

Negotiating the Nexus:  
Production Networks, Multinational Firms,  
and Regulatory Coherence in RTAs

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## Abstract

Deep integration is a defining feature of the 21<sup>st</sup> century regional trade agreement. This paper investigates the role of production networks in shaping behind-the-border commitments in trade agreements. Building on existing studies of production networks and regional trade agreements, this paper examines the role of multinational firms as the political actors that drive governments to conclude deep integration commitments that are geared toward regulatory coherence among partner countries. The analysis provides a case study of RTA commitments in technical barriers to trade (TBTs), a regulatory area of particular importance to the operation of production networks and trade along the international supply chain. TBTs concern standards, regulations, and assessments of the production process, integral to the manufacturing operations of multinational firms. The empirical analysis compares trade in parts and components, a standard measure of production network trade, with the role of multinational firms as they influence the strength of commitments regarding TBTs. The analysis also takes account of parallel institutional provisions regarding investment to reflect the interdependence across provisions in the design of trade agreements. This study finds that the number of multinational firms in agreement partner countries has a positive impact on the strength of TBT commitments: multinational firms amongst RTA members and foreign affiliates hosted by individual countries more broadly are both associated with higher ‘scores’ in TBT commitments.

## Negotiating the Nexus:

### Production Networks, Multinational Firms, and Regulatory Coherence in RTAs

One of the most important developments in global trade that shifts the terms of debate regarding the compatibility of regional trade agreements (RTAs) with the multilateral trade regime is the increasing complexity of the international supply chain. When Viner (1950) first broached the question of trade-diversion and trade-creation due to RTAs, much of international trade consisted of finished goods. Today, however, trade in intermediate goods has flourished, to the extent that the WTO/OECD have launched the “Made in the World” initiative in order to measure and to analyze trade in value-added.<sup>1</sup> How has global production sharing transformed the governance of trade? In particular, what is the impact of production network trade and multinational firms in the design of regional trade agreements? A production network is a group of interconnected firms that are dispersed across different countries, in which each firm contributes to a different stage of the manufacturing process depending on the relative cost advantage of their location. Production networks have become an integral part of global trade. They consist of firms linked along the international supply chain, and they reflect the internationalization of the production process and the cross-border linkages between firms and subsidiaries.

The internationalization of the supply chain first began among developed nations, in what Richard Baldwin has called the “second unbundling” (Baldwin 2011,3). US-Canada or French-German trade in autos and auto parts in the 1970s are early examples of this phenomenon.

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<sup>1</sup> [http://www.wto.org/english/res\\_e/statis\\_e/miwi\\_e/miwi\\_e.htm](http://www.wto.org/english/res_e/statis_e/miwi_e/miwi_e.htm).

However, the big push in the second bundling occurred between developed and developing countries, pushed by systemic advancements in international communications and technology (ICT) and huge wage discrepancies (Feenstra 1998, Ando and Kimura 2005). This “new” trade that promoted the internationalization of the supply chain involved production unbundling known as outward processing trade, or vertical specialization trade (Manger 2009, Hummels, Ishii and Yi 2001), in which intermediate inputs are imported and used in goods that are subsequently exported. By some estimates, this vertical specialization trade was more important for Europe and North America until the 1980s, after which North-South vertical specialization trade boomed and especially in Asia, which has earned the label “Factory Asia” to denote the extensive production unbundling that has occurred in the region (Ando and Kimura 2005, Athukorala 2005).

Production networks form a “trade, investment, and services” nexus (Baldwin 2011). They involve trade intermediate goods, the production of which is driven by investment and supported by services that ease communications and operations of firms that are geographically separated. The prominence of production networks in global trade and the international institutions required to accommodate their activities reflect an evolutionary stage in the global trading system in which private-public distinctions in international trade law are increasingly contentious. Governance of the international supply chain calls for achieving greater regulation of domestic laws and their compatibility across countries, as they are directly related to the cost of doing business abroad and indispensable for facilitating cross-border production activities.

