

Do Trade Flows Respond to Nudges?

Evidence from the WTO's Trade Policy Review Mechanism

David J. Kuenzel*

Wesleyan University

October 2017 – Version 1.1

Abstract

The institutional underpinnings and trade effects of the WTO have been extensively scrutinized in the literature. There is, however, relatively little known about the economic effects of members' communications outside of official negotiations and dispute proceedings. One of the WTO's core missions is to ensure and further transparency of its members' trade policies through regular reviews by its Trade Policy Review Mechanism (TPRM). This paper considers whether communications between members through the TPRM lead to subsequent changes in bilateral trade flows. To examine this question, I construct a detailed dataset on submitted trade policy concerns during TPRM proceedings going back to 1989. The results indicate substantial heterogeneity in the trade effects of submitted trade policy concerns. Positive trade responses are more likely to occur when (i) the receiver of the concern has less market power, (ii) the submitter is more willing to engage in WTO disputes with the reviewed member to challenge controversial trade policies, and (iii) few concerns have been communicated to the importing country before.

JEL codes: F13, F14, F53

Keywords: GATT/WTO, Trade Policy Review Mechanism, Trade Flows

*Contact information: Department of Economics, Wesleyan University, 238 Church St, Middletown, CT 06459, E-mail: dkuenzel@wesleyan.edu, Tel: +1(860)685-3052. I thank the participants of the Spring 2017 Midwest International Trade Meetings for their helpful comments and suggestions.

1 Introduction

There is a large literature on both the institutional underpinnings and the trade impact of the WTO. According to WTO theory ([Bagwell and Staiger 1999, 2002](#)), members liberalize trade on a reciprocal and MFN basis with the dispute settlement mechanism as underlying enforcement device in cases of non-compliance. However, there is little known about the economic effects of members' communications outside of official negotiations and dispute proceedings. In addition to being a negotiation forum and guardian of trading rules, one of the less publicized but crucial institutional tasks of the WTO is to ensure and further transparency of its members' trade policies. For this purpose, the GATT provisionally established in 1989 the Trade Policy Review Mechanism (TPRM), which has conducted periodical reviews of members' trade policies ever since. Officially enshrined in the statutes of the WTO in 1995, the TPRM serves as a transparency-enhancing vehicle and informal communication forum as TPR materials are in general not intended to be used as evidence in any official WTO dispute proceedings.¹

This paper investigates whether informal policy nudges through the TPRM, i.e. the non-binding transmissions of policy concerns, affect bilateral trading relationships. Using information from official GATT/WTO documents going back to 1989, I construct a bilateral dataset of submitted trade policy concerns during TPRM proceedings. Employing a gravity regression framework, I then examine to what extent the participation in these non-binding policy discussions translates to changes in bilateral trade flows. In particular, I consider whether the submission of a concern during a trade policy review subsequently raises a country's bilateral exports to the reviewed member. While the average communicated trade policy concern has no significant trade impact, the results exhibit a substantial degree of heterogeneity. Nudges through the TPRM are more likely to lead to positive trade responses when (i) the receiving country has less market power, (ii) the submitting member has been an active pursuer of trade disputes against the importer in the past, and (iii) few concerns have been communicated to the importing nation before.

By considering the trade effects of bilateral communications through the TPRM, this paper contributes in several ways to the WTO literature. First, it provides the first comprehensive empirical analysis of the trade effects of the WTO's prime trade policy transparency mechanism. Examining the trade effects of the communications between members through the TPRM is a

¹ Annex 3 of the Marrakesh Agreement establishing the WTO explicitly states that the TPRM "is not, however, intended to serve as a basis for the enforcement of specific obligations under the Agreements or for dispute settlement procedures, or to impose new policy commitments on Members." See [WTO \(2017a\)](#) for the text of Annex 3.

relevant exercise as it can provide valuable input for a cost-benefit analysis of the current apparatus. Trade policy reviews are both cost- and time-intensive, and the steadily increasing membership imposes a considerable burden on the WTO Secretariat. At the same time, the WTO Secretariat reports are frequently criticized for not commenting on members' compliance with WTO rules and for offering little concrete guidance on trade policy reforms (see, e.g., [Bown 2009](#)). The present paper can inform discussions on the effectiveness of the TPRM by shedding light on the question under which circumstances WTO members will experience positive trade effects from actively participating in the trade policy review process.

Second, and more broadly, this study provides evidence that specific WTO institutions can induce additional trade effects on a continuing basis. When assessing the effectiveness of the WTO, these estimates need be added to any potential membership effects that have been identified in the previous literature and which usually rely on variations in trade flow patterns around GATT/WTO accessions. The latter line of research started out with the seminal paper by [Rose \(2004\)](#) who found no GATT/WTO membership effects on trade. Subsequent studies rejected or amended Rose's finding in several ways. [Tomz et al. \(2007\)](#) found positive GATT/WTO effects on trade when differentiating between de jure and de facto membership, while [Subramanian and Wei \(2007\)](#) suggest that the WTO promotes trade strongly for developed economies but not for developing countries. [Eicher and Henn \(2011\)](#) found that the latter result is not robust when accounting for heterogeneous PTA effects; they point instead to countries with greater incentives to bargain over tariff reductions as main beneficiaries of positive WTO effects. When accounting for both the intensive and extensive margins of trade, [Felbermayr and Kohler \(2006, 2010\)](#) and [Dutt et al. \(2013\)](#) also find evidence that the WTO enhances trade.² I control for WTO membership throughout in the regressions below and in line with the earlier research I find mixed effects depending on the exact empirical specification.

In addition to studies on accession effects, this paper relates to several other contributions in the literature that examine the economic implications of individual WTO agreements and institutional arrangements. While there has been no systematic empirical analysis of the TPRM, the trade effects of other WTO institutions such as the dispute settlement mechanism and the reporting mechanism for non-tariff barriers have previously been considered. [Bown \(2004\)](#) finds that trade volumes are greater after WTO disputes when complainants have substantial retaliation power. [Bown and](#)

² Additional papers that consider the trade effects of GATT/WTO membership include, among others, [Chang and Lee \(2011\)](#), [Dutt and Traca \(2010\)](#), [Gil-Pareja et al. \(2016\)](#), [Herz and Wagner \(2011\)](#), [Liu \(2009\)](#), [Rose \(2005\)](#), and [Roy \(2011\)](#).

Reynolds (forthcoming) further refine this result and provide evidence that import volume responses after trade disputes are in line with the terms-of-trade approach to WTO theory (Bagwell and Staiger 1999, 2011). In related research, Bown and Reynolds (2015) also show that complainants usually suffer a decrease in the bilateral exports of products that ultimately become subject to a dispute. Disdier et al. (2012), on the other hand, examine the impact of WTO-regulated Technical Barriers to Trade (TBT) and Sanitary and Phyto-Sanitary measures (SPS) on agricultural trade and find that developing country exports to OECD members are negatively affected by both kinds of regulation. Fontagné et al. (2015) provide further product-level evidence that SPS measures which were specifically raised as concerns at the responsible WTO committee have a negative impact on the extensive margin of trade.³

There is a growing literature which examines more broadly to what extent institutional design matters for the impact of trade agreements on trade flows. Focusing on preferential trade agreements negotiated by the US and the EU, Horn et al. (2010) divide agreement provisions into ‘WTO-plus’ and ‘WTO-extra’ rules, where the former encompasses components that fall under the current WTO mandate while the latter considers provisions which go beyond the multilateral trading rules agreed at the WTO. Kohl et al. (2016) extend the Horn et. al classification to 296 trade agreements and find that ‘WTO-plus’ regulations are trade promoting while ‘WTO-extra’ rules are in fact decreasing trade. Dür et al. (2014) compile instead a depth index for 587 preferential trade agreements, and confirm that deeper trade agreements lead to greater increases in trade flows. However, none of these papers considers the trade effects of trade policy transparency provisions and/or informal membership communications outside of official policy and access negotiations.

With regard to the trade effects of formal and informal information transmission, a number of papers also analyze the impact of governmental institutions abroad and the effects of interactions between country officials. Rose (2007) provides evidence that the presence of embassies and consulates promote exports. Nitsch (2007) finds that state and official visits have a trade-enhancing effect as well, and Lederman et al. (2010) show that trade promotion agencies are successful in boosting exports, in particular for heterogeneous goods. Volpe Martincus et al. (2010) argue that the latter result is driven by an expansion in the extensive margin while the presence of diplomatic missions mostly affects homogenous products. However, the effects of governmental trade promotion

³ Several recent papers also consider how countries’ usage of unfair trade rules (anti-dumping, safeguard and countervailing duties) are affected through trade policy reforms, WTO regulations and members’ MFN tariff structure. See, for instance, Bown and Tovar (2011), Bown and Crowley (2014) and Kuenzel (2017).

are not clear-cut. For instance, [Head and Ries \(2010\)](#) fail to identify a robust impact of trade missions led by Canadian government officials on imports and exports. In a similar vein, [Cassey \(2010\)](#) finds no evidence that the closure of California’s overseas offices in 2004 had a detrimental effect on exports. Below I examine to what extent nudges at the inter-governmental level through the WTO’s TPRM have an effect on bilateral trade patterns.

The remainder of the paper is organized as follows. Section 2 provides an overview of the Trade Policy Review Mechanism, and section 3 lays out the empirical approach. Section 4 discusses the TPRM and the gravity regression data. Section 5 presents the results, and section 6 concludes.

