indicates that important MFN and NT provisions concerning the modality and scope of investment liberalization matter for multinational firms' production network activities.

Table 1: Investment Commitments in PTAs and Production Networks

	Dependent Variable: Common MNCs			
	Unweighted Index		PCA	Core Provisions
	(1)	(2)	(3)	(4)
Strength of	0.008***	0.016***	0.058***	0.036***
PTA Commitments	(0.002)	(0.003)	(0.011)	(0.009)
Investment Restrictiveness		0.005***	0.005***	0.005***
		(0.001)	(0.001)	(0.001)
BIT	0.132***	0.090**	0.090**	0.067*
	(0.025)	(0.031)	(0.031)	(0.030)
BIT*ICI	0.005	−0.008	−0.027	−0.008
	(0.003)	(0.004)	(0.015)	(0.013)
Political Distance	−0.020***	−0.008***	−0.008**	−0.008**
	(0.002)	(0.002)	(0.002)	(0.002)
GDP	0.057**	0.053	0.053	0.059
	(0.019)	(0.030)	(0.030)	(0.030)
Trade	0.547***	1.066***	1.045***	1.055***
	(0.052)	(0.085)	(0.086)	(0.086)
Distance	0.899***	2.227***	2.187***	2.197***
	(0.118)	(0.194)	(0.194)	(0.195)
Trade*Distance	−0.077***	−0.211***	−0.206***	−0.207***
	(0.014)	(0.022)	(0.022)	(0.024)
Years Since PTA Signing	0.011***	0.005**	0.005***	0.004**
	(0.001)	(0.002)	(0.002)	(0.002)
Land Contiguity	−0.192***	−0.272***	−0.265***	−0.275***
	(0.038)	(0.050)	(0.050)	(0.050)
Common Language	−0.052*	0.026	0.027	0.032
	(0.021)	(0.030)	(0.030)	(0.030)
Constant	−5.046***	−10.357***	−10.203***	−10.280***
	(0.403)	(0.706)	(0.706)	(0.706)
N	3,108	1,003	1,003	1,003
Adjusted R^2	0.564	0.676	0.677	0.674
F-statistic	366.7***	175.2***	176.3***	174.0***
df	11	12	12	12

Note: ***p<0.001; **p<0.01; *p<0.05

Accounting for the Baseline: Investment Restrictiveness. General investment restrictiveness/openness in agreement members also has a positive and statistically significant effect on the number of common MNCs. A one-unit increase in investment openness is associated is associated with 0.5% more common MNCs among PTA partners. Given that this variable ranges between 0 (most restrictive) and 100 (least restrictive), PTA partners with the least restrictive domestic investment regimes will have about 50% more common MNCs than those with the most restrictive regimes. Also, with a control for the restrictiveness of domestic regulations concerning investment, the estimates for investment commitments in PTAs are higher than for the analysis without this control, and this result is consistent across all four model specifications. Taken together, this combined result indicates that both openness in the overall domestic regulatory environment for investment and PTA commitments have independent positive effects on multinational firms' production networks. That is, unilateral liberalization in investment are as important as treaty commitments in PTAs in encouraging multinational firms to set up shop in PTA partner countries.

Overlapping Commitments: BITs and PTAs. The results of the analysis also show interesting insights about overlapping commitments across the institutions that govern investment: BITs as well as PTAs. Table 1 shows that both the strength of investment commitments in PTAs (ICI) and the existence of a BIT (BIT) each have a positive effect on the extensiveness of production network links between agreement partners. For BITs in particular, the effect of having a BIT between two PTA partners increases the number of common MNCs by 7 to 13%. However, when we interact the effects of a BIT and the strength of investment commitments (BIT*ICI), the results are no longer statistically significant in the core provisions model.

We investigate the interaction of BITs and PTAs further by examining their marginal effects. Figures 4 to 9 illustrate how the presence of an existing BIT between dyad members affects the relationship between investment commitment strength (for the Unweighted Index, PCA and Core Provisions) and the number of common MNCs, and vice versa.[17] Figures 4, 6 and 8 show that the effect of investment commitments in PTAs is stronger where partners have no BIT than when they do. Figures 5, 7 and 9 show that the effect of a BIT on multinational firms' production networks is strong for PTAs with low scores on the investment commitment index. The effect of BITs declines for PTAs with stronger commitments in investment; however, the confidence interval widens substantially, especially of that for the Core Provisions model, indicating much more uncertainty in the estimated effects. This is consistent with the distribution of the data: there are a large number of dyads with zero or low scores on the investment commitment

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[17]We employ the full model, including the control for overall investment restrictiveness, for the estimates underlying these figures.

Figure 4: Effect of Investment Commitments on Common MNCs by BIT (Unweighted Index)
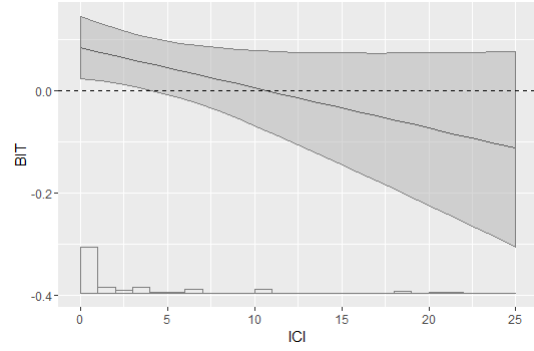