This study examines RTA commitments in technical barriers to trade, a modality of trade governance that is particularly relevant to the operation of production networks. TBTs concern standards, regulations, and assessments of the production process, integral to the manufacturing operations of multinational firms. Building on existing studies of production networks and regional trade agreements, this paper examines the role of multinational firms as the political actors that drive governments to conclude deep integration commitments that are geared toward regulatory coherence among partner countries. The empirical analysis compares trade in parts and components, a standard measure of production network trade, with the role of multinational firms as they influence the strength of commitments regarding TBTs. The analysis also takes account of parallel institutional provisions regarding investment to reflect the interdependence across provisions in the design of trade agreements. This study finds that the number of multinational firms in agreement partner countries has a positive impact on the strength of TBT commitments: multinational firms amongst RTA members and foreign affiliates hosted by individual countries more broadly are both associated with higher ‘scores’ in TBT commitments.

## Motivations

This study is motivated by three major developments in global trade and the scholarship on trade governance of recent years. First, the rise of production networks shifted the locus of trade governance. Today’s trade agreements are far more concerned with “deep integration” (Lawrence 1996), the disciplines that underpin the “trade-investment-services” nexus. They increasingly emphasize “behind-the-border” regulations that support the internationalization of supply chains. This has taken place against a backdrop of a global trading system in which tariffs have fallen to historic lows and intermediate goods comprise an increasingly large share of

international trade. Yeats (2001) found, for example, in an extensive study of the structure of international trade that intermediate input trade accounted for approximately 30% of world trade in manufactured goods in 1995. Others have also found that the share of intermediate goods in global trade has increased significantly in recent years.<sup>2</sup>

Second, global trade is suffering from a serious governance gap as a result of the failure of multilateral trade negotiations under the Doha Round to conclude. The legislative function of the WTO has grown weak, displaced in its turn by the explosion of regional trade agreements that now form the part and parcel of existing trade rules. According to the WTO's 2011 World Trade Report, which focused on regional trade agreements, there were over 300 RTAs in effect in 2010, including those notified and not notified to the WTO. Especially without progress in concluding the Doha Round, RTAs are likely to continue unabated as permanent fixtures of the global economy and an important venue for negotiating trade liberalization.

Finally and most immediately relevant to this paper, this study is also motivated by the trend in “mapping” of regional trade agreements, featuring projects that have sought to move away from the RTA-dichotomy (a country is a RTA-member or not) to assessing their qualities and the strength of liberalization commitments encoded in them. They reflect a shift in analytical focus, from examining the determinants of institutional formation—whether and why countries cooperate through international institutions—to institutional design, or how countries cooperate through the terms of the agreement.

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<sup>2</sup> See also Feenstra and Hanson (1996b), Feenstra (1998), Hummels, Ishii and Yi (2001), and Borga and Zeile (2004).

The extant mappings of RTAs range from comprehensive to issue-specific. They include Horn, Mavroidis, and Sapir (2010), which offers a classification of US and EU RTAs based on whether provisions are legally enforceable and identifies provisions as “WTO-plus,” going beyond existing commitments under WTO agreements, or “WTO-X,” address trade-related issue areas that are not (yet) within the purview of the multilateral trade regime. This classification was further applied to additional RTAs for presentation in the most recent World Trade Report on RTAs (WTO 2011). Comprehensive mappings of RTAs also include Baccini, Dür, Elsig, and Milewicz (2011) that catalogues hundreds of extant RTAs, while Hicks and Kim (2012) classify Asian RTAs according to their respective levels of credible commitment. More specialized mappings of RTAs focus on particular issue areas such as dispute settlement (McCall Smith 2000; Pevehouse and Buhr 2005), flexibility and trade remedies more broadly (Teh, Prusa, and Budetta 2009), TBTs (Piermartini and Brudetta 2009), services (Roy 2011), competition (Teh 2009), investment (Kotschwar 2009, Bütthe and Milner 2011), and government procurement (Kono and Rickard 2011).

These developments strongly indicate the need to examine how changes in the structure of international trade affect how states cooperate through RTAs. Production networks demand deep integration commitments from members to facilitate operations for multinational firms. At the same time, the RTA-mappings provide the necessary data to unpack commitments encoded in RTAs, distinguishing strong from weak agreements. Finally, analysis of commitments in behind-the-border rules also provides important insights into how successful RTAs are mending the gap in global trade governance by advancing the development of key modalities.