2 The WTO’s Trade Policy Review Mechanism

The surveillance of national trade policies is one of the core tasks of the WTO, and the Trade Policy Review Mechanism is the institutional center of this activity. The TPRM was provisionally established in April 1989 and became a permanent feature of the WTO after the successful completion of the Uruguay Round. Annex 3 of the Marrakesh Agreement establishing the WTO sets out the formal rules of the TPRM and affirms its commitment to achieve greater transparency and cooperation among WTO members:⁴

“The purpose of the Trade Policy Review Mechanism is to contribute to improved adherence by all Members to rules, disciplines and commitments made under the Multilateral Trade Agreements and, where applicable, the Plurilateral Trade Agreements, and hence to the smoother functioning of the multilateral trading system, by achieving greater transparency in, and understanding of, the trade policies and practices of Members.”

Importantly, however, the TPRM itself does not intend to evaluate WTO members’ compliance with specific rules, and therefore has a substantially different role from the Dispute Settlement Body. The process is intended to aid the understanding of a member’s trade policies and to provide feedback to the reviewed country. Moreover, the reviews serve as a communication forum where countries can directly submit questions and concerns, and thus potentially nudge the reviewed member toward unilateral adjustments in its trade policies.

⁴ See [Qureshi \(1995\)](#) and [Laird and Valdés \(2012\)](#) for a detailed account of the origin and a broader outline of the goals of the TPRM.

The frequency at which WTO members undergo trade policy reviews varies depending on a country's weight in world trade. The WTO currently conducts reviews on 2-, 4- or 6-year cycles (with flexibility of up to six months). [Table 1](#) distinguishes WTO members by their review frequency. Under the current TPRM rules, members of the Quad group —the United States, the European Union, Japan, Canada until 2006, and China from 2006 onwards— are reviewed every other year. The 16 countries with the highest trade volumes following the Quad, the group of Sixteen, are scheduled to be on a 4-year review cycle. However, currently the group features only 15 members. All other countries are subject to a review every six years, with a possibility of a longer interim period for the least-developed economies.⁵ The WTO conducts between 14 to 20 trade policy reviews a year, which is a slight increase compared to the early stages of the TPRM during the GATT era ([VanGrasstek 2013](#)). As of the end of 2016, the TPRM had concluded more than 450 trade policy reviews.

A WTO trade policy review usually takes about nine months in total. Starting with the completion of a written questionnaire by the country under review, the process continues with an official WTO mission to the capital, and is followed by the circulation of written reports by both the WTO Secretariat and the reviewed member.⁶ Every Secretariat report follows the same structure and includes a detailed overview of the member's trade policies and practices as well as a description of existing trade policy institutions and the current macroeconomic outlook. The report by the member usually takes the form of a policy statement in which the country outlines the objectives and direction of its trade policies ([Laird and Valdés 2012](#)). After receiving the report, the other members have four weeks to submit written questions or concerns to the country under review. The process finally culminates in a two-day meeting of the WTO's Trade Policy Review Body (TPRB) during which the member countries can make further statements and transmit additional concerns and/or questions to the reviewed member. After the meeting, usually within two to six weeks, the WTO Secretariat publishes the reports and the minutes of the meeting, which include the reviewed member's written answers to all submitted questions and concerns. These meeting minutes form the basis for the database of bilateral trade policy concern submissions that I use in the analysis below. Section 4 below provides a detailed discussion of this data.

The TPRM has received mixed reviews by the academic community and policy makers over the

⁵ Taking effect in 2019, the WTO membership recently agreed to raise the review frequencies to 3, 5 and 7 years to ease the pressures on the WTO administration from the rising number of member countries ([WTO 2016](#)).

⁶ See [Table 2](#) in [Laird \(1999\)](#) for an exact timeline of the trade policy review process.

years. On the one hand, regular reviews of members’ trade policies by a neutral third party such as the WTO Secretariat are widely welcomed since they add to the transparency of the world trading system. In particular, the reviews provide useful information on countries’ protection patterns and openness across sectors (Bown 2009). In addition, TPRB meetings can serve as a valuable forum to discuss trade policy disagreements in a less confrontational manner than through the WTO’s dispute settlement mechanism. More generally, it has also been argued that the review process can strengthen a government’s domestic standing when pursuing desirable trade policy reforms.⁷ That is, repeated scrutiny of one’s trade policies increases not only the incentive to implement better policies, but also offers governments a possible justification to pursue reforms in the first place.

On the other hand, the Secretariat reports are frequently criticized for failing to discuss members’ compliance with WTO rules. As Bown (2009, p. 219/220) points out: “[...] trade policy reviews are partially the result of a process that is influenced by political considerations, and thus they are written so as not to provoke disputes or to provide evidence useful in litigation.” Nonetheless, it is not uncommon that the Secretariat or member countries themselves bring up controversial issues during the review process. Ghosh (2010), for instance, finds that in 53 percent of WTO disputes a preceding trade policy review highlighted or analyzed the eventually litigated policies, and in a quarter of disputes the complainant country itself had submitted a question related to the matter during a prior review. But it is not known so far to what extent these nudges through the trade policy review process are actually effective. The analysis below will address this question. In particular, does raising a concern during or ahead of TPRB meetings have an effect on countries’ subsequent bilateral trading relations?

3 Empirical Setup

To investigate the impact of nudges through the TPRM on bilateral trade, I use a standard gravity regression framework.⁸ To capture the effect of submitted trade policy review (TPR) concerns, I generate a binary variable, $TPRconcern_{mxt}$, which takes the value one if an exporter x submitted a concern or question prior or during a review of the importer m in year t , and zero otherwise. It is, of course, possible that the submission of a TPR concern is also partly driven by the extent of

⁷ See Maggi and Rodriguez-Clare (2007) for a formal discussion on how trade agreements can help governments to commit against domestic constituents.

⁸ See Head and Mayer (2014) for a review of the gravity equation’s theoretical underpinnings and different empirical approaches that have been applied in the literature.

existing trade flows between a given country pair. To address these endogeneity concerns, I follow the suggestion of [Baier and Bergstrand \(2007\)](#) and include country-pair fixed effects throughout which has the additional advantage of further purging the estimates of any bias due to the omission of time-invariant country-pair-specific trade costs. Moreover, to account for multilateral resistance in gravity regressions (see [Anderson and van Wincoop 2003](#), and [Baldwin and Taglioni 2007](#)), all specifications include importer-year and exporter-year fixed effects.

To proxy for additional trade costs, the empirical model below also accounts for a number of common gravity controls that are not absorbed by the fixed effects. First and foremost, the regressions add a common WTO membership dummy, *bothWTO*, and a binary variable which captures whether the importer grants unilateral General System of Preferences benefits to the exporter, *GSP*. The former is crucial since only WTO members can submit TPR concerns, while the latter variable helps to control for the possibility that countries enjoying GSP benefits might be less inclined to offer criticism of a member’s trade policies. The baseline specification also includes binary preferential trade agreement (PTA) controls which are differentiated by three degrees of integration: customs unions, *CU*, free trade agreements, *FTA*, and partial scope agreements, *PS*. To capture common membership in a currency union, the binary variable *COMCUR* is added.

Summarizing the previous discussion, I estimate the following baseline gravity equation using a log-linear fixed effects approach:⁹

$$\begin{aligned} \log(\text{imports}_{mxt}) = & \beta_1 TPRconcern_{mxt} + \beta_2 \text{bothWTO}_{mxt} + \beta_3 GSP_{mxt} + \beta_4 CU_{mxt} \\ & + \beta_5 FTA_{mxt} + \beta_6 PS_{mxt} + \beta_7 COMCUR_{mxt} + \eta_{mx} + \nu_{mt} + \omega_{xt} + \epsilon_{mxt} \end{aligned} \quad (1)$$

where the dependent variable is the import volume (in logs) of country *m* from exporter *x* in year *t*. η_{mx} , ν_{mt} and ω_{xt} are directional country-pair, importer-year and exporter-year fixed effects, respectively.

The literature has shown that controlling for the heterogeneous impact of trade agreements is potentially important when estimating trade effects in the WTO context (see, e.g., [Eicher and Henn 2011](#), and [Kohl 2014](#)). I therefore also examine the robustness of the results when the three aggregate trade agreement dummies (*CU*, *FTA*, *PS*) are replaced by individual trade agreement controls. The included set of individual trade agreements is guided by the recent literature ([Ghosh and Yamarik 2004](#), and [Eicher and Henn 2011](#)). In particular, I separately account for countries’

⁹ See [Correia \(2016\)](#) on the estimation of high-dimension linear fixed effects models.

memberships in *AFTA*, *CACM*, *CAN*, *CARICOM*, *EEA*, *EFTA*, *EU*, *MERCOSUR*, and *NAFTA*.¹⁰ In addition, a number of agreements are added that have not been considered by the prior literature: *CAFTADR*, *COMESA*, *EAC*, *CEMAC*, *SADC*, and *WAEMU*.¹¹

The recent gravity equation literature has pointed out that the log-linear specification in (1) prevents zero trade flow observations from being included in the estimation. Following [Silva and Tenreyro \(2006\)](#), I therefore also report results obtained with the Poisson pseudo-maximum likelihood (PPML) estimator in addition to the log-linear specifications. The PPML estimation replaces the log of bilateral imports in equation (1), $\log(\text{imports}_{mxt})$, with the actual level of imports, imports_{mxt} , which prevents zero trade flow observations from being dropped. In addition to handling zero trade flows, the PPML estimator is also considered to be more suitable to address the issues of heteroskedastic and non-normal residuals in gravity regressions.¹² The presence of a large number of three-way fixed effects puts substantial computational demands on the PPML framework. To circumvent these issues, I employ the iterative PPML estimator proposed by [Larch et al. \(2017\)](#). The next section provides a detailed overview of the panel used in the estimations as well as the data sources of all variables.

