Hochschule für
Wirtschaft und Recht Berlin
Berlin School of Economics and Law

Institute for International Political Economy Berlin

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Authors: Jennifer Pédussel Wu, Clark Banach, Sofoklis Goulas, Ignacio Silva Neira

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Jennifer Pédussel Wu
Institute for International Political Economy,
Berlin School of Economics and Law, Berlin

Clark Banach
Canisius University, Buffalo NY

Sofoklis Goulas
Brookings Institution, Washington DC

Ignacio Silva Neira
University of the Basque Country, Bilbao
Institute of International Political Economy,
Berlin School of Economics and Law, Berlin

Abstract: The question of whether trade agreements are 'stepping stones' or 'stumbling blocks' to multilateral trade liberalization is not a new one; however, the empirical methods and the quality of the data used to address this question are continually improving. This paper explores this familiar question using a robust combined dataset and advances in structural gravity analysis to offer insight into regional integration agreements and trade networks. We introduce the Bilateral Longitudinal Observations and Country Statistics (BLOCS) database and demonstrate variation in PPML estimations using measures from varying sources. The data includes observations between 218 sovereign states, and their trading partners, over 60 years (1963-2022). We estimate specifications using four measures of trade flows, and several trade agreement dummies, accounting for varying definitions and reporting practices. Observations also include information on agreement depth and country attributes to contextualize existing literature and further understand the relationship between international trade and agreements. Differences observed between measures of Regional Trade Agreement (RTA) pairs indicate that the methodology for coding trade agreement participation matters. Our findings also suggest that variations in agreement details predict variation in total trade, thus supporting the hypothesis that not all trade agreements are created equal. It is the institutional details that determine whether a trade agreement will be a 'stepping stone' or a 'stumbling block' to multilateral trade liberalization.

JEL classification: C80, C89, D02, F02, F14, F15
Keywords: Database, Empirical gravity models, International trade, Regional trade patterns

Corresponding author: Berlin School of Economics and Law (HWR Berlin), Badensche 52, Berlin, Germany, Tel. +49-(0)30-30877-1167 jennifer.pedussel-wu@hwr-berlin.de.

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1. Introduction

Bhagwati (1991) first introduced the concept of 'stepping stones' and 'stumbling blocks' in an article examining whether membership expansion of Regional Trade Agreements (RTA) serves as an obstacle to further global trade liberalization. If RTAs trigger multilateral negotiations then they can act as stepping stones; however, at the time he argued, it is more likely that RTA formation hinders the advancement of multilateral free trade due to the adverse effect on incentives to continue multilateral negotiations, therefore becoming stumbling blocks. Lawrence (1995) suggested that increased regional integration does not necessarily undermine universal multilateralism and that extra-regional linkages are of great importance to attain multilateral solutions. For instance, if RTAs can be constructed in such a way as to provide credibility and reinforce market institutions, then eventually a more globally integrated economy will emerge. We cover several theoretical models that have expanded on this approach in literature review.

In this paper, we compare the effects of Regional Integration Agreements (RIAs) using comparable measures from Dür, et al. (2014) and Egger and Larch (2008). To compare these distinct effects, we introduce the *Bilateral Longitudinal Observations and Country Statistics* database (BLOCS) as a robust resource for use in comparative structural gravity analysis. The BLOCS lab at Aletheia Research Institution has developed standardized coding practices to merge and append unstandardized observations of bilateral trade partners from a large number of internationally adopted datasets. We employ BLOCS to investigate relationships between economic agreements and international flows between countries and to revisit the familiar question of 'stepping stones' and 'stumbling blocks' that has already produced a large spectrum of research concerning regional trade liberalization.

Rather than just asking if trade agreements are 'stepping stones' or 'stumbling blocks' to multilateral free trade, we examine the contribution of integration agreements toward trade liberalization. This paper therefore serves three purposes. First, we introduce the BLOCS database, a functional, public dataset coded to include diverse sources of information regarding the attributes of bilateral trade partners.[1] It consists of observations and country statistics for trade flows, international investment, international agreements, institutional and productive characteristics, tariffs and polity positions. The second contribution is to compare estimates made with different measures of trade flows and trade agreement characteristics. Third, we contribute to the (empirical) literature on regional agreements and the debate concerning multilateralism and regionalism.

Our results show that the original question is too broad to capture the details of evolving international agreements. Instead of asking whether RIAs are 'stumbling blocks' or 'stepping stones' to multilateral trade liberalization, it is more helpful to ask whether institutional differences in the RIAs have varying predicted effects. The detailed data included in BLOCS, offers findings in line with similar and more recent arguments e.g.,

[1] https://aletheia-research.org/database-projects/blocs-database/

Baldwin (2008, 2011, 2014) and Baier et al. (2019). Baldwin has argued that current trends in regionalism are fundamentally different to that of previous eras, and as such, the traditional 'stepping stones' - 'stumbling block' approach of Bhagwati (1991) or the traditional analysis using the Vinerian trade creation and diversion, is unable to effectively analyze this new regionalism. Baier, et al. (2008), and others have shown that the impact of RTAs varies across agreements as well as across and within pairs within agreements depending on the direction of trade flows. More complex trade flows and evolving supply chain linkages require different research solutions from those offered by 20th century regionalism and FDI plays a more crucial role than previously thought. This paper contributes to the on-going research in that direction.

2. Review of Relevant Literature

Visualization of different measures for total trade included in BLOCS tell a story of a progressive dependence on trade agreements over the past 40 years. Figure 1 illustrates the total global trade differentiated between that which occurred within RTA and that which took place outside of them. This visualization uses three different sources of trade data information: Direction of Trade Statistics (DOTS) from the International Monetary Fund (2023), World Trade Flows (WTF) according to Feenstra and Romalis (2016), and the BACI from CEPII (2022a). Although trade outside of RTAs was historically more predominant than trade within, this trend began to reverse in the early 21st century. As shown by the DOTS data, starting from the early 2000s, trade within RTAs began to represent a larger proportion of global trade. This same trend is observed in the results obtained from WTF and BACI.