## Production Networks and Trade Agreements

In the absence of a new multilateral trade agreement, regional trade agreements have served as the prevailing institutional form for managing trade. To address the institutional needs of production networks and the multinational firms, trade agreements are increasingly including strong commitments in behind-the-border trade rules. The success of production networks relies not only on low tariffs but also on the infrastructure, institutional apparatus, and regulations that facilitate cross-border production. Offshoring by international firms that geographically split up input suppliers and final goods producers are strongly affected by domestic regulations that drive up (or down) the cost of doing business. Local rules matter. This is where RTAs can and do play an important role, especially in delivering commitments on domestic trade-related rules that lower the cost of doing business for international firms. As such, where trade in intermediate goods is prevalent, trade agreements need to extend beyond traditional market access conditions such as tariffs to cover the conditions of competition that exist in member countries.

Moreover, the nature of offshoring generates a politics of its own, as a result of cross-border spillover effects (WTO 2011, 117, fn 54) that are inherent to contracts that are incomplete and relation-specific between geographically separated input suppliers and final goods producers. It raises commitment problems not only in the form of liberalization-- unilateral, bilateral or multilateral agreements (Yarbrough and Yarbrough 1992), but also the provisions of international agreements. According to Antràs and Staiger (2008), the prevalence of offshoring by multinational firms “complicates” the politics of trade agreements, as the means by which governments can shift the terms of trade extend to “wider set of policies” than traditional market access (19). Thus trade agreements must address domestic trade-related rules that could affect



the conditions of bargaining between foreign suppliers and domestic buyers of specialized components. Provisions must secure input trade policies that will facilitate trade in components as well as ensure international competitiveness of locally produced final goods.

#### *RTA Provisions on Technical Barriers to Trade (TBTs)*

Technical barriers to trade (TBTs) is one category of behind-the-border commitments covered in RTAs that is strongly relevant to trade within a production network. TBTs refer to national regulations concerning product standards, technical regulations, and conformity reassessment procedures for goods, whether produced domestically or imported from abroad. Standards and technical regulations delineate the technical characteristics of a product, such as the level of safety of an electronic device. The main difference between the two is that standards are voluntary measures, often relying on standards set by recognized international bodies, while technical regulations are mandatory measures instituted by governments. Examples of TBTs include US regulations that specify a larger minimum size for red tomatoes as compared to green tomatoes, or Chile's meat quality grading system, which is incompatible with systems in, for example, Argentina and the US, which effectively limits the latter countries' access to the Chilean market (Piermartini and Budetta 2009, 251). Conformity assessment procedures specify the process by which products are evaluated against specific standards and/or technical regulations. They provide formal proof that a product's compliance with the standards and technical regulations of the country in which it is being offered on the market. Countries may differ in the certification processes they conduct or recognize for their products, thus requiring exporting firms to undergo a separate certification process for each country in which they sell

their goods. For the multinational firm whose production activities are dispersed across several countries, such conformity assessment adds both cost and time to the production timeline.

Trade liberalization through TBT commitments in RTAs can promote efficiency of production, redress information asymmetries between the producer and consumer, and expand trade between agreement partners. Commitments toward harmonization and/or mutual recognition of standards, technical regulations, and conformity of assessment measures promote regulatory compatibility across the different countries in which multinational firms carry out their production activities. Something as simple as a metrology provision that recognizes a common unit of measurement greatly facilitates trade and production because goods produced under, for example, the metric system do not have to be re-processed for export to a country that employs the imperial system. Mutual recognition or harmonization of conformity assessment measures can also shorten the production timeline, if firms need only undergo a single conformity assessment that is accepted in all the countries in which it carries out production activities. Regulatory compatibility can also redress the informational asymmetry between foreign producers and domestic consumers.<sup>3</sup> Consumers would be better able to gauge the quality and safety features of an imported good, for example, if the labeling conformed to domestic regulations concerning the information to be printed on a product. Finally, though there are trade-offs to harmonization such as less variety in traded goods, a small body of existing scholarship shows that shared standards may have trade-creation effects for trading partners (Swann, Temple, and Shurmer 1996)

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<sup>3</sup> This point extends the information effects of standards in the domestic context to foreign goods.