4 Data

To estimate the impact of submitted TPR concerns on bilateral trade, I use the International Monetary Fund’s Direction of Trade Statistics (DOTS). The panel of trade flows ranges from 1985 to 2015, with the length of the panel being guided by the fact that the first TPR was conducted under the GATT in 1989. I follow the same steps as outlined by [Head et al. \(2010\)](#) to compile the trade flow data from DOTS. In particular, when a bilateral trade flow is reported by both the

¹⁰ *AFTA*: ASEAN Free Trade Area, *CACM*: Central American Common Market, *CAN*: Andean Community, *CARICOM*: Caribbean Community, *EEA*: European Economic Area, *EFTA*: European Free Trade Association, *EU*: European Union, *MERCOSUR*: Southern Common Market, and *NAFTA*: North American Free Trade Agreement. Note that a number of PTAs which have been previously examined in the literature are not considered as they were signed prior to the start date of the sample in this paper. As such, these agreements are absorbed by the country pair dummies. These agreements include: *ANZCERTA*: Australia - New Zealand Closer Economic Relations Trade Agreement, *SPARTECA*: South Pacific Regional Trade and Economic Cooperation Agreement, and *LAIA*: Latin American Integration Association

¹¹ *CAFTADR*: Dominican Republic - Central America - US Free Trade Agreement, *COMESA*: Common Market for Eastern and Southern Africa, *EAC*: East African Community, *CEMAC*: Economic and Monetary Community of Central Africa, *SADC*: Southern African Development Community, and *WAEMU*: West African Economic and Monetary Union.

¹² Nonetheless, the application of the PPML estimator can be problematic in certain circumstances as well. [Charbonneau \(2012\)](#) shows for the special case when $N = T = 2$ that PPML with two-way fixed effects suffers from the incidental parameters problem. See [Head and Mayer \(2014\)](#) for a detailed discussion of the merits and drawbacks of different gravity estimation approaches.

importer and the exporter, I consider the larger value as the more reliable source of data. Since the exporter-reported data are in FOB terms while the importer-reported trade are on CIF basis, I adjust the latter using a 10% margin which is the mean difference for all observations in DOTS that are reported by both importers and exporters. The DOTS data is rounded in all cases to the nearest \$10,000 which corresponds to the standard of accuracy that the IMF follows when recording trade data. One criticism when using consecutive years in a gravity framework is the potential inability of the data to capture the effects of trade policy and other changes as dependent and independent variables do not have sufficient time to fully adjust over short periods (Cheng and Wall 2005). Olivero and Yotov (2012), for instance, provide evidence that panel samples which pool data over consecutive years can produce non-reliable coefficient estimates. To minimize the risk of obtaining spurious coefficient estimates, I follow the advice of Piermartini and Yotov (2016) and consider 3-year intervals of the data starting in 1985.

4.1 Submitted TPR Concerns

Information on submitted concerns and questions by member countries prior or during meetings of the TPRB has been collected from the official GATT/WTO meeting minutes which can be accessed through a public WTO database (WTO 2017b). All TPRB meetings are structured in a similar fashion. First, the chairperson of the TPRB and a representative of the country under review give introductory statements which are then followed by remarks of one or two discussants drawn from the membership who comment in mostly general terms on the trade policy structure of the country under review. Thereafter, members can choose to make statements directed at the country under review in which they raise specific concerns and questions. The member country then verbally replies to the raised concerns before the chairperson closes the TPRB meeting. In addition, the meeting minutes also include written answers to questions that were submitted prior to the TPRB meeting.

TPRB meeting minutes can vary substantially in length depending on the complexity of a member's trade policies, its economic size, and the interest of other member countries. Figure 1 shows the distribution of the number of members which submit concerns and/or questions during trade policy reviews. There is considerable variation in the number of countries that actively seek to engage a member during a review, with five being the smallest number of submissions (TPR of Uganda in 1995) and 56 being the largest number (TPR of the United States in 2014). The mean and median number of GATT/WTO members that submit concerns during a given TPR are 22 and

20, respectively. The data also reveals that the count of received TPR concerns varies substantially with the economic clout of the member under review. Using as proxy the Quad, Sixteen and Other WTO member definitions (see [Table 1](#)), the average number of received TPR concerns for these groups is 35, 26 and 18, respectively. In the empirical analysis below, I leverage this substantial variation in communications between members during TPRs to examine whether soft trade policy nudges have an effect on bilateral trade flows.

4.2 Gravity Variables

The remaining variables for the empirical analysis have been collected from a variety of sources. Data on GATT/WTO membership status come from the WTO homepage, www.wto.org, while information on GSP benefits up until 2003 are from [Liu \(2009\)](#). The information on bilateral GSP benefits after 2003 have been compiled from the GSP List of Beneficiaries documents provided by UNCTAD. Detailed information on *CU*, *FTA* and *PS* memberships (in binary format) have been obtained from the updated trade agreements database of [Egger and Larch \(2008\)](#).¹³ Their database also provides in dummy variable format information on the individual trade agreements discussed in section 3. Data on currency union status (*COMCUR*) come from [de Sousa \(2012\)](#) whose updated dataset includes information up until 2015. [Table 2](#) provides detailed summary statistics for all variables included in the estimations below.

5 Results

To shed light on the trade effects following the submission of TPR concerns, this section considers the log-linear and PPML estimates of the fixed effects specification in equation (1). In addition to examining the average trade effects of TPR concerns for WTO members, I also consider three potential sources of heterogeneity for the effectiveness of communications through the TPRM: (i) countries' market power, (ii) the exporter's willingness to engage in WTO disputes to challenge controversial trade policies, and (iii) the sequencing of TPR concerns.

¹³ Note that the *PS* variable was generated by grouping the information in the database on Partial Scope (PS) and Economic Integration (EIA) agreements.

5.1 Baseline Estimates of TPR Concern Effects

Table 3 provides the results from estimating the gravity equation in (1) to identify the average impact of submitting a TPR concern on bilateral trade flows. Specifications (1) to (3) report log-linear fixed effects estimates, while columns (4) to (6) provide the corresponding results using the PPLM estimator, which has the advantage of including zero trade flow observations. In line with the discussion above, all specifications account for country-pair, importer-year and exporter-year fixed effects to control for endogeneity concerns as well as unobservable time-invariant bilateral trade costs and multilateral resistance effects. Standard errors are clustered throughout at the country-pair level. In addition to the *TPRconcern* dummy, all specifications feature the previously discussed set of control variables to account for other bilateral policy channels: WTO membership, GSP benefits, common currency status, and preferential trade agreements.

Column (1) starts out by capturing preferential trade agreement effects using separate binary variables for common membership in customs unions (*CU*), free trade agreements (*FTA*) and partial scope agreements (*PS*). Turning to the main variable of interest, the *TPRconcern* estimate is not significantly different from zero in the baseline specification in (1). Thus, on a first glimpse, nudges through the WTO’s TPR mechanism seem to be, on average, an ineffective tool to address trade policy disagreements and raise bilateral trade flows. This result also persists when adding a separate dummy for EU members (instead of being treated as part of the customs union dummy) in specification (2). Controlling separately for EU membership is potentially important in the TPR context as EU members cannot file concerns against each other in this forum due their representation as a uniform entity at the WTO. The absence of TPR interactions among EU members could then distort the estimates of the *TPRconcern* coefficient. All specifications going forward therefore include a separate EU control. To further eliminate potential estimation bias due to heterogeneous PTA effects, specification (3) includes individual binary controls for all 15 previously discussed agreements plus a separate dummy for all other trade deals (*BilPTA*).¹⁴ While the *TPRconcern* estimate turns more positive in columns (2) and (3), the effect remains statistically insignificant. Hence, on average, informal communications through the TPR process do not raise trade flows even when carefully accounting for the heterogeneous impacts of preferential trade agreements.

With regard to the additional control variables in specifications (1) to (3), the signs and magnitudes of the coefficient estimates are largely in line with expectations and previous results

¹⁴ The *BilPTA* variable takes the value one if a preferential trade agreement is in place between two countries which is not one of the individually listed ones, and zero otherwise.

in the literature. WTO membership has throughout a significant positive effect on trade flows of a moderate magnitude, while granting GSP benefits to exporters is not found to increase trade. At the same time, both common membership in a customs union and in a free trade agreement significantly increase trade flows, while partial scope agreements (*PS*) do not exhibit a statistically significant effect. The magnitude of the trade effects is estimated to be greatest for CUs ahead of FTAs and WTO membership. Finally, a currency union (*COMCUR*) positively affects trade in columns (1) and (2). However, the effect subsides when separately accounting for EU membership in specification (2), and a common currency ceases to have a statistically significant trade impact once one controls for heterogeneous preferential agreement effects in column (3). Consistent with previous findings in the literature (see, e.g., [Eicher and Henn 2011](#), and [Kohl 2014](#)), there is substantial variation in the trade impacts of the individual agreements. On average, bilateral PTAs other than the separately listed ones (*BilPTA*) are estimated to significantly increase trade flows. But several of the individually included agreements in column (3) have substantially larger and statistically significant effects: *CAFTADR*, *CAN*, *COMESA*, *EAC*, *EEA*, *EU*, *MERCOSUR*, *SADC* and *WAEMU*. Nonetheless, a number of PTAs also show no statistically significant impact on trade: *AFTA*, *CACM*, *CARICOM*, *CEMAC*, *EFTA* and *NAFTA*. Note that while the detailed trade agreement estimates vary to some extent from earlier studies (e.g., [Ghosh and Yamarik 2004](#), [Eicher and Henn 2011](#), and [Kohl 2014](#)), these disparities are most likely due to the differences in the estimation approach and the considered sample period in the present paper.