Figure 5: Effect of BIT on Common MNCs by Investment Commitments (Unweighted Index)
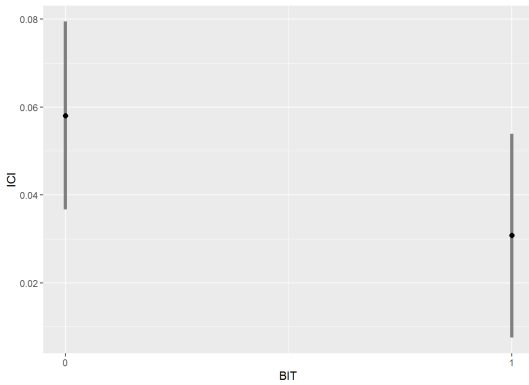

Figure 6: Effect of Investment Commitments on Common MNCs by BIT (PCA)
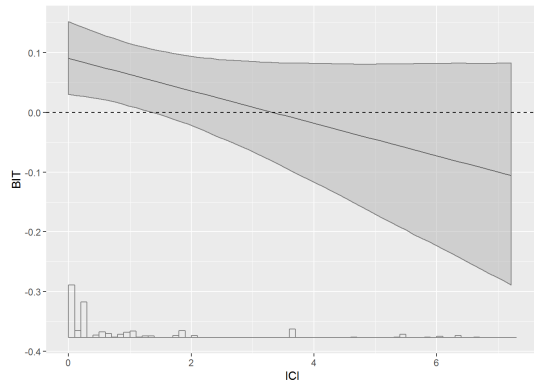

Figure 7: Effect of BIT on Common MNCs by Investment Commitments (PCA)

index, as evidenced in the barchart below the estimates in Figures 5, 7 and 9. Though these results are suggestive of a substitution effect for PTAs and BITs in liberalizing and regulating investment, they are largely inconclusive. While there appears to be an interaction effect for PTAs and BITs, this effect only holds for PTA with weak investment commitments; confidence intervals are large in both figures, and especially at higher values of the investment commitment index. The existing literature underscores the need to evaluate the substantive significance of the conditional effect to know the distribution of the conditioning variable, if a variable's conditional effect reaches statistical significance over only part of the range of the conditioning variable Berry et al. (2012); Hainmueller et al. (2016).

Other Controls. For the remaining controls, greater political distance, measured in terms of differences in the Polity scores of dyad members, has a negative effect on the degree to which agreement members are linked through common MNCs. This result is statistically significant. The economic variables – market size as measured by the combined GDP of dyad members and bilateral trade – both have a positive and statistically
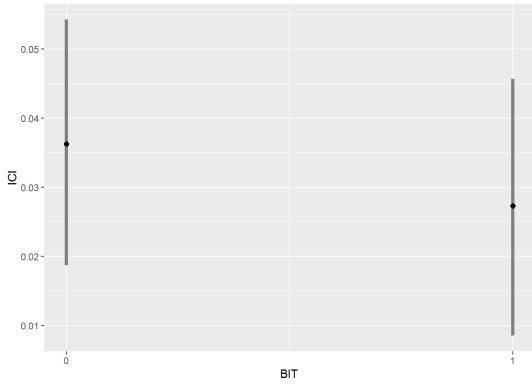
Figure 8: Effect of Investment Commitments on Common MNCs by BIT (Core Provisions)
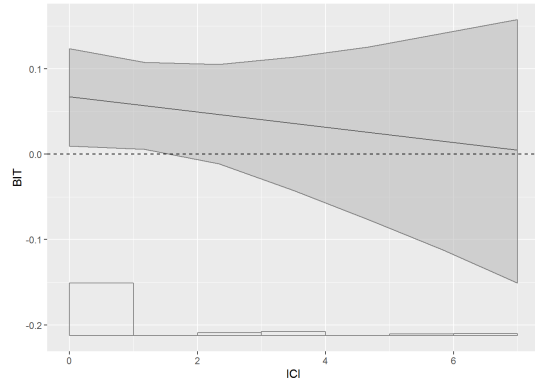

Figure 9: Effect of BIT on Common MNCs by Investment Commitments (Core Provisions)

significant effect on the number of common MNCs.[18] The interaction term for trade and distance is negative and statistically significant; this result is consistent with the gravity model studies in which distance is a resistance term that serves to depress trade.

The years elapsed since the PTA was signed has a positive and statistically significant effect, which indicates the effect of a longer time for implementation. This result is consistent with the expectation that the longer the PTA has been in effect, the more opportunities and time that agreement members have to implement their commitments successfully and subsequently to attract the the establishment of MNC affiliates. Both land contiguity and common language have effects contrary to the directions expected. The estimate for common language is not statistically significant except for the case of Model (1), but land contiguity has a negative effect on the number of common MNCs in agreement members. This is an interesting puzzle when taken in conjunction with the result for distance. While distance has a positive effect on the extensiveness of common MNCs, land contiguity has a negative effect. We speculate that MNCs are less likely to set up shop just across the border; this may be due to higher transport costs across land versus water or that countries that share a border are likely to be substitutes as possible locations for establishing MNC affiliates.

Extensions

Alternative Model Specifications. In this section, we evaluate the robustness of our main findings by juxtaposing alternative analyses alongside the conventional OLS

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[18]We checked the robustness of the results by substituting GDP with GDP per capita. The latter has a positive effect when the dyadic average is employed; the difference in GDP per capita between dyad members does not have a statistically significant effect on the number of common MNCs.

results. Given substantial variation in the marginal distribution and the large number of zero-values in our dependent variable (see Figures 10 and 11), we begin by implementing a dispersion test within a standard Poisson generalized linear model (GLM) as specified in Dupont (2009) and Cameron and Trivedi (2005).[19] Against the backdrop of strong evidence for over-dispersion, we next explore the capability of standard Poisson GLM models to predict the probability of zero counts in our data; while about a tenth of all observations do not have common MNCs at all, our initial constructed Poisson models predict only 1-3% of dyads would have no common MNCs. This provides the impetus to explore other possibilities to model count data with an excess of zeroes.