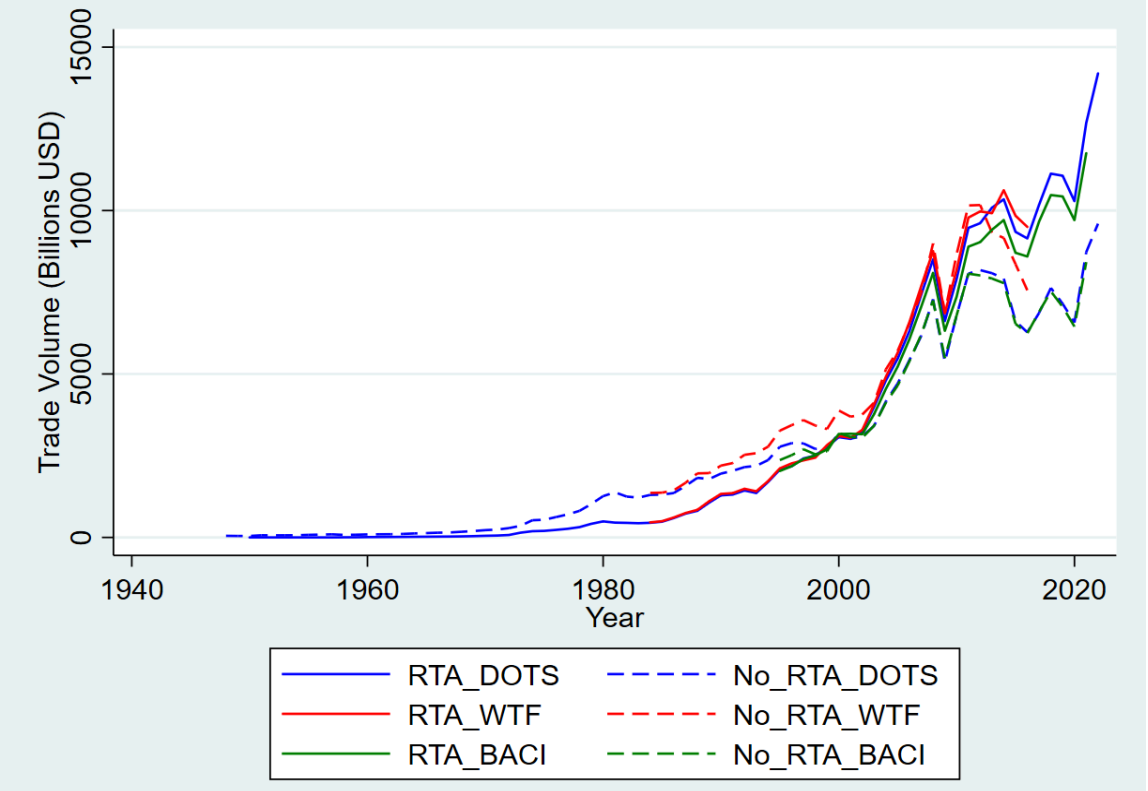
From 1985 - 2003 more trade was exchanged by non-RTA partners than by members of common RTAs, after which the values run nearly parallel until 2011, when the trend begins to amplify[2]. This finding reflects the increase of trade agreements over this period as fewer than 50 existed in 1985 while nearly 300 were in force by 2017, with a notable increase after the founding of the WTO in 1994. This visualization is also helpful for contextualizing past findings made prior to 2003 or prior to 2011. Over the past 40 years, there are 3 identifiable eras of regionalization, each becoming more integrated through RTAs (e.g., Baldwin, 2011). This could be evidence of 'stumbling blocks', i.e. increased incentives to trade within an RTA; however, it could also be the result of rising global tensions and a propensity for agreements to mitigate risk.

Ethier (1998) argued that regionalism promotes the successful entry of 'reforming' countries into a multilateral system in ways that are not possible under a system of universal multilateralism. In this way, RIAs can be "stepping stones" to multilateral trade liberalization. Although Ethier's argument applied to 'new regionalism', where developing countries form RIAs with developed countries, it does not apply to previous waves of regionalism in the 1960s and 1970s. Perroni and Whalley (2000) argued that RTAs are sought by small countries in order to serve as "protection" against a global trade war, i.e. the possibility that an RTA

[2] We comment on the definition of an RTA in Section 3.

acts as an insurance arrangement for the small country. Wu (2005) argued that, independent of the type of RIA, a moderate increase in the threat of trade war (or physical war and or sanctions) will encourage a country to purchase greater integration. Furthermore, she argued that a reduction of protection due to a failing bipolar hegemonic regime, increases the likelihood of trade uncertainty thus increasing greater regional integration and has shown empirically that trade uncertainty is a significant contributing factor (Wu, 2006).

Figure 1: Trade between and within RTAs, 1948-2022[3]



There are also a number of informal arguments that support the 'stepping stones' hypothesis – the idea that multilateralism results from regional agreements. Summers (1991) had suggested that multilateral negotiations will move more quickly when the number of negotiators is reduced to three via trade bloc formation, i.e., a transaction cost argument. Bergsten (1994) argued that just the threat of bloc formation is an asset in multilateral negotiations Baldwin (2016) further argues that the World Trade Organization should facilitate the shift from regionalism toward multilateralism. Nicita and Saygili (2021) examine RTAs in the context of the Covid-19 pandemic, finding that the level of integration matters and that having deep regional trade agreements aids in protecting against global shocks with better resilience.

[3] Generated with Mario Larch RTA measure in BLOCS

In contrast, Panagariya (1999), uses a measure for Preferential Trade Agreements (PTAs), referring actually to Free Trade Agreements (FTAs) and preferential agreements, and shows that they possibly unify protectionist lobbies and turn them into more effective obstacles to trade liberalization. This is because many of his examined PTAs were between developed and developing countries and are thus associated with a perceived loss of wages in developed countries. Multilateral negotiations draw less attention from protectionist lobbies and are thus easier to achieve in democratic countries. Mansfield et al. (2002) had a similar argument. In their political economy model, international agreements are shown to serve a domestic purpose by providing credibility to the organization. Empirically, they identified trends where democracies, allied countries, and GATT members have a greater likelihood of signing an RIA. Limão (2006) applied a tariff methodology and found that, for the United States, RIAs caused smaller reductions in multilateral tariffs of the goods imported from its RIAs relative to similar non-RIA goods. Karacaovali and Limão (2005) find that for the European Union, there are similar effects. While authors are unable to address whether RIAs lower worldwide aggregate multilateral trade liberalization overall, their results suggest that, at least in these cases, RIAs have acted as 'stumbling blocks'.

Previous findings have high variability and often have economically implausible estimates. Cipollina and Salvatici (2010) perform a meta-analysis of 1827 previous papers and find a range of estimates between 12 - 285 percent with a mean effect of 80 percent. Although there have been advances in data availability, data processing, and empirical methodology, the challenges presented by globalization in trade integration research, particularly in the measurement and implementation of structural gravity analysis, mean that physical distance between two countries is not enough to capture all variables related to the trade estimate ((Baier et al., 2014; Baier et al., 2019; Carrère et al., 2020; Piermartini & Yotov, 2016). Yotov (2012) and Heid et al. (2022) suggest including the relationship between international economic integration and internal markets. Yotov et al. (2012) emphasize endogeneity issues in attaining reliable estimates as dummies may be correlated with unobservable cross-sectional costs of investment as well. In addition, FDI research needs to include trade cost reductions to reach a better understanding of the interaction between FDI and trade (Neary, 2009; Blonigen, 2005).

Prior gravity studies have delivered ambiguous results concerning trade creation. There is evidence of general trade creation for Europe, but conflicting results for other types of regional agreements (for summaries of these studies refer to Baier et al., 2019; Frankel, 1997; Srinivasan et al., 1993). Frankel, Stein, and Wei (1995) investigated 7 RTAs for the period 1989-1999 and found that intraregional trade is highly significant." They offer findings that suggest FTAs significantly enhanced world trade while customs unions did not. Soloaga and Winters (1999) examined 9 PTAs in the period 1980-1996, comparing patterns of trade before and after second wave regionalism, and found no indication that "new regionalism" boosted intra-bloc trade. Ghosh and Yamarik (2003) look at 12 PTAs for 6 annual observations and find that PTAs create intra-bloc trade regardless of their type. Baier et al (2019) find that the effects of an FTA are weaker for countries geographically distant.

Countries that are more distant geographically are more sensitive to changes in trade policies (as emphasized in Baier et al., 2014), or perhaps they are also more distant institutionally or culturally, and therefore find it more difficult to coordinate deeper integration. The historical development of our contemporary understanding motivates us to believe that cultural and institutional variables will be important in determining the predicted effects of RIAs in trade relationships.