The corresponding fixed effects PPML results in columns (4) to (6) show nearly identical estimates for the TPR concern term. Hence, the PPML models confirm the earlier findings from the log-linear specification. The submission of TPR concerns has, on average, no statistically significant effect on trade flows. Focusing on specification (6) which controls for heterogeneous effects of trade agreements, the coefficient estimates for *GSP* and *COMCUR* are again not significantly different from zero. However, some of the PPML estimates for the remaining control variables show differences to the earlier log-linear specifications. With regard to the individual trade agreement dummies, several changes emerge. Five agreement measures who previously showed a positive and statistically significant effect cease to be effective drivers of trade flows in the PPML framework (*BilPTA*, *CAFTADR*, *EAC*, *EEA*, *MERCOSUR*). At the same time, two agreements now emerge to have a positive and statistically significant impact on trade (*CACM*, *NAFTA*). The remaining agreements show the same signs and similar statistical significance patterns as in the log-linear case, although the magnitude of the estimated economic effects varies to some extent. In

line with expectations, none of the trade agreements is estimated to be trade inhibiting.

It should be emphasized at this point that the changes in results between the log-linear and PPML specifications are not unexpected and line up with the findings of [Larch et al. \(2017\)](#) who note that the high-dimension fixed effects PPML estimator “can flip the conclusions of an otherwise rigorously-specified linear model.” Differences between the log-linear and PPML results can occur due to two reasons. First, in contrast to the log-linear model the PPML estimator includes zero trade flows, which raises the number of observations in the sample from 195,468 to 266,651. For instance, in the WTO context the PPML estimator now accounts for country pairs who neither traded before nor after joining the WTO, which could explain the statistically insignificant effect of WTO membership in all PPML specifications in [Table 3](#). Second, the presence of heteroscedastic error terms in the gravity equation can lead to inconsistent coefficient estimates in the log-linear specification ([Silva and Tenreyro 2006](#)). Going forward, it is therefore crucial to confirm the consistency of the results for the variable of interest, *TPRconcern*, across both the log-linear and PPML specifications.

5.2 Accounting for Heterogeneity in TPR Concern Outcomes

As previously emphasized, one complication in interpreting the above results is that the aggregate *TPRconcern* estimate only measures the average effect of TPR communications on trade flows. The baseline results in [Table 3](#) could therefore mask a substantial degree of heterogeneity in the impact of submitted trade policy concerns. To examine this possibility, this section considers several factors that could generate variations in trade outcomes after the submission of a TRP concern.

5.2.1 TPR Concerns and Market Power

It is a well-established fact in the trade policy literature that large countries can influence world market prices through their trade policy actions.¹⁵ Importers with greater market power should then be more reluctant to respond with a unilateral trade policy change after an exporter submits a TPR concerns as the importing countries’ terms of trade would be at a greater risk to deteriorate. To test this prediction, I amend the empirical model in equation (1) by introducing an interaction of the TPR concern term with the importer’s world import share as proxy for the country’s market

¹⁵ [Johnson \(1953–1954\)](#) highlighted that in the absence of coordination large countries will choose higher tariff rates than optimal for the collective, and [Bagwell and Staiger \(2002\)](#) show how existing GATT/WTO principles can help solve this dilemma.

power:¹⁶

$$\begin{aligned}
\log(\text{imports}_{mxt}) = & \beta_1 \text{TPRconcern}_{mxt} + \beta_2 \text{TPRconcern}_{mxt} \times \text{WorldImportShare}_{mt} \\
& + \beta_3 \text{bothWTO}_{mxt} + \beta_4 \text{GSP}_{mxt} + \beta_5 \text{CU}_{mxt} + \beta_6 \text{FTA}_{mxt} + \beta_7 \text{PS}_{mxt} \quad (2) \\
& + \beta_8 \text{COMCUR}_{mxt} + \eta_{mx} + \nu_{mt} + \omega_{xt} + \epsilon_{mxt} \quad .
\end{aligned}$$

If large importers are less willing to implement trade policy changes in response to nudges from exporters through the TPR system, then the coefficient of the interaction term should be negative: $\beta_2 < 0$. The relevant marginal trade effect of a TPR concern is now the following composite term: $\beta_1 + \beta_2 \times \text{WorldImportShare}_{mt}$.

Table 4 reports the composite effect evaluated at the mean of the *WorldImportShare_{mt}*, .7 and .9 percent in the respective log-linear and PPML samples, and the individual coefficient estimates. Column (7) shows the results from the log-linear specification that includes the aggregate preferential trade agreement controls (CU, FTA, PS, EU) while specification (8) accounts again for individual PTA effects. Note that to conserve space Table 4 omits the coefficient estimates for the individual trade agreements as they are nearly identical to the prior results in Table 3. The complete results are available upon request. Three findings emerge. First, as expected, the coefficients of the interaction term are indeed negative in both specifications. Second, after controlling for importer market power, the *TPRconcern* coefficient increases in magnitude and becomes statistically significant at the 10 percent level in specification (8). Third, and most importantly, the average composite effect of submitting a TPR concern also has a positive and statistically significant effect on bilateral trade when accounting for heterogeneous PTA effects. That is, submitting a TPR concern significantly raises bilateral trade as long as the importer’s market power is not too great, which would lower the country’s incentive to unilaterally adjust its trade policies.

The corresponding PPML estimates in columns (10) and (11) in Table 4 confirm these findings. In fact, after accounting for zero trade flows and heteroskedasticity with the PPML approach, the magnitude and statistical significance of both the *TPRconcern* variable and its interaction term substantially increase. The composite *TPRconcern* effect in specification (11), which accounts for heterogeneous PTA effects and is statistically significant at the one percent level, implies that the submission of a TPR concern to the average importer raises bilateral trade flows by about five percent ($100 \times (e^{.0474} - 1) = 4.9\%$). Instead of only considering the mean effect, panel a) in Figure 2

¹⁶ Note that a separate *WorldImportShare* term cannot be included due to presence of importer-year fixed effects.

summarizes how the impact of TPR concerns on trade flows varies with importer market power over a wide range of world import shares based on the estimates in specification (11). The picture illustrates that submitting a TPR concern significantly raises bilateral trade flows as long as an importer’s share in world trade is below four percent. Above this threshold, informal communications through the trade policy review mechanism have no significant positive effect on bilateral trading relationships. Thus, TPR concerns can be a successful strategy for exporters to stimulate bilateral trade as long as the importing country’s market power is not too large to disincentivize unilateral trade policy adjustments.

Finally, columns (9) and (12) in [Table 4](#) consider whether the success of TPR concerns also varies with exporter market power. In particular, both specifications now replace the importer measure with the exporting country’s share in world exports, $WorldExportShare_{xt}$, as market power proxy. While the TPR interaction term is positive, neither the individual $TPRconcern$ coefficient nor the composite effect evaluated at the mean of the $WorldExportShare$ variable show a significant effect on trade flows. Panel b) in [Figure 2](#), which is based on the PPML estimates in column (12), further illustrates that exporter market power has no statistically significant impact on the trade success of TPR concerns for a wide range of world export shares. Thus, while the results in this part reveal that import market power is a key factor in explaining the trade impact of TPR communications, exporter market power is an ineffective channel to raise the effectiveness of submitted TPR concerns.¹⁷

5.2.2 TPR Concerns and WTO Enforcement

One key determinant for the success of the GATT/WTO agreements is the enforcement of members’ trade policy commitments through the trade dispute settlement mechanism. While, as earlier discussed, trade policy reviews are in general not supposed to provoke dispute proceedings, there is some stylized evidence that controversial policies which eventually culminate in official disputes are frequently brought up in prior discussions during the TPR process ([Ghosh, 2010](#)). From an enforcement perspective, countries who are more willing to file trade disputes should also be more successful in inducing trade policy changes through the submission of TPR concerns. In this part, I therefore consider the interaction of submitted trade policy concerns and prior dispute activity

¹⁷ I also examined whether market power considerations as captured by countries’ different TPR cycles (Quad versus Sixteen and other members) lead to heterogeneous trade effects. While the log-linear specification indicates that TPR concerns submitted by Quad and Sixteen members are more effective in raising trade, the PPML estimates do not confirm this pattern. These results are available upon request.

between the exporter and importer. In particular, I test the hypothesis whether exporters who have been active filers of GATT/WTO disputes against a given importer are more likely to succeed in raising bilateral trade flows via the submission of TPR concerns. To do so, I adapt the baseline specification in equation (1) by introducing a variable that captures how many disputes the exporter initiated against the importer in the previous three years, $WTODisputes_{mxt}$, and its interaction with the $TPRconcern$ term:

$$\begin{aligned} \log(imports_{mxt}) = & \beta_1 TPRconcern_{mxt} + \beta_2 TPRconcern_{mxt} \times WTODisputes_{mxt} \\ & + \beta_3 WTODisputes_{mxt} + \beta_4 bothWTO_{mxt} + \beta_5 GSP_{mxt} + \beta_6 CU_{mxt} \\ & + \beta_7 FTA_{mxt} + \beta_8 PS_{mxt} + \beta_9 COMCUR_{mxt} + \eta_{mx} + \nu_{mt} + \omega_{xt} + \epsilon_{mxt} \end{aligned} \quad (3)$$

If importers are more receptive to TPR concerns from exporters that are more likely to enforce grievances via dispute proceedings, the coefficient of the interaction terms should be positive: $\beta_2 > 0$.