If the excess zeros are generated by a separate process from the count values, and that the excess zeros can be modeled independently, zero-inflated and negative binomial models can be utilised. We assume that the data comprises two groups of dyads whereby there are no common MNCs between members in the first group, due to issues of viability or interest, and all non-zero variation derives from the second group. This assumption is intuitive, and in keeping with firm decisions predicated on market and profit. We proceed on this basis to construct zero-inflated Poisson count models, alongside negative binomial GLMs to resolve issues of over-dispersion. These are implemented in keeping with best practices established in the extant literature Zeileis et al. (2008); Jackman (2015), using the **R** packages *MASS* and *pscl* with same specifications as in Table 1. Columns 1 to 4 of Table 2 correspond to the negative binomial GLMs, and Columns 5 to 8 correspond to the zero-inflated count models. We adopt the basic model specification from the initial OLS regression for models (1) and (5); control for the possibility of an interaction effect between the presence of a BIT and investment commitments in models (2) and (6); add investment restrictiveness as a baseline variable to the base specification in models (3) and (7); and finally append investment restrictiveness and the BIT-investment commitment interaction term in models 4 and 8.

The analysis results from applying these alternative models are consistent with those of our main findings. Across all eight models, investment commitments between countries, with a control for less restrictiveness in investment regulation, exhibit a significant positive impact on the number of common MNCs. Of note would be how the effects augment with investment restrictiveness taken into account in the negative binomial models (compare Models (1) and (2) with (3) and (4)). Similarly, the presence of a BIT in a dyad still correlates with increased numbers of common MNCs, even as interacting BITs with the ICI variable yield mixed results across the alternative models.

Much like our main findings, the basic model specifications implemented for the neg-

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[19]The **R** stats package's *glm* and *dispersiontest* functions were used across the four model specifications presented earlier.
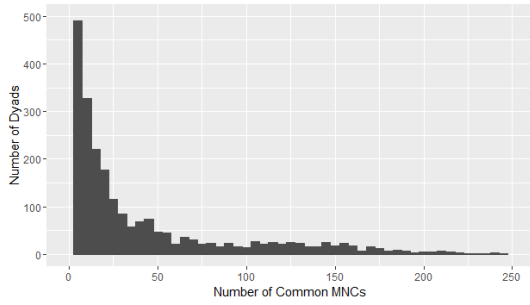
Figure 10: Histogram of
Number of Dyads against Number
of Common MNCs (sample without
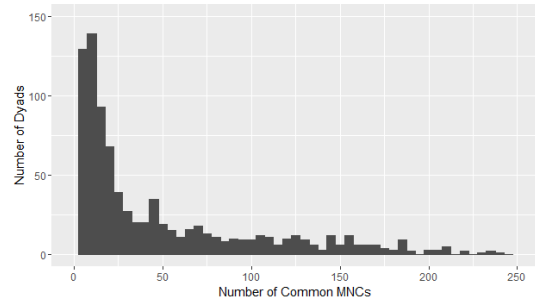investment restrictiveness)

Figure 11: Histogram of
Number of Dyads against Number
of Common MNCs (sample with investment
restrictiveness)

ative binomial model – Model (1), and the zero-inflated Poisson model – Model (5), also
generate statistically significant results across several control variables of interest. Prior
BITs signed, trade, and the number of years since the PTA was signed, have a posi-
tive substantive effects on the number of common MNCs. In addition, these alternative
models also generate estimates at higher significance levels relative to those from OLS
— indicating less uncertainty in the estimates and validating the move to account for
over-dispersion and inflated zeroes. Estimates for the noteworthy relationships between
distance, land contiguity, and common MNCs explicated earlier is also in keeping with
the main findings, further supporting the case for MNCs favoring a wide, dispersed net-
work of subsidiaries as opposed to establishing their presence in countries adjacent to
each other.