Apart from potential applications for structural gravity model analysis, RIAs, due to their proliferation, are often included in empirical work as a control variable. Rose (2002) empirically examined the role of the World Trade Organization in promoting trade liberalization. He concludes that RTAs at that time were not empirically significant, an interesting finding nonetheless. If indeed RTA formation is not of significance, then an examination of countries' incentives in joining such agreements must be examined more closely. More recently, Yao et al (2021) finds that countries sharing a common RIA could boost the trade volume compared to those not in a RIA. Furthermore, they examine the trade creation effect in conjunction with product coverage lending, to support the argument that market access is an important motivation for joining a RIA. Countries that trade more are usually expected to benefit from the formation of a RIA.

Countries that trade a lot would be expected to gain from the formation of a RIA. One proposed reason for agreement formation has to do with trade environment uncertainty (Wu, 2005; 2006). This can lead to the domino effect in RIA creation as proposed by Baldwin (1993). Another commonly accepted reason is the Natural Trading Partners (NTP) hypothesis, e.g., Krugman (1980) and Schiff (1999). It is generally accepted that a trade agreement will be signed if the participants are complementary in trade and are not 'far apart' either geographically, institutionally or culturally. If country A is geographically close to country B, and they each trade what the other is interested in acquiring, they may have an incentive to form an agreement. If the countries are geographically distant, they are less likely to form a trade agreement, this also makes sense for cultural and institutional distance. By the same logic, trade and investment flows are both generally accepted to be subject to the legal and institutional regimes of the receiving country; this serves as an indicator of institutional "closeness" and should be even more important with respect to the investment climate. If the regimes are too different, the translated risk will not inspire the flow of investment from one institutional system to another. Similarly, research has found that FTAs have stronger effects for those countries displaying strong legal institutions and/or weak bureaucratic institutions (Baier et al., 2019).

What is apparent from the above literature is that the definitional distinction between PTAs, RTAs, FTAs, and RIAs, is also inconsistent. We similarly hypothesize that the definition of an Economic Integration Agreement (EIA) is important. In their investigation of FTAs, Baier and Bergstrand (2004) concentrate on the decision making and those characteristics which impact the formation of an FTA. Essentially, an FTA is a choice made by governments concerning GATT Article XXIV and only complete (not partial) FTAs can be formed between a pair of countries. We postulate that given the recent changes at the WTO that allow for

partial scope agreements whereby unilateral liberalization or one-sided liberalization is allowed, this may no longer be the case. In other words, the choice is no longer binary but rather one of scaled implementation.

Baier et al. (2008) later adopted a different methodology to include EIAs, not only FTAs. In their definition, EIAs are "treaties between economic units – in the case of international EIAs, between nations – to reduce policy controlled barriers to the flow of goods, services, capital, labor, etc. Most – though not all – EIAs tend to be 'regional' (or continental) in scope and most tend to be free (or preferential) trade agreements (henceforth, FTAs)" (p. 461). We define an RIA here in a manner consistent with Baier et al. (2008) and Bergstrand et al. (2015). In the next section, we expand on the methods used to assess the effects of reciprocal trade agreement related liberalization and attempt to clarify some of the existing definitions. To further investigate our intuition that measures matters we employ two RTA variables from different sources that use a common definition.

3. BLOCS Data

The BLOCS project consolidates observations related to bilateral trade and investment flows for ease of use in investigating how these relationships are affected by international institutional change. The project builds on *A Database for Investigating FDI and Regional Trade* developed by Wu et al. (2017). BLOCS has been developed as a sustainable repository for future data and offers the ability to compare measures from varying sources for 218 sovereign jurisdictions, between 1948 and 2022. In the most recent version, 584 variables have been attributed to country-pairs for a combined dataset of over 1.3 million observations. We introduce BLOCS as a comprehensive open source repository for aggregated data on international flows, institutional agreements and political attributes of country-pairs.

BLOCS combines several internationally recognized databases into a complete bilateral panel dataset through a system of reconciliation for the changing codification of territories. BLOCS provides bilateral trade and investment positions for all countries recognized by the United Nations, complemented with those territorial units considered by the International Monetary Fund (IMF) as relevant economic areas. Dummy variables capture whether a country belongs to a particular trade agreement and whether these are associated with additional country-pair attributes. Although there are incomplete records in some cases, robust information exists for most bilateral pairs for most years. Table 1 outlines the variables from BLOCS used in the research design for this paper and descriptive statistics are shown in Table 2.

The two measures for RTA (DESTA and Larch) data are only correlated by 30%. DESTA contains 993 agreements that are used to construct a bilateral index using the measures reported for countries in the same agreement. With the Larch data, we know only if a dyad has signed an RTA. Although there are more years recorded with RTAs between more countries in the Larch data, DESTA data includes a more comprehensive index of

agreements and agreement conditions. While both datasets purport to examine agreements post-WWII, it would seem that there are significant differences between the two datasets. We hypothesize that this is due to the types of sub-agreements examined in the DESTA. Not all early agreements included sub-agreements and therefore the data for earlier years might be less comprehensive. It is argued by Dür et al (2014) that the DESTA data is very strong in examining the trade changes that have occurred over time, especially in the post-WTO establishment period (1994). In order to compare the different measures, we constructed a variable using our interpretation of the Larch RTA measure with DESTA data. To our knowledge, the discussion and creation of distinct definitional comparative measures has not been found in previous work.

3.1 Trade

The Direction of Trade Statistics (DOTS) from the IMF provided the initial base from which to begin building BLOCS. The database started with the bilateral trade information that include export (FOB), import (CIF) and total trade. The DOTS data covers bilateral merchandise trade between 218 countries for the period 1948 - 2022. In order to check robustness and provide more detailed information on bilateral trade relations, World Trade Flows (WTF) and Bilateral Product Trade Flows (BACI) databases were joined with countries included in DOTS. WTF includes bilateral information on total trade from 1984-2016. WTF uses 4-digit ITC codes and aggregates across all bilateral partners using manufacturing, mining (including oil), and agricultural goods.

In contrast, BACI provides more detailed information on disaggregated trade data for more than 5,000 products and runs from 1995-2022. In order to incorporate a higher level of disaggregation in terms of goods traded between countries, BACI was incorporated into BLOCS at a one-digit level of specification configuring 10 variables that indicate the value of the trade flow for each category of products. This makes it easier to join more detailed information using the 1992 Harmonized Commodity Description and Coding Systems (HS). In the case of WTF and BACI, bilateral trade is the value of total trade from country i to country j. Given the different methods of aggregation, we expect to find relative differences between these two data sets. The DOTS database is used to report nominal results for total exports and imports.

3.2 International Investments

To incorporate different measures for FDI, information was obtained from two sources; the Coordinate Direct Investment Survey (CDIS) from the IMF and the Foreign Direct Investment by Transnational Corporations (FDI/TNC) from UNCTAD. IMF data includes the inward direct investment position and outward direct investment positions in US$ covering the period 2009-2022. Data from UNCTAD includes diverse distinctions about bilateral information for 257 sovereign areas of jurisdiction. The variables from UNCTAD include inflows, outflows, instock, and outstock in millions of US dollars, covering the period from 2000 to 2022. Furthermore, as a measure of robustness, each of the presented variables

has a corresponding measure reported by the counterpart. In some cases, it can be observed that the information for some countries is constructed based on the data reported by the counterpart. This approach is useful when the quantity and quality of reporting by national institutions is undependable.

3.3 Tariffs

In order to provide the possibility of studying barriers to trade, a database published by Furceri et al. (2021) was merged into BLOCS and applied to bilateral pairs. This database includes country-level information on total employment, real effective exchange rate (taken originally from IMF), author´s calculation for tariff (equivalent to the weighted average product rate for tariff per country), and trade balance (period average, deflected by GDP). As the information provided in the Rose dataset is at the country level, the four variables merged to BLOCS were applied as unique observations assigned to both origin countries and partner countries in each identified pair. Therefore, the tariff variable offers a general measure of protectionism, or openness, for both members of the pair rather than an effective tariff rate between the two countries.