This paper relies on a coding of RTA provisions developed by Piermartini and Budetta (2009), which examines RTA commitments in standards, technical regulations, and conformity assessment. Their approach essentially takes the WTO's TBT Agreement as the baseline by identifying references to the WTO agreement, affirmations of rights and obligations under the agreement, and making specific references to the provisions of the WTO agreement. The core of the coding scheme evaluates the integration approach in liberalizing TBT measures, specifically whether agreement members make any commitments toward mutual recognition (also called "equivalence") or harmonization in the above three areas. Appendix 2a provides the specific coding scheme applied to TBT provisions in RTAs. In evaluating the strength of TBT commitments, this approach also takes into account the supporting institutional mechanisms provided in the trade agreement. The agreement accounts for agreement-wide provisions concerning transparency that provide for notification and contact points, and a dispute settlement process that produces binding decisions and that do not have a 'carve out' for disputes concerning TBT measures. Last but not least, the coding scheme also accounts for provisions on technical cooperation in areas such as metrology and areas beyond trade, such as investment and infrastructure quality. The overall approach of this template places equal emphasis on TBT measures and on the supporting institutional features that ensure monitoring, enforcement, and cooperation extending beyond trade.

### *Multinational Firms and the Political Economy of RTAs*

In examining how production networks shape institutional design outcomes for trade, this study focuses on the role of multinational firms as one important set of political actors in the political economy of RTAs. In acknowledging the importance of the global value chain in

international trade, a substantial body of scholarship has been devoted to measuring trade in value-added or in intermediate goods. What is less evident in the literature is how multinational firms, who are the key actors in global production-sharing, have affected the politics and political economy of trade-policy. As export-oriented interests that strongly resisted protectionism during the 1980s (Milner 1988), the multinational firms have been the driving force behind the construction of production networks and the increasing complexity of the global supply chain. In examining their association with regulatory commitments such as TBTs in RTAs, the expectation is that a strong presence of multinational firms in a particular country is likely to be associated with stronger commitments toward regulatory coherence.

## Research Design

The analysis utilizes a sample of regional trade agreements (RTAs) from Asia, a region which has been particularly active in global production sharing.<sup>4</sup> Exports of manufactured parts and components from countries in the region grew by 15 per cent per annum for the years 1984-2006, and intra-Asian exports grew at an even higher rate of about 21 percent (Hoekman and Kostecki 2009, 13). The region exhibits diversity in the depth of integration commitments in RTAs as well as the political and economic factors that influence them. The sample includes trade agreements of roughly the last decade during which time trade along the international supply chain has burgeoned in the international economy. The unit of analysis is the RTA-dyad, formed by pairing the signatories of each agreement. The sample consists of undirected dyads, making no distinction in the direction of trade among the countries. Thus each RTA includes one observation per country pair.

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<sup>4</sup> Appendix 1 lists the trade agreements included in the analysis.

## Dependent Variable

The dependent variable captures the strength of commitments to liberalizing trade rules in technical barriers to trade (TBTs). In constructing a measure of the strength of TBT commitments, this study applies a template drawn from a large-scale mapping effort, as documented in Estevadeordal, Suominen, and Teh (2009) that sought to assess institutional variation in RTA commitments. This study applied the TBT template proposed in this volume to the RTAs signed by countries in Asia and constructed a measure of the strength of TBT commitments that is an average of the presence or absence of commitments along 23 components.

This paper employs a 24-point scale [0,23] of TBT commitments based on the mapping scheme developed by Piermartini and Budetta (2009). The mapping scheme relies as its initial reference point on the TBT Agreement of the WTO, which facilitates comparisons between existing multilateral rules on TBTs and also shows the extent to which TBT commitments have advanced beyond those in the WTO Agreement. The scale captures i) whether there is reference to the WTO's TBT Agreement and attendant rights and obligations, as a means to ascertain the intended relationship of the RTA to the WTO; ii) approach to integration, namely harmonization or mutual recognition of standards; iii) transparency requirements that reduce information costs for traders; iv) provisions for settlement of TBT-related disputes; and v) the extent of common policy-making in the field of standards envisioned in the RTA. Higher values on the variable reflect stronger TBTs on the part of RTA signatories.

*Independent Variable of Interest: Production Network Trade and Multinational Firms,*

Production network trade is measured as the log-transformed, average annual dollar value of bilateral trade in parts and components between the FTA-dyad members. Trade in parts and components refer specifically to goods that are ‘parts and accessories of capital goods (except transport equipment)’ (code 42\*) and ‘parts and accessories of transport equipment (code 53\*) under the UN Registry of Broad Economic Categories (BEC).<sup>5</sup> Data were obtained from the UN Comtrade Database. It is perhaps the most commonly used measure for capturing global production sharing (Ng and Yeats 1999; Hoekman and Kostecky 2009), due to data availability, though other studies have sought to expand the range of intermediate goods covered under this label (Athukorala 2010) or have proposed measures such as trade in value-added (Elms and Low 2013). This study employs trade in these categories of intermediate goods for reasons of data availability, but also to capture the importance of the industries (such as auto parts manufacturing) that are especially important in the production networks of the region. These data were weighted by the GDP of each country in the dyad, averaged across the dyad to reflect the importance of production network trade to the domestic economy in both countries, and log-transformed. This dyadic measure was then averaged once again across the ten-year period preceding the signing of the FTA, utilizing the years for which data were available.