Table 2: Negative Binomial and Zero-Inflated Poisson Models

	Dependent Variable: Common MNCs							
	1-4: negative binomial models				*5-8: zero-inflated poisson models*			
	Unweighted Index		PCA	Core Index	Unweighted Provisions		PCA	Core Provisions
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Strength of PTA Commitments	0.013** (0.005)	0.029*** (0.007)	0.106*** (0.023)	0.064*** (0.018)	0.015*** (0.001)	0.005*** (0.001)	0.023*** (0.004)	0.016*** (0.003)
Investment Restrictiveness		0.015*** (0.002)	0.015*** (0.002)	0.014*** (0.002)		0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)
BITS	0.198*** (0.053)	0.204** (0.066)	0.206** (0.066)	0.160* (0.063)	0.135*** (0.010)	0.089*** (0.014)	0.096*** (0.014)	0.080*** (0.014)
BITS*ICI	0.007 (0.007)	−0.016* (0.009)	−0.053 (0.030)	−0.023 (0.026)	−0.008*** (0.001)	−0.005*** (0.001)	−0.016*** (0.005)	−0.007 (0.004)
Political Distance	−0.046*** (0.004)	−0.017*** (0.005)	−0.017*** (0.005)	−0.016** (0.005)	−0.055*** (0.001)	−0.033*** (0.001)	−0.032*** (0.001)	−0.032*** (0.004)
GDP	0.201*** (0.042)	0.202** (0.065)	0.203** (0.065)	0.206** (0.065)	−0.105*** (0.009)	−0.206*** (0.015)	−0.203*** (0.015)	−0.199*** (0.015)
Trade	1.630*** (0.118)	2.639*** (0.194)	2.591*** (0.195)	2.629*** (0.195)	1.626*** (0.025)	2.375*** (0.043)	2.357*** (0.043)	2.352*** (0.043)
Distance	2.653*** (0.271)	5.498*** (0.447)	5.405*** (0.448)	5.450*** (0.449)	2.457*** (0.064)	4.492*** (0.108)	4.465*** (0.108)	4.444*** (0.109)
Trade*Distance	−0.249*** (0.031)	−0.526*** (0.050)	−0.514*** (0.051)	−0.522*** (0.051)	−0.214*** (0.007)	−0.407*** (0.011)	−0.404*** (0.011)	−0.402*** (0.011)
Years Since PTA Signing	0.017*** (0.002)	0.006 (0.003)	0.007* (0.003)	0.004 (0.003)	0.007*** (0.0004)	−0.0003 (0.001)	0.0002 (0.001)	0.0002 (0.001)
Land Contiguity	−0.563*** (0.080)	−0.538*** (0.105)	−0.520*** (0.105)	−0.548*** (0.105)	−0.450*** (0.013)	−0.479*** (0.021)	−0.473*** (0.021)	−0.473*** (0.021)
Common Language	−0.196*** (0.043)	−0.013 (0.065)	−0.009 (0.065)	−0.007 (0.065)	−0.279*** (0.010)	−0.162*** (0.015)	−0.159*** (0.015)	−0.157*** (0.015)
Constant	−14.965*** (0.932)	−26.347*** (1.635)	−25.995*** (1.638)	−26.166*** (1.637)	−11.339*** (0.224)	−18.690*** (0.396)	−18.580*** (0.397)	−18.550*** (0.398)
N	3,108	1,003	1,003	1,003	3,108	1,003	1,003	1,003
Vuong (z-score)	25.203	16.672	16.632	16.597				

Note: The Vuong test (of model fit) is applied to negative binomial and zero-inflated poisson models with the same specifications (1 & 5, 2 & 6, 3 & 7, 4 & 8). The z-score is appended to the model with better fit. All the negative binomial models perform better than their zero-inflated poisson counterparts. ***p<0.001; **p<0.01; *p<0.05

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The alternative model specifications continue to show inconsistent results for language, whose effect is largely negative but statistically significant mostly for the estimates from the zero-inflated poisson models. The Results for GDP in models accounting for a baseline of investment restrictions are also inconsistent: while the estimate is statistically significant, the negative binomial model generates positive estimates while the zero-inflated Poisson model generates negative estimates. We next proceed to evaluate model fit vis-à-vis negative binomial and zero-inflated Poisson variants, by implementing Vuong's likelihood ratio test for model selection Vuong (1989); Greene (1994).[20] In all model specifications, the negative binomial GLMs provide a better overall fit to the data than their zero-inflated poisson counterparts.

Endogeneity. A further concern is endogeneity, in which a greater number of multinational firms' subsidiaries in partner countries may actually engender stronger investment liberalization, protection, and integration commitments in PTAs. It is conceivable that corporations with growing stakes in a country would adopt a longer-term view of developing and expanding their production networks and hence lobby for more robust investment agreements with partner countries to serve their commercial interests. There is also a possibility that correlations we observe in the aforementioned models is a result of unobserved confounders affecting both investment liberalization commitments in trade agreements and production networks. To address these issues, we additionally conduct instrumental variable (IV) estimations. We use government effectiveness as an instrument for the strength of investment commitments in agreements. Government effectiveness refers to the quality of a country's civil service, policy formulation, and implementation, in addition to the credibility of the government's commitment to such policies Kaufmann et al. (2016).

This choice of government effectiveness as an instrument is predicated on conditions of instrument validity. The inking of trade and investment agreements is highly contingent upon the capacity of governments to conduct bilateral or multilateral negotiations, to formulate, and subsequently to execute coherent policies. At the same time, commercial decisions to locate production facilities and subsidiaries are primarily made based on profit maximization whereby firms consider labor, building, operations, transport, and tax costs. This suggests that government effectiveness is largely independent of the number of subsidiaries a firm has in a given country, rendering the instrumental variable approach appropriate to interrogate a causal link between investment commitment strength and

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[20]We refer to extant literature detailing alternative measures of fit — see Little 2013 on the test to compare the negative binomial and zero-inflated Poisson models; and Coxe et al. 2009 for a discussion of the Vuong test. We use the *vuongtest* function in the **R** *nonnest2* package, and subsequently compare the results to Akaike Information Criterion (AIC) values, which provide competing measures of model fit (see Akaike 1987, Sakamoto et al 1986). The AIC values indicate the superiority of the negative binomial models for all specifications.