3.4 International Agreement Information

Information on international trade agreements is provided by Mario Larch's Regional Trade Agreements Database from Egger and Larch (2008), referred to in this paper as Larch. Larch's database incorporates seven variables that provide information about the participation of each bilateral pair in varying trade agreements. Trade agreements are classified as: *Regional Trade Agreements (rta), Custom Unions (cu), Free Trade Agreements (fta), Partial Scope Agreements (psa) and Economic Integration Agreement (eia).* Fratianni and Oh (2006) identify eleven RTAs accounting for 40 percent of world trade: ASEAN, CARICOM, the EU, NAFTA, Andean Community of Nations (ANDEAN), CACM (Central American Common Market), MERCOSUR, PATCRA, ANZCERTA, SPARTECA, and the United States-Israel FTA. These RIAs are all included and data for their specific characteristics are derived from earlier data concerning their agreement participation.

The Design of International Trade Agreement (DESTA) database introduced by Dur et al. (2014) can also be used to analyze RIAs as defined by their codebook. In contrast to Larch, the DESTA database provides detailed characteristics for more than 700 agreements for the period 1948 - 2022. By operationalizing trade agreement attributes, observations obtained from DESTA yielded 372 dummy variables that take the value of one in years that a pair of countries is covered by a specific trade agreement provision. The agreement provisions are classified according to the following categories: *Market Access, Services, Global Value Chains (GVCs), Investments, Temporary Entry of Business Persons, Intellectual Property Rights (IPRs), Public Procurement, Competition, Technical Barriers to Trade (TBT), Sanitary and Phytosanitary (SPS) Measures, Regulatory Cooperation and Transparency, Trade Defense Instruments, E-Commerce, Data Flows, Capital Movement and Exchange Rates, Non-Trade Issues and Dispute Settlement.*

3.5 Additional Institutional Attributes and Gravity Variables

The Democratic and Autocratic patterns of authorities information is merged from the Regime Authority Characteristics and Transitions Dataset, which provides country level information from 1948 to 2018, is a subset of the Polity IV Project (Political Regime Characteristics and Transitions, 1800-2018). This dataset covers regime characteristics as democratic measures, institutionalized procedures for transferring executive power, among others. BLOCS also incorporates governance information from the World Bank. The Worldwide Governance Indicators database provides information on countries' local governance in the areas of Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption. We do not explicitly include these in the current paper estimates as they are implicitly present in the multilateral resistance methodology. Lastly, in order to provide information consistent with traditional gravity models, the Gravity Characteristics data from CEPII was merged into BLOCS. This dataset provides bilateral information on geo-demographic variables (distance between countries, population, distance between cities, among others), trade facilitation measures, and cultural proximity (languages, religion, etc.).

3.6 Macroeconomic Indicators and Balance of Payment

The macroeconomic context and the international finance characteristics are covered by two datasets from the IMF. These are International Financial Statistics (IFS) and Balance of Payment (BOP), respectively. IFS provides 16 variables with country level information for the period 1948-2019, and covers general macroeconomics characteristics such as labor force, inflation, GDP, investment, among others, for both origin and partner countries. Balance of Payment data was merged to include in BLOCS information about international transactions described in 28 variables, for both origin and partner countries, for the main results in the current account, capital account, financial account, and supplementary items.

4. Research Design

Our specification estimates bilateral trade between countries as a function of physical and institutional factors that have been demonstrated to reduce trade costs. The structural gravity model is a preferred method for assessing the importance of RIA formation on trade volumes. Anderson and van Wincoop (2003) provide a theoretical foundation for the gravity model; whereas, Yotov (2022) examines the evolution of the gravity model over the last 60 years and provides a history of its development as an empirical tool. The model offers valuable contributions to policy debates by providing dependable analysis of trade agreements as well as explanations of the relationship between FDI and trade (Carrère et al, 2020). Accordingly, to introduce the BLOCS data and demonstrate its capacity, we begin with a multilateral resistance gravity model that offers comparable findings to foundational texts and then validate those results using a more robust pair fixed effects.

We revisit this fundamental question of the literature to assess model dependence and determine the external validity of findings across a longer period of analysis, using a contemporary empirical strategy. We further identify those agreements that cover tariffs and other border measures, known as "shallow" agreements and those that cover a larger set of policy areas, at the border and behind the border, known as "deep" agreements. Observed effects can vary widely depending on the RTA measure, the source of total trade data used in the estimation and the fixed effects assumptions employed in the model.

The literature does not always make a clear distinction between RTAs and PTAs and discuss both either simultaneously or interchangeably. PTAs and RTAs are also forms of RIAs, and the World Trade Organization (WTO) uses enabling clauses for different types of regional agreements. These are classified at the WTO as customs unions (CU), free trade agreements (FTA), and partial scope agreements (PS) or economic integration agreements (EIA). PTAs are considered a form of RTA and generally refer to the larger category of trade agreements which are nonreciprocal. Although integration agreements are not required to be regional, they are generally considered so for WTO purposes.

Because in this paper, we make a distinction as to the institutional agreements (and their depth) included in the PTA or RTA, we default to following Wu (2006) and Bergstrand et al. (2015), and use RIAs as our default terminology. We thus encompass all agreements in this definition and use two different measures for nonreciprocal RTAs. Larch data is a bilateral panel from 1950 to 2022 that includes multilateral and bilateral regional trade agreements as notified to the World Trade Organization. The Larch measure of RTA is constructed as a composite of all types of agreements included in his data (CU, FTA, Partial Scope, Economic Integration Agreements). Data excludes the Lomé Agreements and the Yaoundé Agreements, thus does not include data corresponding to newer WTO definitions of PTAs as nonreciprocal preferential schemes. Inactive agreements, if they were notified to the WTO are also included. We also construct a measure of the Larch RTA which excludes EIAs.

The Design of Trade Agreements (DESTA) data also builds on the list of agreements notified to the WTO, using PTA as their definitional category. DESTA also complements the WTO list with other sources including a systematic search of websites of foreign, trade and economics ministries. DESTA includes both accession and withdrawal information. DESTA classifies all types of agreements as preferential and includes bilateral agreements and is complete in terms of the types of agreements and their depth. The RTA variable has been constructed to include all agreement types included in Larch and offers important insights into the institutional variation of agreements.

Trade volumes provide an indicator of effectiveness for trade liberalization or regional trade policies. Liberalization policies are expected to lead to an increased share of external interest in a country's economy and thus bilateral trade flows are expected to increase. If the formation of a preferential agreement has had a significant effect on trade, we expect there to be both trade creation and trade diversion vis-a-vis bilateral trade partnerships and further research is required to determine whether the identified trends are

persistent. Predictions generated from DOTS provide insight into whether observed effects are driven by exports or imports. The total value of real bilateral flows from country *i* to country *j* in a given year is estimated using WTF and BACI data. The structural gravity model is employed as a conventional device used to estimate the effects of country-pair attributes on volumes of international trade (for more on the gravity model see Deardorff, 1998; Feenstra et al., 2001; Yotov, 2022). The model has been historically consistently reliable in describing trade patterns.