The analysis employs two measures to capture the presence of multinational firms in agreement partners. The first measure—*FTA-wide MNCs*--is the total number of multinational firms that the agreement partners have in common, whether as parent or host country. That is, the variable is the sum of all multinational firms in which an FTA member is a parent or host

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<sup>5</sup> <http://unstats.un.org/unsd/tradekb/Knowledgebase/Intermediate-Goods-in-Trade-Statistics>.

country of the firm. This measure is intended to capture the linkages provided by multinational firms of FTA member countries. The second measure utilizes information on all foreign affiliates in a country. This measure—*Foreign Affiliates*—is the dyadic average of the total number of multinational firms present in each FTA member. This figure includes multinational firms from FTA members and non-members. This variable reflects the extent of a country's linkages with the international supply chain rather than the FTA-specific linkages provided by multinational firms. Data on multinational firms were obtained from the Investment Map database of the International Trade Centre, and the analysis utilizes information on foreign affiliates established before the signing of the FTA.<sup>6</sup> The analysis employs the log-transformed, 10-year dyadic average (or less depending on data availability) for the two variables.

The analysis also controls for several factors that may affect both production network trade and the depth of integration in FTAs. Perhaps the most important of the controls is foreign direct investment (FDI), which has been the engine of production networks, enabling multinational firms to establish and to operate manufacturing sites. FDI is measured as the dyadic average of annual FDI inflows as a proportion of GDP. Data were obtained from the World Development Indicators (WDI 2013). The analysis controls for trade openness and economic growth, both also averaged across the dyad. Trade openness for each member is measured as the sum of the country's exports and imports weighted by its GDP. The two trade openness figures were then averaged across the two dyad members. The analysis takes account of two key political variables that reflect the domestic politics of trade, namely regime type and veto players (Mansfield and Milner 2012, Mansfield, Milner, and Pevehouse 2007). Regime type

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<sup>6</sup> <http://www.investmentmap.org/searchCompany.aspx>.

is operationalized as the average Polity score for the two dyad members, and veto players as the dyadic average of the *Political Constraint* index provided in Henisz (2000).<sup>7</sup> Values of all control variables were also averaged across the ten-period period before the FTA was signed for those years where data were available.

Last but not least, an additional independent variable—an index of commitments in investment in the same RTA—reflects the interdependence of institutional design components and the close links between trade and investment. Commitments in investment comprise one of the pillars of a regional trade agreement that promotes the formation of production networks and also facilitates their operations where they exist. For Asian countries, in particular, attracting investment has been one of the major motivations behind government decisions to sign a free trade agreement. In the case of the ASEAN Free Trade Area (AFTA) Agreement, for example, officials were been explicit about the need to attract investment to the region and to prevent the diversion of FDI, as a key argument for the AFTA project. Already in the early 1990s and well before the Asian Financial Crisis, FDI was on the decline (Nesadurai 2003, 82-87). AFTA negotiators, in their consultations with experts during the drafting the agreement, took into account the general conclusion of numerous studies that the major impact of trade agreement projects such as NAFTA and the European Single Market would be further decline in FDI flows to the region. The need to address this FDI “crisis” and to prevent further diversion of FDI, especially to China, spurred the cooperation that produced AFTA in 1992 (Khong and Nesadurai 2007, 51).

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<sup>7</sup>The Polity data were obtained from <http://www.systemicpeace.org/polity/polity4.htm>, and the Political Constraint Index from <http://www-management.wharton.upenn.edu/henisz/>.