Columns (13) and (14) in [Table 5](#) provide the log-linear estimates of equation (3), where the former specification includes the aggregate trade agreement dummies and the latter allows for heterogeneous PTA effects. The individual PTA estimates are again omitted in [Table 5](#) as they are similar to those in [Table 3](#); detailed results for these variables are available on request. The interaction coefficient, β_2 , is indeed positive in both specifications. But neither the $TPRconcern$ term nor its interaction with the dispute variable show a statistically significant effect on trade by themselves. The key effect to consider, however, is the composite of the $TPRconcern$ and the interaction coefficients. The top row in [Table 5](#) reports this composite term when evaluated at the mean number of disputes that active users of the GATT/WTO systems have recently filed against importers. On average, these exporters have initiated two disputes against a given importer in the previous three years, implying that the mean composite effect is given by: $\beta_1 + \beta_2 \times 2$. The log-linear estimates of this term in columns (13) and (14) show that the average user of the dispute settlement system can expect an increase in bilateral trade by around three percent after submitting a TPR concern, an effect which is statistically significant at either the five or 10 percent level. Thus, for exporters who have shown resolve in the recent past to enforce potential WTO agreement violations via the dispute settlement mechanism, TPR concerns are a successful tool to raise bilateral trade.

Columns (15) and (16) in [Table 5](#) report the corresponding PPML results. While the composite effect for the average user of the dispute settlement system is slightly smaller in magnitude, it is still significant at the 10 percent level when allowing for heterogeneous PTA effects. Using the PPML

estimates in specification (16), [Figure 3](#) plots how the composite TPR concern effect on trade flows varies with the number of recently filed disputes by the exporter against the importer. The graph shows that exporters who recently initiated at least two trade disputes against the country under review can expect a statistically significant increase in trade flows after submitting a TPR concern. The resulting trade effects vary between two and five percent for the considered range of two to 10 trade disputes. Hence, both the log-linear and PPML estimations show that nudging countries during trade policy reviews is more effective when the submitters of concerns are willing to pursue legal action to enforce their claims.

5.2.3 TPR Sequencing and Trade Outcomes

Since WTO members are frequently subject to trade policy reviews, it is likely that repeated examinations of their policies will eventually uncover fewer issues that countries wish to see addressed. Moreover, if issues have been repeatedly brought to the attention of the reviewed country without any response by the latter, these concerns are less likely to be resolved through a unilateral policy action. In either case, we should expect that earlier submissions of TPR concerns by WTO members are more likely to stimulate bilateral trade than policy nudges that occur during later reviews.

To examine this potential source of heterogeneity, the log-linear specifications (17) and (18) in [Table 6](#) introduce separate TPR dummies for the first bilateral TPR concern that WTO members submit (*TPRconcern_First*) and later TPR submissions (*TPRconcern_After*). When including the aggregate PTA controls in column (17), the trade impact of the first submitted TPR concern is indeed higher in magnitude than for later TPR concerns. However, the effect only becomes statistically significant (at the 10 percent level) after controlling for the heterogeneous effects of individual trade agreements in specification (18).¹⁸ According to the log-linear estimates, the average trade impact of the first submitted TPR concern is about four percent, while for later submissions the effect is not significantly different from zero. When accounting for zero trade flows and heteroskedasticity in the corresponding PPML specifications (21) and (22) in [Table 6](#), both the magnitude and statistical significance of the effect increases even further. According to the PPML estimates, the first submitted TPR concern increases trade by six to seven percent while later nudges have no effect.

¹⁸ The individual trade agreement coefficients are again omitted from the table; detailed results are available on request.

The log-linear specifications (19) and (20) in [Table 6](#) expand the definition of “early TPR concerns” to include the first three occasions when an exporter submits a concern during trade policy reviews of the importer (*TPRconcern_First3*). A similar results pattern emerges as in the previous log-linear estimations. Early TPR concerns have positive trade effects while nudges after multiple reviews of a country’s trade policy show little impact. Employing the PPML estimator in columns (23) and (24) results in the same findings. While the magnitude of the estimates slightly decreases when the more extensive definition of early TPR concerns is applied, the estimated trade effects across the log-linear and PPML specification are now closer in size to each other. Each of the first three submitted TPR concerns by an exporter raises bilateral trade flows, on average, by around three percent while later nudges have no effect. Overall, the empirical evidence in [Table 6](#) offers support for the notion that early communications with an importer are most effective in increasing bilateral trade.

6 Concluding Remarks

Most of the empirical WTO literature focuses on the implications of access negotiations and dispute proceedings while relatively little is known about the trade effects of members’ communications outside of these channels. One of the less known but crucial institutional tasks of the WTO is to ensure and further transparency of its members’ trade policies via the Trade Policy Review Mechanism. This paper considers the question how policy nudges through the TPRM affect bilateral trading relationships between members. Specifically, I examine whether countries’ submissions of concerns during the review of another member’s trade policies lead to subsequent increases in bilateral trade flows.

Using data collected from official GATT/WTO documents going back to 1989, the empirical evidence suggests that soft policy nudges through the TPRM have, on average, no effect on bilateral trade flows. The data also reveals, however, that the aggregate results mask a substantial degree of heterogeneity in the trade-creating effects of active participation in trade policy review proceedings. I find that the submission of trade policy concerns is more likely to have positive effects on bilateral trading relationships when (i) the country under review has relatively little market power, (ii) the submitting member has been an active pursuer of trade disputes against the importer in the past, and (iii) few concerns have been communicated to the importing nation before.

More broadly, the results in this paper suggest that the potential economic gains from the WTO

can go beyond static one-time effects when countries join the organization. Active participation in WTO institutions such as the TPRM can generate additional continuous membership benefits under certain conditions. Further examining the institutional details of the WTO to sort out the composite welfare effects of the organization is therefore a promising avenue for future research.

References

- Anderson, James E. and Eric van Wincoop**, “Gravity with Gravitas: A Solution to the Border Puzzle,” *American Economic Review*, 2003, *93* (1), 170–192.
- Bagwell, Kyle and Robert W. Staiger**, “An Economic Theory of GATT,” *American Economic Review*, 1999, *89* (1), 215–248.
- **and** – , *The Economics of the World Trading System*, Cambridge, MA: MIT Press, 2002.
- **and** – , “What Do Trade Negotiators Negotiate About? Empirical Evidence from the World Trade Organization,” *American Economic Review*, 2011, *101* (4), 1238–1273.
- Baier, Scott L. and Jeffrey H. Bergstrand**, “Do Free Trade Agreements Actually Increase Member’s International Trade,” *Journal of International Economics*, 2007, *71* (1), 72–95.
- Baldwin, Richard and Daria Taglioni**, “Trade Effects of the Euro: A Comparison of Estimators,” *Journal of Economic Integration*, 2007, *22* (4), 780–818.
- Bown, Chad P.**, “On the Economic Success of GATT/WTO Dispute Settlement,” *Review of Economics and Statistics*, 2004, *86* (3), 811–823.
- , *Self-Enforcing Trade: Developing Countries and WTO Dispute Settlement*, Washington, D.C.: Brookings Institution Press, 2009.
- **and Kara M. Reynolds**, “Trade Flows and Trade Disputes,” *Review of International Organizations*, 2015, *10* (2), 145–177.
- **and** – , “Trade Agreements and Enforcement: Evidence from WTO Dispute Settlement,” *American Economic Journal: Economic Policy*, forthcoming.
- **and Meredith A. Crowley**, “Emerging Economies, Trade Policy, and Macroeconomic Shocks,” *Journal of Development Economics*, 2014, *111* (November), 261–273.
- **and Patricia Tovar**, “Trade Liberalization, Antidumping, and Safeguards: Evidence from India’s Tariff Reform,” *Journal of Development Economics*, 2011, *96* (1), 115–125.
- Cassey, Andrew J.**, “California’s Exports and the 2004 Overseas Office Closures,” *Economic Inquiry*, 2010, *50* (3), 641–651.