Following recent developments in the literature, the method used in this study is the Poisson pseudo maximum likelihood (PPML) estimation, a robust approach advocated by (Yotov et al., 2012; 2016). Yotov et al. (2012) emphasizes the endogeneity issues that arise when predicting the effect of RTAs on trade. In the multilateral resistance model, unobserved heterogeneity of countries is captured using country-level fixed effects, which helps to proxy other country specific factors not included in the model. After traditional multilateral resistances are estimated for comparison, country-pair fixed effects are used to predict changes to total trade flows under stricter conditions. RTA dummies may be correlated with unobservable cross-sectional trade costs; therefore, country-pair fixed effects are employed to account for a variety of unobservable bilateral linkages. Comparing the magnitudes of predicted values under varying assumptions offers further insight into the effect of the unobservables on the estimation. Lagged and Lead variables can also be used to estimate reverse causality, phase in effects and persistence.

The BLOCS database provides the measures for PPML estimations using both multilateral resistances and pair fixed effects assumptions. The BLOCS database also provides the resources to examine bilateral FDI for a longer time period among a wider range of variables than is currently publicly available. Recent literature also includes Foreign Direct Investment (FDI) as an explanatory variable in the pursuit of understanding trade agreement transformation, a relationship outlined by Blondigen (2005). This is useful in removing the "country effect" in international investment studies, due to the heterogeneity of investments depending on where it originates (Demir & Duan, 2018).

The following specifications have been developed to estimate changes in trade flows as a result of variation in trade agreements and investment conditions between bilateral country-pairs under two sets of assumptions, using four measures of trade and two measures for trade agreement. We then employ DESTA data (Dür et al., 2014) to examine the specific chapters of trade agreements and their potential contribution to bilateral trade flows.

4.1 Gravity Estimations

This procedure has been developed to provide a comparative analysis of trade measures used to identify trends associated with trade agreement attributes and to assess the external validity of prior findings. It is expected that further analysis is required to fully understand the nature and direction of these relationships. The multilateral resistance PPML models are estimated under country-pair fixed effects assumptions where internal trade

costs are set to one. In this model $X_{ij,t}$ denotes either nominal or real trade flows at consecutive year t, and the terms $x_{i,t}$ and $\pi_{i,t}$ denote country-level year fixed effects for importers and exporters, respectively. Subscript i and j denote trading partners at origin and at destination, respectively and errors are clustered by country-pair. Thus, the coefficient of RTA, β_7 provides evidence of trade creation or diversion. The constrained model provides a benchmark for comparison and an opportunity to estimate the effects of protectionism:

(1)

$$X_{ij,t} = exp\,[\,\pi_{i,t} + \chi_{j,t} + \mu_{ij} + \beta_1 ln(Distance_{ij}) + \beta_2(Contig_{ij}) + \beta_3(Language_{ij}) + \beta_4(Colony_{ij}) + \beta_5 ln(Y_{it}) + \beta_6 ln(E_{jt}) + \beta_7(RTA_{ijt}) + \beta_z \boldsymbol{Z}_{ijt}\,] \times \varepsilon_{ij,t}$$

If RTA provisions have significant trade creation effects, then we expect to see higher total trade between members. The vector of control variables that expands as specifications become more robust is denoted by $\boldsymbol{Z}$. Results are reported in Table 3.1. In Equation 2 we expand the model to include measures of protectionism and population size. These results are reported in Table 3.2.

(2)

$$X_{ij,t} = exp\,[\,\pi_{i,t} + \chi_{j,t} + \mu_{ij} + \beta_1 ln(Distance_{ij}) + \beta_2(Contig_{ij}) + \beta_3(Language_{ij}) + \beta_4(Colony_{ij}) + \beta_5 ln(Y_{it}) + \beta_6 ln(E_{jt}) + \beta_7 ln(Pop_{it}) + \beta_8 ln(Pop_{jt}) + \beta_9(Tariff_{it}) + \beta_{10}(Tariff_{jt}) + \beta_{11}(RTA_{ijt}) + \beta_z \boldsymbol{Z}_{ijt}\,] \times \varepsilon_{ij,t}$$

Estimations of these prior models can then be compared to demonstrate the upward bias observable in multilateral resistance models. It is expected that the magnitude of observed effects will be smaller when controlling for country-pair and country-year fixed effects. This specification also demonstrates the validity of measures, while providing evidence of variation given their differences. The country-pair fixed effects model is more robust; therefore, it is the preferred model and will be used to estimate the effects of specific provisions as well as FDI stocks and flows. Outcomes of Equation 3 are reported in Table 3.3

(3)

$$X_{ij,t} = exp\,[\,\pi_{i,t} + \chi_{j,t} + \mu_{ij} + \boldsymbol{\beta}_1 RTA_{ijt} + \beta_z \boldsymbol{Z}_{ijt}] \times \varepsilon_{ij,t}$$

4.2 Specification Strategy

Measures for market access, competition provisions, investment protection and institutional alignment further control for variation in agreement and provide a lens for comparison. This model estimates those same variations under the constraints of the fixed effects model (see Equation 3). In this case the attributes are added to the vector of controls denoted by $\boldsymbol{Z}$. As the provisions are in place only when an RTA is in place, RTA (Larch) and RTA (DESTA) act as base variables to interpret combined total effects.The estimations incorporate additional information concerning the trade agreements themselves. The inclusion of these details may help identify 21st century effects à la Baldwin (2014).

This literature hypothesizes that one reason for trade creation is that countries sign a particular agreement within the framework of a larger trade agreement. Specified chapters within the agreements on market access, competition and investment protection are expected to offer essential advantages to the trading partners, thus creating trade. Using the panel of 218 countries between 1949 and 2022, we identify distortions in trade, predicted by variation in agreements, across country-pairs and time. Values of exports and imports from DOTS are available for the entire period of analysis; whereas, measures of total trade from WTF and BACI, although more robust, are limited by the number of years in the bilateral panel. This means trends identified with DOTS data consider the entire lifecycle of trade agreement transformation, whereas WTF observations and BACI observations are constrained to time periods with varying representation of regionalization eras. These results provide insight into the external validity of findings across time and trends in varying eras. The estimations are reported in Table 4.1.

In Equations 4 and 5, we incorporate foreign direct investment (FDI) flows and stocks into the model, as FDI has been shown to have important causal relationships with trade. Consequently, this reduces the total number of countries in the sample and restricts the data to post-2001 analysis. Despite these limitations, the estimates provide valuable insights into the relationship between investment and trade in recent years, particularly in the context of modern value chain intermediate goods trade. They also offer another subset of results to assess the external validity of the findings (see Tables 4.2 and 4.3). In the final estimation, we predict the effects of FDI stocks and flows, again controlling for provisions, both to test for model dependence and to observe differences in post-2001 provision effects (see Tables 4.4 and 4.5).

(4)

$$X_{ij,t} = exp\left[\pi_{i,t} + \chi_{j,t} + \mu_{ij} + \boldsymbol{\beta}_1 RTA_{ijt} + \beta_2(FDI\ inflows_{ijt}) + \beta_3(FDIoutflows_{ijt}) + \beta_z \boldsymbol{Z}_{ijt}\right] \times \varepsilon_{ij,t}$$

(5)

$$X_{ij,t} = exp\left[\pi_{i,t} + \chi_{j,t} + \mu_{ij} + \boldsymbol{\beta}_1 RTA_{ijt} + \beta_2(FDI\ instock_{ijt}) + \beta_3(FDIoutstock_{ijt}) + \beta_z \boldsymbol{Z}_{ijt}\right] \times \varepsilon_{ij,t}$$

5. Results

PPML estimations made with nominal exports or imports are considered robust when controlling for country-level year and country-pair fixed effects; therefore, predicted values fitted with DOTS data provide insight into trends that are consistent across all eras. The WTF measure provides total trade data from 1984 - 2016 meaning that a majority of the estimates are made in a world prior to trade among RTAs members exceeding trade among non member partners. This can provide insight into trends that are consistent both a prior and a posteriori to the formation of the WTO. The BACI measure provides total trade data from 1995 - 2021 and estimates are made in a world that has always had the WTO. The results provide insights into factors affecting total trade under contemporary institutional conditions and can be compared to the outcomes of the other sample subsets.