This paper utilizes information from a detailed coding of investment provisions in FTAs, which captures the dimensions of protection and liberalization (Kotschwar 2009) that are explicitly stated as agreement provisions. The coding of investment provisions covers 33 components across the following 10 broad categories:

- 1) Sectoral coverage to include portfolio investment as well as FDI, which reflects how broadly investment is defined;
- 2) Investor-state dispute settlement and the ability of private economic actors to protect their economic interests in host countries;
- 3) Positive or negative-list bindings in MFN and national treatment (NT);
- 4) Scope of MFN and NT as they concern the stages of investment: establishment, acquisition, post-establishment and (re)sale;
- 5) Investment protection, covering 'fair and equitable treatment,' repatriation of profits, and expropriation;
- 6) Restrictions on transfers and payments;
- 7) Performance requirements;
- 8) Restrictions on senior management and board of directors, in terms of membership and temporary entry provisions;
- 9) Denial of benefits for third-party investors; and
- 10) General transparency provisions regarding the publication of laws and regulations and the availability of a national inquiry point, which are applicable to all provisions in the trade agreements.

These categories encompass provisions emphasized in both Kotschwar (2009) and Miroudot (2011), in which the latter focus on the FTA-formation strategies of developing countries. They comprise a comprehensive set of provisions on investment that are found in FTAs in general. The analysis relies on an additive index that was constructed by summing up the level of protection and/or liberalization that is captured by each category. The Appendix provides the detailed 33-point coding scheme and the values assigned to each component.

## Findings

Table 1 presents the results of the regression analysis. The three columns show the results of including different measures of production networks, as seen through trade in parts and components, multinational firms common to FTA members, and the number of foreign affiliates in FTA members.

The results show that trade in parts and components do not have an impact on the strength of TBT commitments in RTAs. As a widely used measure of production network trade, studies have found that trade in parts and components do influence the broader depth of integration provided in RTAs that takes account of all agreement provisions. For individual areas such as TBTs, however, such trade appears to have only a weak influence on the strength of commitments. In contrast, the strong presence of multinational firms in agreement partners, where multinational firms originate and are hosted in partner countries, appears to have a positive effect on TBT commitments. Similarly, the presence of foreign affiliates, irrespective of whether these firms' parent companies hail from other member countries or originate outside the RTA membership, also have a positive impact on the strength of TBT commitments. The results suggest that strong linkages at the firm level and the degree to which countries participate in the

Table 1. Production Network Trade and RTA Commitments

Dependent Variable:	Commitments in Technical Barriers to Trade (TBTs)		
<i>Trade in Parts &amp; Components</i>	0.680 (0.403)		
<i>FTA-wide MNCs</i>		1.553 (0.532)**	
<i>Foreign Affiliates</i>			1.947 (0.873)*
<i>Investment Commitments</i>	0.328 (0.168)	0.718 (0.188)**	0.350 (0.167)*
<i>Democracy</i>	0.972 (0.361)**	0.716 (0.362)*	0.941 (0.350)**
<i>Veto Players</i>	4.864 (11.907)	12.498 (11.703)	9.964 (11.434)
<i>Trade Openness</i>	-0.017 (0.032)	-0.009 (0.030)	-0.013 (0.031)
<i>FDI Inflows</i>	1.471 (0.556)**	1.180 (0.543)*	1.417 (0.560)*
Constant	11.247 (6.811)	12.825 (4.205)**	9.835 (5.815)
R2	0.29	0.39	0.30
N	165	149	168
Standard errors in parentheses.      * p<0.05; ** p<0.01			

international supply chain through the production activities of multinational firms are important factors that influence how countries approach integration in standards, technical regulations, and conformity assessments of traded goods. Moreover, multinational firms may be the most enthusiastic advocates of integration in TBTs, as these rules directly impact the cross-border linkages created by regional or global production sharing activities. The analysis also finds support for the argument that institutional provisions in RTAs are interdependent. In the case of TBTs, they are associated with strong commitments toward protection and liberalization of investment in the same agreement. The positive association between RTA commitments and investment and in TBTs is indicative of the trade-investment nexus that underpins the effective operations of a regional production network.

Among the control variables, the strength of TBT commitments appears to be driven by long-term FDI inflows into partner countries, which further corroborates the close link between trade and investment. General trade openness, however, has no significant impact on TBT commitments. Among the political variables, democracies are associated with stronger TBT commitments, while veto players appear not to have an impact.