Table 3: Instrumental Variable Estimations

	Unweighted Index		PCA	Core Provisions
Dependent Variable: Common MNCs				
	(1)	(2)	(3)	(4)
Strength of PTA Commitments	0.087***	0.126***	0.418***	0.355***
	(0.008)	(0.018)	(0.060)	(0.053)
Investment Restrictiveness		0.006***	0.006***	0.006***
		(0.001)	(0.001)	(0.001)
BIT	0.595***	0.587***	0.560***	0.512***
	(0.055)	(0.093)	(0.088)	(0.085)
BIT*ICI	−0.063***	−0.105***	−0.342***	−0.301***
	(0.008)	(0.017)	(0.055)	(0.051)
Political Distance	−0.017***	−0.006	−0.005	−0.004
	(0.002)	(0.004)	(0.003)	(0.004)
GDP	0.135***	0.063	0.061	0.073
	(0.024)	(0.044)	(0.043)	(0.045)
Trade	0.378***	0.874***	0.800***	0.887***
	(0.065)	(0.130)	(0.130)	(0.132)
Distance	0.708***	2.216***	2.043***	2.269***
	(0.143)	(0.288)	(0.281)	(0.295)
Trade*Distance	−0.049**	−0.193***	−0.172***	−0.197***
	(0.017)	(0.033)	(0.033)	(0.034)
Years Since PTA Signing	0.033***	0.018***	0.018***	0.012***
	(0.003)	(0.003)	(0.003)	(0.003)
Land Contiguity	−0.065	−0.149	−0.126	−0.171*
	(0.047)	(0.076)	(0.075)	(0.077)
Common Language	−0.083**	−0.046	−0.036	−0.029
	(0.025)	(0.046)	(0.044)	(0.046)
Constant	−5.563***	−10.170***	−9.491***	−10.254***
	(0.487)	(1.045)	(1.026)	(1.066)
N	3,108	1,003	1,003	1,003
Adjusted R^2	0.372	0.290	0.328	0.262

First Stage Results

	Dependent Variable: ICI			
Government Effectiveness	2.303***	2.545***	0.765***	0.915***
Weak Inst F-Statistic	945.1***	403.2***	423.1***	442.8***
Wu-Hausman Consistency	154.9***	90.5***	88.2***	95.3***

Note: Only the instrument coefficient is presented in the 1st Stage results for concision.
***p<0.001; **p<0.01; *p<0.05

production networks. This satisfies the exclusion restriction, i.e. the instrument should not have a direct effect on the dependent variable; any observable effect should only be indirect and work through the potentially endogenous variable.

The data for government effectiveness were obtained from the Worldwide Governance Indicators (WGI) project Kaufmann et al. (2016). The first stage performs as expected: government effectiveness is positively and very significantly related to investment commitment strength in all model specifications. The second-stage IV estimation results confirm that the investment strength variable is positively and significantly correlated with production networks in PTA partners. Indeed, the magnitude of the effects is larger than for the main results in Table 1. The estimates for investment commitment strength in these IV models are eight to ten times larger than the original OLS regressions; this suggests that the original results may even underestimate the effect of the strength of investment commitments on production networks if we do not account for endogeneity. In all models, F-tests and Wu-Hausman consistency tests indicate that government effectiveness is not a weak instrument and OLS estimates are likely not consistent, suggesting the presence of endogeneity and necessitating this instrumental variable approach.

Conclusion

In this paper, we investigate the impact of investment provisions in PTAs on multinational firms' production networks. The analysis investigates the degree to which strength of commitments made regarding investment activities promotes the establishment of multinational firms' affiliates in agreement partners and thus enhances their participation in international production networks. To test our hypothesis that PTAs with strong investment commitments promote production networks, we employed three different measures that reflect the strength of investment commitments derived from the presence of specific provisions in PTAs: an unweighted additive measure of the presence of specific provisions across 13 major categories of investment activities; a weighted measure derived from principal component analysis; and the presence of a set of core provisions concerning most-favored-nation and national treatment in the modality and scope of investment liberalization. The dependent variable – production networks – is operationalized as the number of common MNCs in PTA partners. The sample of analysis includes dyads across 317 PTAs. The results of the empirical analysis support our hypothesis: in PTAs with stronger investment commitments, agreement partners also tend to have more MNC affiliates in common than those in PTAs with weaker investment commitments. The effect is stronger for the core provisions and strongest for the weighted PCA measure. This result holds across a variety of specifications, including a control for the average level of

investment restrictiveness in agreement partners. We also find some evidence of a substitution effect for BITs and PTAs, in which investment commitment strength and the existence of a bilateral investment treaty alternatively promote production networks in agreement countries. We test the robustness of our results using alternative models for count data and also account for endogeneity.

Moving forward, our study also identifies several promising avenues for future research that focus on BITs and PTAs as overlapping institutions for governing investment. As more PTAs start to introduce and include investment commitments in their provisions, it raises interesting questions regarding the relationship between PTAs and BITs, in particular the usefulness of either or both in encouraging foreign direct investment and the expansion of production networks by multinational firms. Our analysis shows that states that do not have a BIT tend to have PTAs that provide for stronger investment commitments. On the other hand, states that do have a BIT tend to have PTAs that provide for less extensive investment commitments. This suggests that PTAs and BITs are substitute instruments that countries use to encourage inward investments from multinational firms. Where a BIT is already in effect, partner countries may have few incentives to follow up with PTAs that contain strong investment commitments as the promises to protect and liberalize investments are already institutionalized. In the absence of a BIT, however, states may seek to formalize their commitments by signing PTAs with strong investment commitments. Thus, PTAs and BITs may well be substitute agreements to institutionalize and formalize investment commitments. As information becomes more extensively available on the strength of commitments in BITS, as through the UNCTAD's International Investment Agreements (IIA) Mapping Project, we see opportunities for valuable future research on overlapping governance of investment through these two institutional mechanisms.

Appendix

A. Dependent Variable Measurement: Inclusions and Exclusions of Corporate Entities

Included entities are conceptualized as part of a firm's production network.