We find important differences between the DESTA and Larch RTA measures. In addition to this, variation in results using WTF data and the BACI reveal some important differences as well. DOTS data are helpful in assessing how much of the relationship is driven by exports or imports. Previous literature has not compared these three different measures. WTF provides information on trade per year between two countries; BACI is an aggregated value of imports and exports reconciled to a single figure of total trade while DOTS provides total exports from country A to country B. It makes sense that these estimates deviate somewhat given that the three measures are actually quite different from each other; however, together they tell a more complete story and robust results are significant across measures and assumptions.

Table 3.1 reports common elements of a naive gravity model outlined in Equation 1; distance, common colony, contiguity, language, etc. all have the expected signs. Although these estimates are expected to have an upward bias, the results contextualize later estimates made with more constrained assumptions. Both measures of RTA are positive and significant using all measures of trade. We proceed to examine an extended model that includes measures for protectionism and population. We report these results in Table 3.2 and find that, as signs and significance are as expected and as found in the literature. This procedure provides further insight into the effects of country-pair unobservables and protectionism.

When controlling for country-pair fixed effects, the estimates in Table 3.3 are consistent with existing literature. As was originally reported by Rose (2003), RTAs are positive and significant, but only in the long run using BACI and DOTS measures for trade. Being a member of WTO is negative and significant for total trade using the WTF data. We hypothesize that this result is due to the time period of the WTF data. Table 4.1 repeats the fixed-effects estimation approach including the provisions and their depth from the DESTA data. Interestingly, the provision for investment protection seems to reduce trade in the long-run analysis. This is a signal that, as the literature hypothesizes, substitution between investment and trade occurs; more constrictive investment chapters result in lower trade as more investment is made for domestic market production and consumption. Corruption agreements also result in lower trade. This is a rather interesting result and warrants further examination in future work.

Labor agreements seem to predict increases in trade, as do environmental agreements and binding dispute settlement provisions. These results could be explained by an intra-industry argument if those countries have higher incomes and are more likely to trade in an IIT framework. Alternatively, we could make a Baldwin (2014) 21st century argument. In that, RIAs are not going to be trade creating as they are linked to previous trade relationships and are therefore more likely to divert trade if anything due to linkages in the value chain. Binding dispute settlement provisions have the most consistent positive and significant results on whether a RTA increases total trade between pairs. As this procedure produces robust results regarding the effect of RTAs on total trade flows, these results suggest that institutional differences in RTAs have significant effects.

We now turn to the inclusion of FDI measures. In Table 4.2, the estimates controlled for country-pair fixed effects and the same pattern as the prior estimation. FDI inflows are not significant when controlling for country-pair level unobservables, but outflows have a negative relationship with imports. This implies that in a post-2000 world bilateral country-pairs in the same RTA are more likely to see increases in total trade accompanied by decreasing investment outflows from countries with increasing imports. Table 4.3 reports the same estimates for FDI stocks. The results confirm the negative relationship as outsock is negative and significant for all measures of trade under robust assumptions. As investment outstock decreases, trade flows can be expected to increase. These results are consistent when adding agreement provisions back into the model. This implies the findings are robust when controlling for institutional variation.

Table 4.4 and 4.5 offer insight into variation among RTA provisions in the post-2000 world. The significance of the institutional and cultural attributes of the agreement indicates that although RTAs can create trade, alignment on institutional factors can have a dramatic effect on outcomes. This is consistent with recent literature on investment facilitation agreements e.g., Berger et al. (2019) and confirms Rose's findings that RTAs in and of themselves are insignificant. The positive results that are consistent in both time subsets include the effects of binding dispute settlement, labor agreements and provisions addressing monopolies and cartels. The consistent negative effects include corruption agreements and investment provisions. Some effects change signs or become insignificant in the different period subsets. These results provide contexts to the findings.

Results imply that between country-pairs, in the same RTA, less trade is expected when there is more investment flowing into the partner country from the origin country. This challenges some findings e.g., Head and Ries (1998) in a study of Canada, have argued that exports and FDI are correlated due to expatriate communities. In this most constrained specification, corruption agreements are still the greatest predictor of reductions in total trade between pairs. Labor agreements are also still positive and significant, but the significance varies depending on the measure of FDI used for control.

6. Conclusion

This study provides evidence of the importance of multi-method research designs. Many studies have been completed using only one of the reported measures for total trade or participation in RTAs. An even greater number of studies fail to account for variation in the terms and conditions of agreements or time period subsets. Although multilateral resistance models are helpful for identifying trends, country-pair fixed effects models provide more reliable results. Results that are consistent across measures and assumptions are evidence of external validity; therefore, these outcomes are considered most robust. A large amount of variation among the estimates implies the presence of model dependency and merits further research. The evidence suggests RTAs have a significant and positive effect on total trade, but that RTAs can divert trade unless developed with the appropriate institutions. This confirms the depth of the agreement matters and not all agreements are created equal.

Given the most consistent estimates predicted by different measures under varying assumptions, we hypothesize that just being in an RTA does not seem to have any continued significant positive effect on trade between countries in the post-2000 world. The outcomes also provide further evidence that the second and third 'waves' of regionalism differ from the earlier rush to form RTAs in the 1970s and 1980s. The research procedure provides evidence of the importance of deeper agreements. Significant evidence of trade diversion due to RTA formation under certain conditions, implies that RTAs can be 'stumbling blocks' and that institutional differences matter in determining whether an RTA will be a 'stepping stone'. We propose that bilateral trade cannot be dependably linked to divergent membership in a RTA and that trade creation between members of the same RTA increases when agreements support competition authorities, dispute resolution and labor agreements. Also, when investment is flowing from origin countries to partner countries, one can expect decreases in total trade between pairs. This is consistent with the theoretical underpinnings of international monetary economics reported by Obstfeld (2012). As more goods and services flow in less money flows out in the form of investment.

This paper also describes the building of BLOCS and demonstrates its capabilities. This database presents bilateral information for more than 210 countries between 1948 and 2022, and combines information from various sources on the international economy. In this way, the development, maintenance and updating of this database encourages and empowers researchers in the area of international economics to conduct research in the area. The contributions that BLOCS has in fostering research is the continued diversity of information and sources that enable quick and convenient access to institutional, historical and cultural variables. The BLOCS database assists in investigating historical-institutional conditions as well as elements of international trade and investment, including their relationships. This short study has shown that the importance of many types of transfers will be eligible for study through the BLOCS inclusion of trade, RTAs, FDI, institutional characteristics, etc. (e.g., Beverelli et al. 2018; Kruse and Martinez-Zaroso 2021; Yao et al. 2021).

By developing a database with sustainable and elastic characteristics, it promotes scientific research that incorporates in its analysis the intersectionality of data problems in the field of international economics. It is thus expected to promote and motivate research questions by providing consistent material for the methodological development of answers in an area where the promotion of information is required (Maggi, 2014). This newly available instrument will allow for robust research in the field of international economics and will facilitate an efficient access to information that can contribute to a variety of fields of literature where data gathering is necessary and cumbersome.