## Conclusion

Deep integration is a defining feature of the 21<sup>st</sup> century regional trade agreement. This paper examined the role of production networks in shaping behind-the-border commitments in RTAs, focusing on TBT provisions as a case study. In doing so, this paper built on existing studies on production networks and regional trade agreements to analyze the role of multinational firms as political actors that lobby governments to conclude deep integration

commitments that are geared toward regulatory coherence among partner countries. TBTs comprise a regulatory area of particular relevance to the operation of production networks and trade along the international supply chain. TBTs include standards, technical regulations, and conformity assessments for products that are integral to the manufacturing operations of multinational firms. The empirical analysis compared the impact of trade in parts and components, a widely employed measure of production network trade, with the presence of multinational firms in RTA partners on the strength of commitments regarding TBTs. The results of the analysis show that the presence of multinational firms have a positive effect on the strength of TBT commitments: countries linked by multinational firms are generally likely to sign RTAs with higher ‘scores’ in TBT commitments. The analysis also found that provisions geared toward stronger protection and liberalization of investments are associated with stronger commitments in TBTs, which not only supports strong linkages between trade and investment but also the interdependent nature of institutional design across issue areas.

Future work on this project will consider two main issues that have emerged from the analysis. First, multinational firms should be differentiated by the sector in which they conduct their activities. The ‘line of business’ that distinguishes multinational firms across different sectors should be utilized to test the hypothesis that firms from different sectors—manufacturing, services, primary products—may have different institutional preference in the design of RTAs. Second, this project may also consider further the interdependence of institutional components in RTAs by going beyond TBTs and investment to consider other regulatory areas such as competition and services.

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## Appendix 1. Regional Trade Agreements Included in the Analysis

ASEAN - Australia - New Zealand	Japan - Thailand
ASEAN - China	Japan – Malaysia
ASEAN - India	Japan-Peru Free Trade Agreement
ASEAN - Japan	Japan-Vietnam
ASEAN - Korea, Republic of	Jordan - Singapore
Australia - Chile	Korea, Republic of - Chile
Brunei Darussalam - Japan	Korea, Republic of - India
Chile - China	Korea, Republic of – Singapore
Chile - India	MERCOSUR – India
Chile - Japan	Malaysia-Australia
China - Hong Kong, China	Malaysia-Chile Free Trade Agreement
China - Macao, China	Mauritius-Pakistan
China - New Zealand	New Zealand - Malaysia
China - Singapore	Pakistan - China
China-Iceland	Pakistan – Malaysia
China-Switzerland	Panama - Singapore
EFTA - Korea, Republic of	People's Republic of China-Costa Rica
EFTA - Singapore	Peru - China
EU - Korea, Republic of	Peru - Korea, Republic of
Economic Cooperation Organization (ECO)	Peru-Singapore
Gulf Cooperation Council-Singapore FTA	Singapore - Australia
India - Bhutan	Singapore-Costa Rica FTA
India – Japan	Thailand – Australia
India - Malaysia	Thailand - New Zealand
India - Singapore	Thailand-Peru Free Trade Agreement
India – Nepal	Trans-Pacific Strategic Economic
Iran-Pakistan	Partnership
Japan - Indonesia	Turkey-Korea
Japan - Mexico	US - Singapore
Japan - Philippines	

## Appendix 2a. Mapping of TBT Provisions

I. Reference to WTO-TBT Agreement [0,3]		Values	
1. Definitions of standards and regulations in RTA same as those of WTO-TBT Agreement?		No=0	Yes=1
2. General reference to rights and obligations of WTO-TBT Agreement?		No=0	Yes=1
3. Does reference to WTO-TBT Agreement cover specific provisions?		No=0	Yes=1
II. Integration Approach [0,9]			
A. Standards [0,3]			
B. Technical Regulations [0,3]			
C. Conformity Assessment [0,3]			
(Mutual) Recognition (MR)	O R	Harmonization	
Burden of explanation for non-equivalence on importing country?		Specified existing standards/rules to which countries will harmonize?	No=0 Yes=1
MR Agreement in force? (Not complete; excluded from analysis)		Use/creation of regional standards/rules promoted?	No=0 Yes=1
Time schedule for achievement of MR?		Use of international standards/rules promoted?	No=0 Yes=1
III. Transparency Requirements [0,3]			
Notification:	Time period allowed for comments specified?		No=0 Yes=1
	Time period allowed for comments longer than 60 days?		No=0 Yes=1
Are there contact points/consultations for the exchange of information?		No=0	Yes=1
IV. Institutional Organization [0,5]			
Administrative bodies: regional body established?		No=0	Yes=1
Dispute Settlement Mechanisms	Regional dispute settlement body?		No=0 Yes=1
	Regional consultations foreseen to solve disputes?		No=0 Yes=1
	Mechanism to issue recommendations?		No=0 Yes=1
	Recommendations mandatory?		No=0 Yes=1
	Recourse to dispute settlement disallowed?		Yes=0 No=1
V. Further Cooperation [0,3]			
Common policy/standardization program (beyond trade-related objectives?)		No=0	Yes=1
Technical assistance?		No=0	Yes=1
Metrology?		No=0	Yes=1
Total Range for TBT commitments [0,23]			