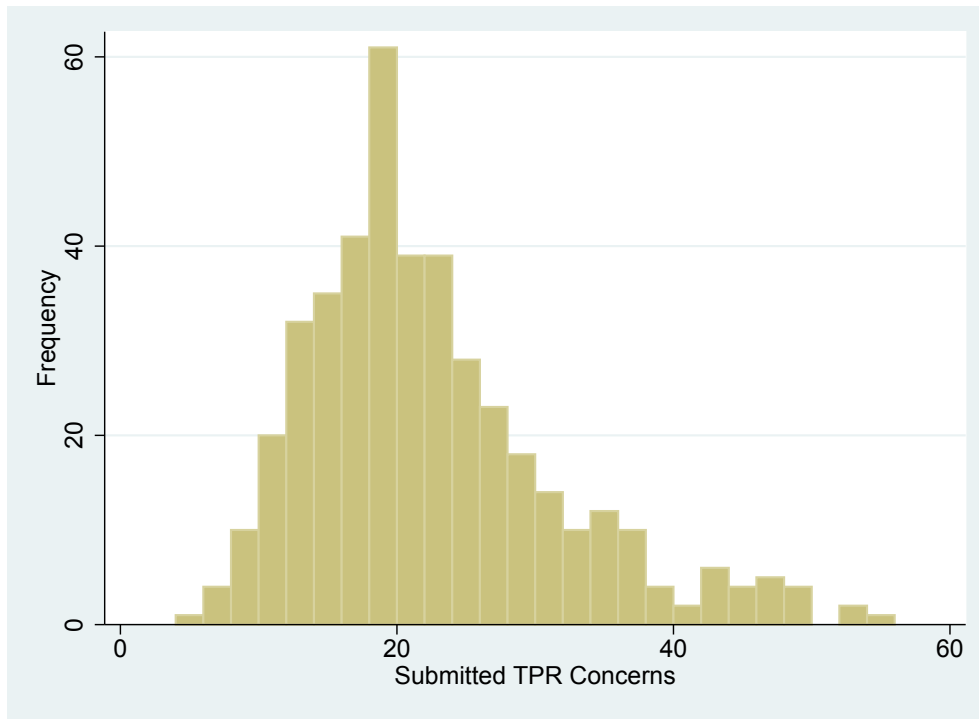
- Chang, Pao-Li and Myoung-Jae Lee**, “The WTO Trade Effect,” *Journal of International Economics*, 2011, 85 (1), 53–71.
- Charbonneau, Karyne B.**, “Multiple Fixed Effects in Nonlinear Panel Data Models: Theory and Evidence,” *Working Paper, Princeton University*, 2012.
- Cheng, I-Hui and Howard J. Wall**, “Controlling for Heterogeneity in Gravity Models of Trade and Integration,” *Federal Reserve Bank of St. Louis Review*, 2005, 87 (1), 49–63.
- Correia, Sergio**, “A Feasible Estimator for Linear Models with Multi-Way Fixed Effects,” *Working Paper, Duke University*, 2016.
- de Sousa, José**, “The Currency Union Effect on Trade is Decreasing over Time,” *Economics Letters*, 2012, 117 (3), 917–920.
- Disdier, Anne-Célia, Lionel Fontagné, and Mondher Mimouni**, “The Impact of Regulations on Agricultural Trade: Evidence from the SPS and TBT Agreements,” *American Journal of Agricultural Economics*, 2012, 90 (2), 336–350.
- Dür, Andreas, Leonardo Baccini, and Manfred Elsig**, “The Design of International Trade Agreements: Introducing a New Dataset,” *Review of International Organizations*, 2014, 9 (3), 353–375.
- Dutt, Pushan and Daniel Traca**, “Corruption and Bilateral Trade Flows: Extortion or Evasion?,” *Review of Economics and Statistics*, 2010, 92 (4), 843–860.
- , **Ilian Mihov, and Timothy Van Zandt**, “The Effect of WTO on the Extensive and the Intensive Margins of Trade,” *Journal of International Economics*, 2013, 91 (2), 204–219.
- Egger, Peter H. and Mario Larch**, “Interdependent Preferential Trade Agreement Memberships: An Empirical Analysis,” *Journal of International Economics*, 2008, 76 (2), 384–399.
- Eicher, Theo S. and Christian Henn**, “In Search of WTO Trade Effects: Preferential Trade Agreements Promote Trade Strongly, But Unevenly,” *Journal of International Economics*, 2011, 83 (2), 137–153.
- Felbermayr, Gabriel J. and Wilhelm Kohler**, “Exploring the Intensive and Extensive Margins of World Trade,” *Review of World Economics*, 2006, 142, 642–674.

- **and** –, “Modeling the Extensive and Intensive Margins of World Trade: New Evidence on GATT and WTO Membership,” *The World Economy*, 2010, *33* (11), 1430–1469.
- Fontagné, Lionel, Gianluca Orefice, Roberta Piermartini, and Nadia Rocha**, “Product Standards and Margins of Trade: Firm-level Evidence,” *Journal of International Economics*, 2015, *97* (1), 29–44.
- Ghosh, Arunabha**, “Developing Countries in the WTO Trade Policy Review Mechanism,” *World Trade Review*, 2010, *9* (3), 419–455.
- Ghosh, Sucharita and Steven Yamarik**, “Are Regional Trading Arrangements Trade Creating? An Application of Extreme Bounds Analysis,” *Journal of International Economics*, 2004, *63* (2), 369–395.
- Gil-Pareja, Salvador, Rafael Llorca-Vivero, and José Antonio Martínez-Serrano**, “A Re-Examination of the Effect of GATT/WTO on Trade,” *Open Economies Review*, 2016, *27* (3), 561–584.
- Head, Keith and John Ries**, “Do Trade Missions Increase Trade?,” *Canadian Journal of Economics*, 2010, *43* (3), 754–775.
- **and Thierry Mayer**, “Gravity Equations: Workhorse, Toolkit and Cookbook,” in Gita Gopinath, Elhanan Helpman, and Kenneth S. Rogoff, eds., *Handbook of International Economics*, Vol. 4, Oxford, UK: North-Holland, 2014, pp. 131–195.
- , – , **and John Ries**, “The Erosion of Colonial Trade Linkages After Independence,” *Journal of International Economics*, 2010, *81* (1), 1–14.
- Herz, Bernhard and Marco Wagner**, “The ‘Real’ Impact of GATT/WTO – A Generalized Approach,” *The World Economy*, 2011, *34* (16), 1014–1041.
- Horn, Henrik, Petros C. Mavroidis, and André Sapir**, “Beyond the WTO? An Anatomy of EU and US Preferential Trade Agreements,” *The World Economy*, 2010, *33* (11), 1565–1588.
- Johnson, Harry G.**, “Optimum Tariffs and Retaliation,” *Review of Economic Studies*, 1953–1954, *21* (2), 142–153.
- Kohl, Tristan**, “Do We Really Know That Trade Agreements Increase Trade?,” *Review of World Economics*, 2014, *150* (3), 443–469.

- , **Steven Brakman, and Harry Garretsen**, “Do Trade Agreements Stimulate International Trade Differently? Evidence from 296 Trade Agreements,” *The World Economy*, 2016, 39 (1), 97–131.
- Kuenzel, David J.**, “WTO Dispute Determinants,” *European Economic Review*, 2017, 91 (January), 157–179.
- Laird, Sam**, “The WTO’s Trade Policy Review Mechanism - From Through the Looking Glass,” *The World Economy*, 1999, 22 (6), 741–764.
- **and Raymundo Valdés**, “The Trade Policy Review Mechanism,” in Amrita Narlikar, Martin Daunton, and Robert M. Stern, eds., *The Oxford Handbook on the World Trade Organization*, Oxford: Oxford University Press, 2012, pp. 463–484.
- Larch, Mario, Joschka Wanner, Yoto V. Yotov, and Thomas Zylkin**, “The Currency Union Effect: A PPML Re-assessment with High-Dimensional Fixed Effects,” *Working Paper*, 2017.
- Lederman, Daniel, Marcelo Olarreaga, and Ludy Payton**, “Export Promotion Agencies: Do They Work?,” *Journal of Development Economics*, 2010, 91 (2), 257–265.
- Liu, Xuepeng**, “GATT/WTO Promotes Trade Strongly: Sample Selection and Model Specification,” *Review of International Economics*, 2009, 17 (3), 428–446.
- Maggi, Giovanni and Andres Rodriguez-Clare**, “A Political-Economy Theory of Trade Agreements,” *American Economic Review*, 2007, 97, 1374–1406.
- Nitsch, Volker**, “State Visits and International Trade,” *The World Economy*, 2007, 30 (12), 1797–1816.
- Olivero, María Pía and Yoto V. Yotov**, “Dynamic Gravity: Endogenous Country Size and Asset Accumulation,” *Canadian Journal of Economics*, 2012, 45 (1), 64–92.
- Piermartini, Roberta and Yoto V. Yotov**, “Estimating Trade Policy Effects with Structural Gravity,” *WTO Working Paper ERSD-2016-10*, 2016.
- Qureshi, Asif H.**, “Some Lessons From ‘Developing’ Countries’ Trade Policy Reviews in the GATT Framework: An Enforcement Perspective,” *The World Economy*, 1995, 18 (3), 489–503.