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Appendix

Table 1: Included variables from BLOCS

Variable	Description	Source
Exports and Imports DOTS	Exports and Imports of goods from country i to j, US Dollars	IMF (2023)
Trade WTF	Goods trade from country i to j, US Dollars	Feenstra, R., Romalis, J. (2016)
Trade BACI	Aggregated Trade country i to j, US Dollars	CEPII (2020)
RTA (DESTA)	Dummy variable equal 1 if a regional trade agreement captured in DESTA is signed between country i and country j	Dür, Andreas, Leonardo Baccini and Manfred Elsig (2014)
RTA (Larch)	Dummy variable equal 1 if a regional trade agreement captured in Larch is signed between country i and country j. IEA agreements are excluded.	Egger and Larch (2008)
Tariff origin country	Product-level tariff data are aggregated by calculating weighted averages, using the export share of each product, measured as fractions of value, as the weights. Origin country	Fuceri, D., Hannan, J., Ostry, D., and Rose, A. (2019)
Tariff partner country	Product-level tariff data are aggregated by calculating weighted averages, using the export share of each product, measured as fractions of value, as the weights. Partner country	Fuceri, D., Hannan, J., Ostry, D., and Rose, A. (2019)
Distance	Distance between capitals of countries i and j, in log of km	CEPII (2020)
Contiguity	Dummy variable equal to 1 if countries i and j are contiguous.	CEPII (2020)
Language	Dummy variable equal to 1 if countries i and j have the same official language	CEPII (2020)
Colonizer	Dummy variable equal to 1 if countries i and j have had a common colonizer post 1945	CEPII (2020)
GDP origin & partner countries	Log of origin GDP (current thousands US$)	CEPII (2020)
Population origin & partner	Origin population, log in thousands	CEPII (2020)
Inflation origin & partner	Prices, Consumer Price Index, All items, origin country	CEPII (2020)

Table 2: Descriptive Statistics

Variable	Observations	Mean	Var	Standard Deviation	Min	Max
RTA (DESTA)	1,322,774	0.15	0.125	0.35	0	1
RTA (Larch)	1,322,774	0.12	0.106	0.33	0	1
Tariff origin country	680,346	9.47	126.40	11.24	0	161.58
Tariff partner country	666,049	9.28	117.500	10.84	0	161.58
Capital distance	913,063	8.64	0.687	0.83	0.63	9.90
Contiguity	886,830	0.02	0.022	0.15	0	1
Language	886,830	0.17	0.143	0.38	0	1
Colonizer	886,830	0.098	0.088	0.30	0	1
Ln GDP origin	865,788	16.96	5.724	2.39	9.09	23.79
Ln GDP partner	864,781	16.97	5.675	2.38	9.09	23.79
Ln Population origin	911,402	8.90	4.066	2.02	1.22	14.15
Ln Population partner	909,320	8.93	4.145	2.04	1.22	14.15
Inflation origin	1,108,739	91.79	249820.3	499.82	0	38796.56
Inflation partner	1,088,816	96.55	356132.5	596.77	0	38796.56

Table 3.1 - Baseline Estimation

	EXPORTS DOTS	IMPORTS DOTS	WTF TRADE	BACI TRADE	EXPORTS DOTS	IMPORTS DOTS	WTF TRADE	BACI TRADE
DESTA RTA	0.396***	0.343***	0.507***	0.302***				
ML RTA					0.412***	0.338***	0.512***	0.310***
Distance	-0.692***	-0.661***	-0.557***	-0.698***	-0.690***	-0.663***	-0.557***	-0.696***
Contiguity	0.593***	0.479***	0.622***	0.502***	0.586***	0.478***	0.614***	0.497***
Language	0.155**	0.124*	0.196***	0.119*	0.166***	0.134**	0.212***	0.125**
Colony	0.309**	0.423***	0.397***	0.442***	0.293*	0.403**	0.365**	0.428***
GDP Origin	0.631***	0.555***	0.559***	0.548***	0.628***	0.552***	0.561***	0.550***
GDP Destination	0.484***	0.540***	0.524***	0.543***	0.479***	0.539***	0.525***	0.547***
rmse	0.886	0.864	0.793	0.821	0.890	0.866	0.792	0.820
N	487691	527755	418439	396286	487691	527755	418439	396286

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3.2 - Extended Estimation

	EXPORT DOTS	IMPORT DOTS	WTF TRADE	BACI TRADE	EXPORT DOTS	IMPORT DOTS	WTF TRADE	BACI TRADE
DESTA RTA	0.391***	0.338***	0.503***	0.304***				
Larch RTA					0.414***	0.338***	0.510***	0.311***
Origin Tariff	-0.005**	-0.007***	-0.007**	-0.000	-0.005*	-0.007***	-0.006*	-0.001
Destination Tariff	-0.006**	-0.005**	-0.006**	-0.001	-0.006**	-0.005**	-0.006**	-0.001
Distance	-0.693***	-0.662***	-0.557***	-0.698***	-0.690***	-0.663***	-0.558***	-0.697***
Contiguous	0.590***	0.476***	0.621***	0.499***	0.581***	0.473***	0.613***	0.494***
Language	0.160**	0.129**	0.198***	0.121*	0.170***	0.138**	0.214***	0.128**
Colony	0.313**	0.429***	0.396***	0.448***	0.301**	0.412**	0.366**	0.434***
GDP Origin	0.682***	0.598***	0.563***	0.593***	0.684***	0.599***	0.569***	0.594***
GDP Destination	0.529***	0.576***	0.551***	0.595***	0.529***	0.578***	0.556***	0.599***
ln_pop_o	-0.525***	-0.424***	-0.208	-0.553***	-0.558***	-0.462***	-0.235*	-0.544***
ln_pop_d	-0.460***	-0.467***	-0.459***	-0.573***	-0.508***	-0.495***	-0.503***	-0.560***
rmse	0.882	0.865	0.793	0.821	0.886	0.866	0.792	0.820
N	487689	527753	418439	396286	487689	527753	418439	396286

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3.3 : Baseline Fixed-Effects Estimation

	EXPORT DOTS	IMPORT DOTS	WTF TRADE	BACI TRADE	EXPORT DOTS	IMPORT DOTS	WTF TRADE	BACI TRADE
DESTA RTA	0.098***	0.085**	-0.008	0.075***				
Larch RTA					0.130***	0.090**	0.007	0.064**
Both in WTO	-0.038	0.009	-0.105*	-0.002	-0.040	0.008	-0.106*	-0.002
rmse	0.323	0.329	0.288	0.272	0.322	0.329	0.288	0.272
N	494594	545011	370057	330450	494594	545011	370057	330450

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4.1 : Extended Fixed-Effects Estimation