## Appendix 2b. Classification of Investment Provisions in FTAs

- 1) Sectoral Coverage
  - a) Definition: is investment defined as FDI or does it also include portfolio investment?
  - b) Is there a separate Investment Chapter?
  - c) Are investment provisions found in the Services Chapter as mode 3 (commercial presence)?
  - d) Endeavours without specified scope: Is there a general commitment to cooperation/liberalization/promotion of investment (often in the preamble to the agreement) but without specific commitments such as *b* or *c* above?
- 2) Does the FTA provide for Investor-State Dispute Settlement?
- 3) MFN and National Treatment
  - a) Positive-list bindings: FTA investment provisions list sectors to be liberalized; all others remain “unbound” (not subject to commitments)
  - b) Negative-list bindings: FTA investment provisions stipulate MFN and national treatment as general principles applicable across the board, but with exemptions for those sectors that are to remain closed.
- 4) Scope of MFN and National Treatment: phases of investment covered by MFN and national treatment.
  - a) “Establishment”
  - b) “Acquisition”
  - c) “Post-establishment”
  - d) “(Re)sale” [of investment]”
- 5) Investment Protection: the terms should appear in the provisions.
  - a) “fair and equitable treatment”
  - b) Free transfer of funds
  - c) Expropriation and compensation: expropriation on a nondiscriminatory basis and with adequate compensation
- 6) Transfers and Payments
  - a) Does FTA place restrictions on transfer of funds in the event of balance-of-payments difficulties?
  - b) Does RTA place restrictions on transfer of funds in other prescribed circumstances?
- 7) Performance Requirements: i) obligations to export a particular percentage of goods and services; ii) to use a particular level or percentage of local content; iii) to give preference to local goods or services; iv) to observe trade and foreign exchange balancing requirements; v) to transfer technology; or vi) to act as the exclusive supplier of goods and services
  - a) Prohibition of local content, trade, or other specified requirements?

- b) Prohibition of local content or trade requirements only? Prohibits any of i) – iv) only from above list; allows v) and vi) and other specified requirements
  - c) Provisions more limited than TRIMs (performance requirements not banned/prohibited)? No provisions on local content?
- 8) Senior Management/Board of Directors: Restrictions regarding the nationality of managers and members of the board; hiring of top managerial personnel regardless of nationality; stipulating nationality of majority of board of directors
- a) Provisions allowing for temporary entry of key personnel? (may be in another part of FTA)
  - b) Cannot restrict either senior management/board of directors based on nationality?
  - c) Can partially restrict board of directors?
  - d) Can partially restrict management or both?
- 9) Denial of Benefits: Description: concerns rights of third-party (non-FTA partner country) investors. Issue is whether they enjoy the same rights as investors of a party to the FTA when they have a substantial presence in one member and invest in the other party's territory through this presence. Implies *de facto* transfer of investment rules to non-party actors.
- a) (Denial of benefits) Only to persons with no substantial business operations in other party?
  - b) (Denial of benefits/)Tougher treatment for specific reasons?
    - Examples: denial of benefits in the absence of diplomatic relations between denying party and non-party or adoption/maintenance of measures with that non-party that prohibits transactions with the enterprise
  - c) (Denial of benefits/) Tougher treatment for all reasons?
- 10) Transparency (in any part of the agreement): GATS obligation to publish all relevant laws and to set up inquiry points that companies/governments can use to obtain information about regulations in the sector. Prior comment: parties notify each other with regard to any proposed or actual matter than might be adopted that might affect other party
- a) 'Prior comment'?
  - b) Publish (as in GATS)?
  - c) National inquiry point (as in GATS)? (may also be 'contact point')