Inclusions	Description
Subsidiaries	Companies that are more than 50 percent owned by a parent firm. The parent firm is a majority shareholder and is able to have control over the production activities of the particular subsidiary.
Divisions	These are different segments of a firm established for different purposes, with the intention to reap gains from specialization and division of labor. Divisions are part of a firmś production network because they are likely to engage in production of the components/goods for which they are responsible. This is similar to firm units (see below). For example, Hewlett Packard has several divisions comprising the printer division, the multi-function division, the handheld devices division, the server division etc.
Facilities	Corporate properties such as buildings and factories or large-scale equipment used to carry out business functions and activities.
Joint ventures	Firms create joint ventures to share ownership, returns, risks and governance. It is a collaborative venture between two or more firms where each provides synergistic expertise as well as monetary contributions.
Units	Similar to divisions, units represent the different segments of a firm that perform various business functions and is likely to carry out production for the goods that they are responsible for.

Exclusions	Description
Parent	The parent firm rarely carries out production work but is instead a center for command and control over its corporate family.
Branches	Branch offices often undertake the administrative work of a firm, or comprise of various functional divisions such as human resources and accounting. These functional branch offices are not directly related to a firms production activities.
Holding companies	Holding companies are companies established for the purpose of owning other firms outstanding shares, and rarely engages in the production of goods and services.

B. Investment Provisions in PTAs

Category	Provisions
1. Definition of Investment	a) No definition: b) FDI c) FDI and portfolio
2. Separate Investment Chapter?	
3. Investment provision ins Services Chapter (Mode 3)?	
4. Endeavors without specified scope?	
5. Investor-State Dispute Settlement?	
6. MFN and NT	a) Positive-list bindings b) Negative-list bindings
7. Scope of MFN and NT	a) Establishment b) Acquisition c) Post-establishment d) (Re-)sale
8. Investment Protection	a) 'fair and equitable treatment' b) Free transfer of funds c) Expropriation and compensation
9. Transfers and Payments	a) Restrictions on transfer of funds in the event of balance-of-payments difficulties? b) Restrictions on transfer of funds in other prescribed circumstances?
10. Performance Requirements	a) Prohibition of local content, trade, or other specified requirements? b) Prohibition of local content or trade requirements only? c) Provisions more limited than TRIMs (performance requirements not banned/prohibited)?
11. Senior Management/ Board of Directors	a) Provisions allowing for temporary entry of key personnel? b) Cannot restrict either senior management or board of directors based on nationality? c) Can partially restrict board of directors? d) Can partially restrict management or both?
12. Denial of Benefits	a) Only to persons with no substantial business operations in other party? b) Tougher treatment for specific reasons? c) Tougher treatment for all reasons?
13. Transparency	a) Prior comment? b) Publish (as in GATS)? c) National inquiry (contact) point (as in GATS)?

C. Summary Statistics

Summary Statistics (without Investment Restrictiveness)

Continuous Variables	N	Mean	St. Dev.	Min	Max
*log*Common MNCs	3,108	1.083	0.671	0.000	2.491
Unweighted Index	3,108	4.907	5.404	0	25
PCA Weighted Index	3,108	1.494	1.673	0.000	7.2129
Core Provisions	3,108	1.252	1.794	0.000	7
Political Distance	3,108	4.882	4.634	0	20
GDP	3,108	11.510	0.725	8.779	13.283
Trade	3,108	7.789	1.581	1.964	11.824
Distance	3,108	3.513	0.448	1.775	4.296
Years Since PTA Signing	3,108	17.240	8.494	1	48

Categorical Variables	N	Levels	0 Count	1 Count	
BITs	3,108	2	2,011	1,097	
Contiguity	3,108	2	2,902	206	
Common Language	3,108	2	2,398	710	

Summary Statistics (with Investment Restrictiveness)

Continuous Variables	N	Mean	St. Dev.	Min	Max
*log*Common MNCs	1,003	1.286	0.612	0.000	2.474
Unweighted Index	1,003	3.275	5.262	0.000	25
PCA Weighted Index	1,003	0.9455	1.548	0.000	7.2129
Core Provisions	1,003	0.8923	1.848	0.000	7
Investment Restrictiveness	1,003	69.645	13.440	24.45	93.823
Political Distance	1,003	4.985	4.793	0.000	19
GDP	1,003	11.671	0.658	10.099	13.283
Trade	1,003	8.181	1.430	3.730	11.824
Distance	1,003	3.583	0.471	1.775	4.296
Years Since PTA Signing	1,003	19.388	8.249	1	43

Categorical Variables	N	Levels	0 Count	1 Count	
BITs	1,003	2	571	432	
Contiguity	1,003	2	914	89	
Common Language	1,003	2	801	202	

D. Principal Components Analysis

Weights Assigned to Different Categories of the Index of the 1st Principal Component

Category	Weight of PC1
V1. Definition of Investment	0.343
V2. Separate Investment Chapter	0.215
V3. Investment Provisions in Services Chapter	0.324
V4. Endeavors without Specific Scope	0.184
V5. Investor-State Dispute Settlement	0.201
V6. MFN and National Treatment	0 .340
V7. Scope of MFN and National Treatment	0.297
V8. Investment Protection	0.242
V9. Transfers and Payments	0.338
V10. Performance Requirements	0.242
V11. Senior Management / Board of Directors	0.296
V12. Denial of Benefits	0.168
V13. Transparency	0.328