	EXPORT DOTS	IMPORT S DOTS	WTF TRADE	BACI TRADE	EXPORT DOTS	IMPORT DOTS	WTF TRADE	BACI TRADE
DESTA RTA	0.174***	0.176***	0.159***	0.064				
ML RTA					0.141***	0.075**	0.090**	-0.004
Specific ref GVCs	-0.042	-0.031	-0.075**	-0.030	-0.001	-0.010	-0.057	-0.030
Investment definition	-0.057	-0.019	0.074	0.066	-0.044	-0.010	0.075	0.077
Investment protection	-0.087**	-0.073*	-0.108***	-0.018	-0.091***	-0.059	-0.105***	-0.009
Transfers restrictions	0.091***	0.099***	0.029	0.012	0.066**	0.073**	0.022	0.004
Competition chapter	0.022	0.032	0.038	-0.002	0.042*	0.050*	0.034	-0.003
Common competition	0.118	0.013	0.048	0.105	0.127	0.027	0.057	0.115
Monopolies and cartels	0.032	0.105**	0.069*	0.014	0.014	0.091*	0.067*	0.012
DSM invest	-0.108*	-0.199**	-0.263***	-0.146	-0.099	-0.182**	-0.250***	-0.148
Solving disputes	-0.072	-0.105	-0.137**	0.041	-0.002	-0.005	-0.059	0.095***
DS binding	0.094**	0.075	0.089**	0.054	0.079**	0.060	0.086*	0.053
Labor agreement	0.146***	0.148***	0.104***	0.082**	0.141***	0.137***	0.105***	0.079**
Environment agreement	0.083***	0.049	0.071**	0.015	0.061**	0.028	0.057*	0.010
Corruption agreement	-0.146***	-0.148***	-0.111***	-0.113***	-0.138***	-0.137***	-0.106***	-0.111***
rmse	0.320	0.325	0.286	0.272	0.320	0.326	0.286	0.272
N	494594	545011	370057	330450	494594	545011	370057	330450

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

Table 4.2: Baseline Fixed-Effects Estimates using FDI Flows

	EXPORTS DOTS	IMPORTS DOTS	WTF TRADE	BACI TRADE	EXPORTS DOTS	IMPORTS DOTS	WTF TRADE	BACI TRADE
DESTA RTA	0.106***	0.102***	0.029	0.105***				
ML RTA					0.129***	0.124***	0.040	0.115***
lfdi_inflows	-0.038	0.036	-0.043	-0.046	-0.035	0.040	-0.043	-0.043
lfdi_outflow	-0.039	-0.152***	-0.114	-0.114*	-0.028	-0.149***	-0.112	-0.101
rmse	0.180	0.195	0.167	0.179	0.180	0.195	0.167	0.179
N	99989	100072	75628	95595	99989	100072	75628	95595

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

Table 4.3: Baseline Fixed Effects Estimations Including FDI Stocks

	EXPORT DOTS	IMPORT DOTS	WTF TRADE	BACI TRADE	EXPORT DOTS	IMPORTS DOTS	WTF TRADE	BACI TRADE
DESTA RTA	0.112***	0.123***	0.044*	0.100***				
ML RTA					0.128***	0.131***	0.058**	0.106***
lfdi_instock	-0.029	-0.013	-0.046*	-0.017	-0.027	-0.011	-0.046*	-0.017
lfdi_outstock	-0.082**	-0.103***	-0.097***	-0.105***	-0.079**	-0.104***	-0.096***	-0.102***
rmse	0.198	0.217	0.187	0.204	0.198	0.217	0.187	0.204
N	185153	197119	145604	186559	185153	197119	145604	186559

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

Table 4.4: Extended Fixed-Effects Estimates using RTA, FDI Flows

	EXPORT DOTS	IMPORT DOTS	WTF TRADE	BACI TRADE	EXPORT DOTS	IMPORT DOTS	WTF TRADE	BACI TRADE
DESTA RTA	0.017	0.031	0.144**	0.027				
ML RTA					0.030	0.017	0.061	0.016
lfdi_inflows	-0.026	0.046*	-0.022	-0.035	-0.026	0.046*	-0.022	-0.035
lfdi_outflow	-0.017	-0.144***	-0.074	-0.089*	-0.016	-0.145***	-0.073	-0.089*
Specific ref GVCs	-0.056*	-0.005	-0.068**	-0.039	-0.046	0.000	-0.051	-0.034
Investment definition	-0.217***	-0.211***	-0.081	-0.125**	-0.211***	-0.202***	-0.066	-0.120*
Investment protection	0.046	0.029	-0.023	0.042	0.043	0.029	-0.019	0.043
Transfers restrictions	-0.003	-0.033	-0.053	-0.022	-0.009	-0.042	-0.056	-0.028
Competition chapter	0.013	-0.053*	0.015	-0.026	0.017	-0.046	0.016	-0.020
Common competition	0.279**	0.183**	0.221*	0.236*	0.277**	0.185**	0.226*	0.236*
Monopolies and cartels	0.028	0.128***	0.084**	0.067*	0.025	0.123***	0.080**	0.063*
DSM invest	0.148**	0.064	-0.014	0.062	0.146**	0.061	-0.013	0.060
Solving disputes	0.059	0.030	-0.108	0.051	0.058	0.048	-0.024	0.066
DS binding	0.089**	0.149***	0.096**	0.093**	0.085**	0.146***	0.092**	0.091**
Labor agreement	0.092**	0.104**	0.057	0.078**	0.092***	0.102**	0.054	0.076**
Environment agreement	-0.039	-0.008	0.013	-0.045	-0.044	-0.014	0.005	-0.050*
Corruption agreement	-0.122***	-0.185***	-0.126***	-0.123***	-0.120***	-0.184***	-0.119***	-0.122***
rmse	0.179	0.194	0.167	0.179	0.179	0.194	0.167	0.179
N	99989	100072	75628	95595	99989	100072	75628	95595

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 4.5: Extended Fixed-Effects Estimates using RTA, FDI Stocks

	EXPORT DOTS	IMPORT DOTS	WTF TRADE	BACI TRADE	EXPORT DOTS	IMPORT DOTS	WTF TRADE	BACI TRADE
DESTA RTA	0.088	0.093	0.122**	0.043				
ML RTA					0.076**	0.048	0.066*	0.027
lfdi_instock	-0.020	-0.001	-0.033	-0.008	-0.021	-0.002	-0.033	-0.009
lfdi_outstock	-0.072**	-0.094***	-0.077**	-0.094***	-0.073**	-0.096***	-0.077**	-0.094***
Specific ref GVCs	-0.030	-0.013	-0.080***	-0.029	-0.010	-0.001	-0.067**	-0.022
Investment definition	-0.040	-0.020	0.088	0.049	-0.030	-0.006	0.095	0.052
Investment protection	0.035	0.051	-0.040	0.020	0.032	0.055	-0.041	0.020
Transfers restrictions	0.023	-0.007	-0.053	-0.013	-0.005	-0.034	-0.061	-0.024
Competition chapter	0.019	0.002	0.035	0.011	0.037	0.019	0.034	0.018
Common competition	0.148*	0.094	0.031	0.091	0.150*	0.095	0.032	0.092
Monopolies and cartels	0.000	0.121***	0.047*	0.012	-0.010	0.110***	0.046	0.007
DSM invest	-0.016	-0.107	-0.170**	-0.099	-0.011	-0.107	-0.164**	-0.096
Solving disputes	0.034	-0.016	-0.072	0.085	0.071*	0.040	-0.005	0.109***
DS binding	0.053	0.065	0.065*	0.055	0.043	0.056	0.059*	0.051
Labor agreement	0.080**	0.047	0.062**	0.075**	0.073**	0.040	0.061*	0.073**
Environment agreement	-0.029	-0.009	0.043	-0.037	-0.045	-0.023	0.035	-0.042
Corruption agreement	-0.117***	-0.122***	-0.115***	-0.120***	-0.110***	-0.116***	-0.107***	-0.118***
rmse	0.179	0.194	0.167	0.179	0.179	0.194	0.167	0.179
N	99989	100072	75628	95595	99989	100072	75628	95595

* p < 0.10, ** p < 0.05, *** p < 0.01

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