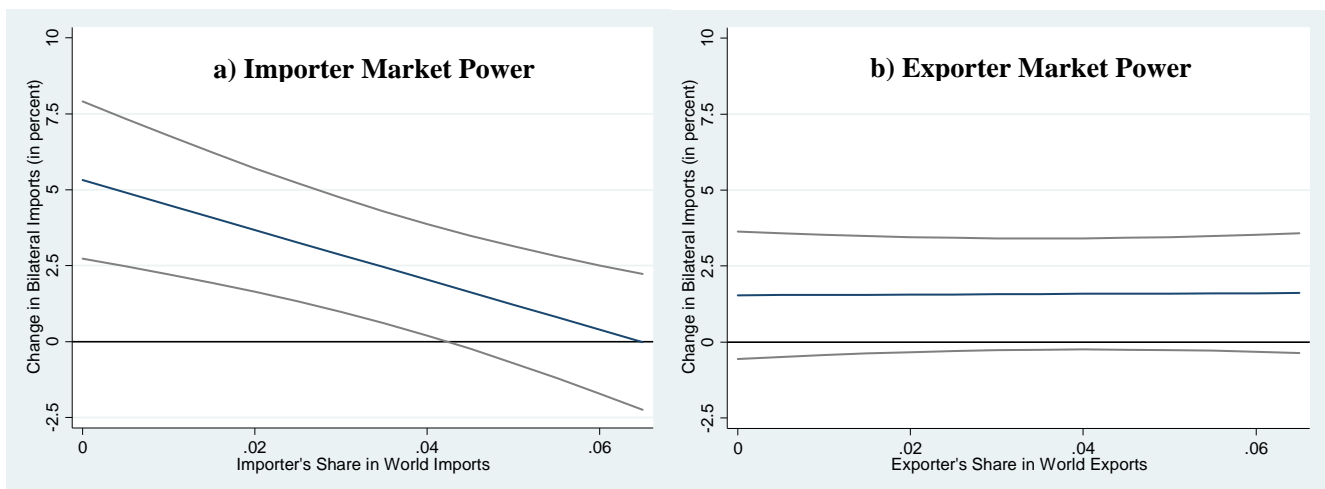
- Rose, Andrew K.**, “Do We Really Know That the WTO Increases Trade?,” *American Economic Review*, 2004, *94* (1), 98–114.
- , “Which International Institutions Promote International Trade,” *Review of International Economics*, 2005, *13* (4), 682–698.
- , “The Foreign Service and Foreign Trade: Embassies as Export Promotion,” *The World Economy*, 2007, *30* (1), 22–38.
- Roy, Jayjit**, “Is the WTO Mystery Really Solved?,” *Economics Letters*, 2011, *113* (2), 127–130.
- Silva, J. M. C. Santos and Silvana Tenreyro**, “The Log of Gravity,” *Review of Economics and Statistics*, 2006, *88* (4), 641–658.
- Subramanian, Arvind and Shang-Jin Wei**, “The WTO Promotes Trade, Strongly But Unevenly,” *Journal of International Economics*, 2007, *72* (1), 151–175.
- Tomz, Michael, Judith L. Goldstein, and Douglas Rivers**, “Do We Really Know That the WTO Increases Trade? Comment,” *American Economic Review*, 2007, *97* (5), 2005–2018.
- UNCTAD**, *General System of Preferences: List of Beneficiaries*, New York and Geneva: United Nations, various years.
- VanGrasstek, Craig**, *The History and Future of the World Trade Organization*, Geneva: WTO Publications, 2013.
- Volpe Martincus, Christian, Antoni Estevadeordal, Andrés Gallo, and Jessica Luna**, “Information Barriers, Export Promotion Institutions, and the Extensive Margin of Trade,” *Review of World Economics*, 2010, *146* (1), 91–111.
- WTO**, “WTO Members Agree on Reforms for Trade Policy Reviews and Monitoring,” https://www.wto.org/english/news_e/news16_e/tpr_21dec16_e.htm 2016. Accessed 22 October 2017.
- , “Uruguay Round Agreement: Trade Policy Review Mechanism (TPRM),” https://www.wto.org/english/docs_e/legal_e/29-tprm_e.htm 2017a. Accessed 22 October 2017.
- , “WTO Documents Online,” https://docsonline.wto.org/dol2fe/Pages/FE_Search/FE_S_S005.aspx 2017b. Accessed 22 October 2017.

Figure 1: Submitted Concerns in Trade Policy Reviews, 1989–2015



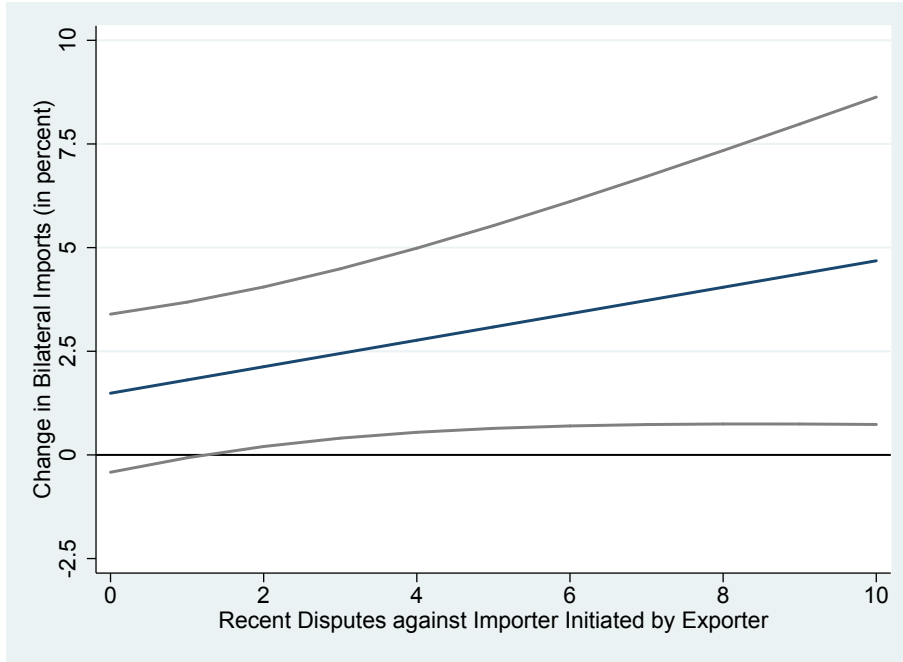
Notes: Figure 1 shows the distribution of the number countries that submit a concern during WTO trade policy reviews over the period 1989–2015.

Figure 2: Trade, TPR Concerns and Market Power



Notes: Panel a) shows the composite effect of TPR concerns on trade as a function of the world import share of the importing country based on the estimates in specification (11). Panel b) shows the composite effect of TPR concerns on trade as a function of the world export share of the exporting country based on the estimates in specification (12). 90 percent confidence intervals are included for reference.

Figure 3: Trade, TPR Concerns and WTO Disputes



Notes: Composite effect of TPR concerns on trade as a function the number of WTO disputes initiated by the exporter against the importer in the previous three years based on the estimates in specification (16). 90 percent confidence intervals are included for reference.

Table 1: WTO Member Countries by TPR Cycles

Group Name and TPR Frequency		
Quad 2-year	Sixteen 4-year	Others 6-year
European Union Japan United States Canada (until 2006) China (after 2005)	Australia Brazil Canada (after 2006) Hong Kong India Indonesia Malaysia Mexico Norway Singapore South Korea Switzerland Taiwan Thailand Turkey	All other members

Table 2: Summary Statistics

Variable	Linear FE Sample (195,468 obs.)				PPML FE Sample (266,651 obs.)			
	Mean	Std. Dev.	Min.	Max.	Mean	Std. Dev.	Min.	Max.
<i>AFTA_{mnt}</i>	0.00	0.06	0	1	0.00	0.05	0	1
<i>BilPTA_{mnt}</i>	0.16	0.36	0	1	0.13	0.34	0	1
<i>bothWTO_{mnt}</i>	0.66	0.47	0	1	0.61	0.49	0	1
<i>CACM_{mnt}</i>	0.00	0.03	0	1	0.00	0.02	0	1
<i>CAN_{mnt}</i>	0.00	0.03	0	1	0.00	0.03	0	1
<i>CAFTADR_{mnt}</i>	0.00	0.03	0	1	0.00	0.02	0	1
<i>CARICOM_{mnt}</i>	0.01	0.08	0	1	0.01	0.07	0	1
<i>CEFTA_{mnt}</i>	0.00	0.04	0	1	0.00	0.03	0	1
<i>CEMAC_{mnt}</i>	0.00	0.03	0	1	0.00	0.02	0	1
<i>COMCUR_{mnt}</i>	0.02	0.12	0	1	0.01	0.12	0	1
<i>COMESA_{mnt}</i>	0.01	0.09	0	1	0.01	0.09	0	1
<i>CU_{mnt}</i>	0.05	0.22	0	1	0.04	0.20	0	1
<i>CU_NoEU_{mnt}</i>	0.03	0.18	0	1	0.03	0.17	0	1
<i>EAC_{mnt}</i>	0.00	0.02	0	1	0.00	0.02	0	1
<i>ECOWAS_{mnt}</i>	0.01	0.09	0	1	0.01	0.09	0	1
<i>EEA_{mnt}</i>	0.02	0.14	0	1	0.01	0.12	0	1
<i>EFTA_{mnt}</i>	0.00	0.03	0	1	0.00	0.03	0	1
<i>EU_{mnt}</i>	0.02	0.13	0	1	0.01	0.11	0	1
<i>FTA_{mnt}</i>	0.09	0.29	0	1	0.07	0.26	0	1
<i>GSP_{mnt}</i>	0.17	0.38	0	1	0.15	0.36	0	1
<i>imports_{mnt}</i> (in \$ billions)	0.48	4.76	0	438.07	0.35	4.08	0	438.07
<i>logimports_{mnt}</i>	15.29	3.38	9.12	26.81	15.23	3.40	9.12	26.81
<i>MERCOSUR_{mnt}</i>	0.00	0.03	0	1	0.00	0.02	0	1
<i>NAFTA_{mnt}</i>	0.00	0.02	0	1	0.00	0.01	0	1
<i>PS_{mnt}</i>	0.08	0.27	0	1	0.07	0.25	0	1
<i>SADC_{mnt}</i>	0.00	0.06	0	1	0.00	0.06	0	1
<i>TPRconcern_{mnt}</i>	0.05	0.22	0	1	0.04	0.19	0	1
<i>TPRconcern_After_{mnt}</i>	0.03	0.18	0	1	0.03	0.16	0	1
<i>TPRconcern_After3_{mnt}</i>	0.02	0.12	0	1	0.01	0.11	0	1
<i>TPRconcern_First_{mnt}</i>	0.02	0.12	0	1	0.01	0.11	0	1
<i>TPRconcern_First3_{mnt}</i>	0.03	0.18	0	1	0.03	0.16	0	1
<i>WTODisputes_{mnt}</i>	0.03	0.37	0	20	0.02	0.32	0	20
<i>WAEMU_{mnt}</i>	0.00	0.04	0	1	0.00	0.04	0	1
<i>WorldExportShare_{ext}</i>	0.01	0.02	0	0.14	0.01	0.02	0	0.14
<i>WorldImportShare_{mt}</i>	0.01	0.02	0	0.19	0.01	0.02	0	0.19