Standard Deviation and Variance Explained by 1st-5th Principal Components

Category	PC1	PC2	PC3	PC4	PC5
Standard Deviation	2.566	1.399	1.077	0.999	0.771
Proportion of Variance	0.506	0.151	0.892	0.767	0.046
Cumulative Proportion	0.506	0.657	0.746	0.823	0.868

F. PTAs Included in the Analysis

1. African Economic Community
2. ALADI (Latin American Integration Association)
3. ANZTEC (New Zealand and Taiwan[21])
4. Asia-Pacific Trade Agreement
5. ASEAN-Australia-New Zealand
6. ASEAN-China
7. ASEAN-India
8. ASEAN-Japan
9. ASEAN-Korea, Republic of
10. ASEAN Free Trade Area (AFTA)
11. Agadir (Free Trade Area among Arab Mediterranean Countries)
12. Albania-Moldova
13. Albania-UNMIK (Kosovo)
14. Andean Community
15. Armenia-Kazakhstan
16. Armenia-Moldova
17. Armenia-Russian Federation
18. Armenia-Turkmenistan
19. Armenia-Ukraine
20. Asia Pacific Trade Agreement (APTA)-Accession of China
21. Australia-Chile
22. Australia-New Zealand (ANZCERTA)
23. Azerbaijan-Russian Federation
24. BIMST-EC
25. Bahrain-Jordan
26. Bangladesh-India
27. Bolivia-Chile
28. Brunei Darussalam-Japan
29. CARICOM
30. CARICOM-Colombia
31. CARICOM-Costa Rica
32. CARICOM-Cuba
33. CARICOM-Dominican Republic
34. CEFTA-Croatia
35. Australia-New Zealand
36. CanadaColombia
37. Canada-Costa Rica
38. Canada-Israel
39. Canada-Peru
40. Canada-Chile
41. Central European Free Trade Agreement
42. Chile-China
43. Chile-India
44. Chile-Japan
45. Chile-Mexico
46. Chile-Venezuela
47. China-Hong Kong, China
48. China-Macao, China
49. China-New Zealand
50. China-Singapore
51. China-Iceland
52. China-Switzerland
53. Common Economic Zone (CEZ)
54. Common Market for Eastern and Souther

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[21]Taiwan is referred to PTAs as the Separate Customs Territory of Taiwan, Penghu, Kinmen, and Matsu

55. Commonwealth of Independent States (CIS)

56. Croatia-Lithuania

57. Croatia-Moldova

58. Croatia-Slovenia

59. Dominican Republic-Central America

60. Dominican Republic-Central America-US (CAFTA-DR)

61. EC (15) Enlargement

62. EC (25) Enlargement

63. EC (27) Enlargement

64. EC-Bulgaria

65. EC-Czech Republic

66. EC-Estonia

67. EC-Hungary

68. EC-Latvia

69. EC-Lithuania

70. EC-Poland

71. EC-Romania

72. EC-Slovak Republic

73. EC-Slovenia

74. EFTA-Albania

75. EFTA-Canada

76. EFTA-Chile

77. EFTA-Egypt

78. EFTA-FYR Macedonia

79. EFTA-Israel

80. EFTA-Jordan

81. EFTA-Korea, Republic of

82. EFTA-Lebanon

83. EFTA-Mexico

84. EFTA-Morocco

85. EFTA-Palestinian Authority

86. EFTA-Peru

87. EFTA-SACU

88. EFTA-Serbia

89. EFTA-Singapore

90. EFTA-Tunisia

91. EFTA-Turkey

92. EFTA-Bulgaria

93. EFTAColombia

94. EFTACroatia

95. EFTA-Bulgaria

96. EFTA-Czech Republic

97. EFTA-Estonia

98. EFTA-Hungary

99. EFTA-Latvia

100. EFTA-Lithuania

101. EFTA-Poland

102. EFTA-Romania

103. EFTA-Slovenia

104. EFTA-Slovak Republic

105. EU-Albania

106. EU-Algeria

107. EU-Andorra

108. EU-Bosnia and Herzegovina

109. EU-CARIFORUM States EPA

110. EU-Cameroon

111. EU-Chile

112. EU-Croatia

113. EU-Côte d'Ivoire

114. EU-Egypt

115. EU-Faroe Islands

116. EUFYR Macedonia

117. EU-Israel

118. EU-Jordan

119. EU-Korea, Republic of

120. EU-Lebanon

121. EU-Mexico

122. EU-Montenegro

123. EU-Morocco

124. EU-Palestinian Authority

125. EU-Papua New Guinea-Fiji

126. EU-San Marino

127. EU-Serbia

128. EU-South Africa

129. EU-Tunisia

130. EU-Turkey

131. EU-Bulgaria

132. EU-Moldova

133. EU-OCT

134. EU-Romania

135. EU-Switzerland-Liechtenstein

136. EU-Syria

137. East African Community (EAC)

138. Economic Community of West African States (ECOWAS)

139. Economic Cooperation Organization (ECO)

140. Egypt-Turkey

141. Egypt-Jordan

142. Eurasian Economic Community (EAEC)

143. European Economic Area (EEA)

144. FYROM-Moldova

145. Faroe Islands-Switzerland

146. Faroe Islands Norway

147. GSTP

148. Georgia-Armenia

149. Georgia-Azerbaijan

150. Georgia-Kazakhstan

151. Georgia-Russian Federation

152. Georgia-Turkmenistan

153. Georgia-Ukraine

154. Georgia-EU

155. Gulf Cooperation Council (GCC)

156. Gulf Cooperation Council-Singapore FTA

157. Honduras-El Salvador and Taiwan

158. Hong Kong, China-New Zealand

159. Hong Kong, China-Chile

160. Hong Kong, China-European Free Trade (EFTA?)

161. Hungary-Isreal

162. Hungary-Latvia

163. Hungary-Lithuania

164. Hungary-Turkey

165. IGAD

166. Iceland-Faroe Islands

167. India-Afghanistan

168. India-Bhutan

169. India-Japan

170. India-Malaysia

171. India-Singapore

172. India-Sri Lanka

173. India Nepal

174. India-GCC

175. India-Mongolia

176. India-Thailand

177. Iran-Pakistan

178. Israel-Mexico

179. Israel-Jordan

180. Israel-Poland

181. Israel-Slovak Republic

182. Israel-Slovenia

183. Japan-Indonesia

184. Japan-Mexico

185. Japan-Philippines

186. Japan-Singapore

187. Japan-Switzerland

188. Japan-Thailand

189. Japan-Vietnam

190. Japan Malaysia

191. Japan-Vietnam

192. Jordan-Singapore

193. Jordan-Morocco

194. Jordan-Syria

195. Jordan-Tunisia

196. Jordan-United Arab Emirate

197. Korea, Republic of-Chile

198. Korea, Republic of-India

199. Korea, Republic of-Singapore

200. Korea-United States Free Trade Agreement

201. Kyrgyz Republic-Armenia

202. Kyrgyz Republic-Kazakhstan

203. Kyrgyz Republic-Moldova

204. Kyrgyz Republic-Russian Federation

205. Kyrgyz Republic Ukraine

206. Kyrgyz Republic Uzbekistan

207. Lao People's Democratic Republic-Thailand

208. Latvia-Poland

209. Latvia-Slovak

210. Latvia-Slovenia

211. Latvia-Turkey

212. Lithuania-Poland

213. Lithuania-Slovakia

214. Lithuania-Slovenia

215. Lithuania-Turkey

216. MERCOSUR-India

217. MERCOSUR-Andean Community

218. MERCOSUR-Bolivia

219. Malaysia-Australia

220. Malaysia-Chile Free Trade Agreement

221. Malaysia-US

222. Mauritius-Pakistan

223. Melanesian Spearhead Group (MSG)

224. Moldova-Bosnia and Herzegovina

225. Moldova-Monternegro-Serbia

226. Moldova-Romania

227. Namibia-Zimbabwe

228. New Zealand Malaysia

229. New Zealand-Singapore

230. Nicaragua and Taiwan

231. North American Free Trade Agreement (NAFTA)

232. PTN

233. Pacific Island Countries Trade Agreement

234. Pakistan-China

235. Pakistan-Malaysia

236. Pakistan-Sri Lanka

237. Pakistan-Mauritius

238. Pan-Arab Free Trade Area (PAFTA)

239. Panama-Costa Rica (Panama-Central America)

240. Panama-Singapore

241. Panama-Taiwan

242. Papua New Guinea-Australia

243. People's Republic of China-Costa Rica

244. People's Republic of China-Taipei

245. Peru-China

246. Peru-Korea, Republic of

247. Peru-Singapore

248. Poland-Turkey

249. Preferential Tariff Arrangement-Group of 8 Developing Countries

250. Romania-Turkey

251. Russia-Kazakhstan-Belarus

252. Russian Federation-Tajikistan

253. SPARTECA

254. Serbia-Montenegro-Romania

255. Singapore-Australia

256. Singapore-Costa Rica FTA

257. Slovak Republic-Turkey

258. Slovenia-FYR Macedonia

259. Slovenia-Turkey

260. South Asian Free Trade Agreement (SAFTA)

261. South Asian Preferential Trade Arrangement (SAPTA)

262. Southern African Customs Union (SACU)

263. Southern African Development Community (SADC)

264. Southern Common Market (MERCOSUR)

265. TPS-OIC

266. Thailand-Australia

267. Thailand-New Zealand

268. Thailand-Bahrain

269. Thailand-Peru Free Trade Agreement

270. Trans-Pacific Strategic Economic Partnership

271. Turkey Albania

272. Turkey-Bosnia and Herzegovina

273. Turkey-Chile

274. Turkey-Croatia

275. Turkey-FYR Macedonia

276. Turkey Georgia

277. Turkey-Israel

278. Turkey-Jordan

279. Turkey-Montenegro

280. Turkey-Morocco

281. Turkey-Palestinian Authority

282. Turkey-Serbia

283. Turkey-Tunisia

284. Turkey-Albania

285. Turkey-Korea

286. Turkey-Lebanon

287. Turkey-Mauritius

288. US-Australia

289. US-Bahrain

290. US-Chile

291. US-Jordan

292. US-Morocco

293. US-Oman

294. US-Peru

295. US-Singapore

296. US-Afghanistan

297. US-Albania

298. US-Central Asia

299. US-Colombia

300. US-Israel

301. US-Laos

302. US-Pakistan

303. US-Panama

304. US-Vietnam

305. Ukraine-Azerbaijan

306. Ukraine-Belarus

307. Ukraine-FYR Macedonia

308. Ukraine-Kazakhstan

309. Ukraine-Moldova

310. Ukraine-Russian Federation

311. Ukraine-Tajikistan

312. Ukraine-Uzbekistan

313. Ukraine -Turkmenistan

314. United States-Marshall Islands Compact of Free Association

315. United States-Micronesia Compact of Free Association

316. United States-Palau Compact of Free Association

317. Uzbekistan-Russian Federation

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