Table 3: TPR Concerns and Trade – Baseline results

Variable	Linear Fixed Effects Model			PPML Fixed Effects Model		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>TPRconcern_{mx}t</i>	-.0070 (.0150)	.0191 (.0149)	.0222 (.0149)	.0095 (.0116)	.0122 (.0114)	.0159 (.0114)
<i>bothWTO_{mx}t</i>	.0746* (.0422)	.0826** (.0420)	.0827** (.0421)	-.0621 (.0606)	-.0641 (.0605)	-.0612 (.0601)
<i>CU_{mx}t</i>	.5460*** (.0448)			.2225*** (.0479)		
<i>CU_NoEU_{mx}t</i>		.2404*** (.0601)			.0624 (.0780)	
<i>EU_{mx}t</i>		1.0064*** (.0473)	.4683*** (.0559)		.2646*** (.0537)	.2688*** (.0517)
<i>FTA_{mx}t</i>	.1145*** (.0217)	.1771*** (.0226)		-.0533 (.0457)	-.0450 (.0475)	
<i>PS_{mx}t</i>	.0322 (.0422)	.0197 (.0421)		.0948*** (.0256)	.0932*** (.0260)	
<i>GSP_{mx}t</i>	-.0308 (.0312)	.0069 (.0312)	.0122 (.0312)	.0099 (.0305)	.0123 (.0306)	.0216 (.0305)
<i>COMCUR_{mx}t</i>	.3101*** (.0428)	.1267*** (.0430)	.0165 (.0417)	.0264 (.0348)	.0238 (.0348)	-.0028 (.0341)
<i>BilPTA_{mx}t</i>			.1269*** (.0218)			-.0122 (.0434)
<i>AFTA_{mx}t</i>			-.1573 (.1478)			-.1757 (.1458)
<i>CACM_{mx}t</i>			.3601 (.2458)			.7260*** (.1640)
<i>CAFTADR_{mx}t</i>			.4944*** (.1120)			.0555 (.0722)
<i>CAN_{mx}t</i>			.4978* (.2879)			.7425*** (.2874)
<i>CARICOM_{mx}t</i>			.3795 (.3072)			.0402 (.4448)
<i>CEMAC_{mx}t</i>			-.1204 (.3377)			.2209 (.3319)
<i>COMESA_{mx}t</i>			.4545*** (.1081)			.8422*** (.2103)
<i>EAC_{mx}t</i>			1.1655*** (.2310)			.3521 (.2499)
<i>EEA_{mx}t</i>			.5286*** (.0506)			.0373 (.0413)
<i>EFTA_{mx}t</i>			.0583 (.1073)			-.1014 (.0733)
<i>MERCOSUR_{mx}t</i>			.3342* (.1999)			.2235 (.1956)
<i>NAFTA_{mx}t</i>			.1914 (.1267)			.2543*** (.0708)
<i>SADC_{mx}t</i>			.7123*** (.1550)			.8030*** (.1524)
<i>WAEMU_{mx}t</i>			.5135*** (.1726)			.4393** (.1711)
Obs.	195,468	195,468	195,468	266,651	266,651	266,651
R^2	.8954	.8955	.8956	.9927	.9927	.9926
Country-pair FE	Yes	Yes	Yes	Yes	Yes	Yes
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Clustered standard errors at the country-pair level are in parentheses. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Table 4: TPR Concerns and Trade – Market Power

Variable	Linear Fixed Effects Model			PPML Fixed Effects Model		
	(7)	(8)	(9)	(10)	(11)	(12)
Composite Effect:						
TPRconcern/Market Power [= $\beta_1 + \beta_2 \times \bar{x}$]	.0231 (.0158)	.0266* (.0158)	.0199 (.0157)	.0411*** (.0145)	.0474*** (.0144)	.0155 (.0122)
<i>TPRconcern_{mtx}</i> [= β_1]	.0290 (.0179)	.0329* (.0179)	.0170 (.0172)	.0464*** (.0159)	.0532*** (.0158)	.0153 (.0127)
<i>WorldImportShare_{mt}</i> × <i>TPRconcern_{mtx}</i> [= β_2]	-.6432 (.4818)	-.7017 (.4813)		-.7538*** (.2890)	-.8200*** (.2904)	
<i>bothWTO_{mtx}</i>	.0829** (.0420)	.0830** (.0421)	.0825* (.0421)	-.0625 (.0602)	-.0593 (.0598)	-.0611 (.0601)
<i>CU_NoEU_{mtx}</i>	.2403*** (.0601)			.0612 (.0780)		
<i>EU_{mtx}</i>	1.0070*** (.0473)	.4701*** (.0559)	.4676*** (.0559)	.2703*** (.0543)	.2748*** (.0524)	.2688*** (.0518)
<i>FTA_{mtx}</i>	.1771*** (.0226)			-.0449 (.0477)		
<i>PS_{mtx}</i>	.0200 (.0421)			.0925*** (.0260)		
<i>COMCUR_{mtx}</i>	.1270*** (.0430)	.0170 (.0417)	.0165 (.0417)	.0260 (.0347)	-.0007 (.0340)	-.0028 (.0341)
<i>GSP_{mtx}</i>	.0064 (.0312)	.0117 (.0312)	.0121 (.0312)	.0142 (.0306)	.0238 (.0305)	.0215 (.0303)
<i>BilPTA_{mtx}</i>		.1270*** (.0218)	.1271*** (.0218)		-.0118 (.0436)	-.0122 (.0431)
Obs.	195,468	195,468	195,468	266,651	266,651	266,651
R^2	.8955	.8956	.8956	.9927	.9926	.9926
Country-pair FE	Yes	Yes	Yes	Yes	Yes	Yes
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual PTAs	No	Yes	Yes	No	Yes	Yes

Notes: Clustered standard errors at the country-pair level are in parentheses. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively. Specifications (8), (9), (11) and (12) include individual trade agreement controls; see Table 3 for detailed list. Composite effect is evaluated at the respective mean of the *WorldImportShare_{mt}* and *WorldExportShare_{mt}* variables.

Table 5: TPR Concerns and Trade – GATT/WTO Enforcement

Variable	Linear Fixed Effects Model		PPML Fixed Effects Model	
	(13)	(14)	(15)	(16)
Composite Effect:				
TPRconcern/Enforcement [= $\beta_1 + \beta_2 \times \bar{x}$]	.0319* (.0165)	.0343** (.0165)	.0182 (.0117)	.0213* (.0117)
<i>TPRconcern_{mxt}</i> [= β_1]	.0181 (.0152)	.0213 (.0152)	.0110 (.0116)	.0149 (.0116)
<i>TPR × WTODisputes_{mxt}</i> [= β_2]	.0069 (.0061)	.0065 (.0061)	.0036 (.0023)	.0032 (.0023)
<i>WTODisputes_{mxt}</i>	-.0060 (.0061)	-.0068 (.0061)	-.0089*** (.0027)	-.0078*** (.0028)
<i>bothWTO_{mxt}</i>	.0827** (.0420)	.0828** (.0421)	-.0567 (.0605)	-.0549 (.0601)
<i>CU_NoEU_{mxt}</i>	.2404*** (.0601)		.0604 (.0781)	
<i>EU_{mxt}</i>	1.0057*** (.0474)	.4675*** (.0559)	.2583*** (.0537)	.2653*** (.0519)
<i>FTA_{mxt}</i>	.1771*** (.0226)		-.0470 (.0480)	
<i>PS_{mxt}</i>	.0196 (.0421)		.0953*** (.0260)	
<i>COMCUR_{mxt}</i>	.1265*** (.0430)	.0163 (.0417)	.0238 (.0348)	-.0019 (.0340)
<i>GSP_{mxt}</i>	.0067 (.0313)	.0120 (.0312)	.0082 (.0307)	.0179 (.0305)
<i>BilPTA_{mxt}</i>		.1268*** (.0218)		-.0152 (.0435)
Obs.	195,468	195,468	266,651	266,651
R^2	.8955	.8956	.9927	.9926
Country-pair FE	Yes	Yes	Yes	Yes
Country-year FE	Yes	Yes	Yes	Yes
Individual PTAs	No	Yes	No	Yes

Notes: Clustered standard errors at the country-pair level are in parentheses. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively. Specifications (14) and (16) include individual trade agreement controls; see Table 3 for detailed list. Composite effect is evaluated at the mean of the *WTODisputes_{mxt}* variable for active users of the GATT/WTO dispute settlement mechanism.

Table 6: TPR Concerns and Trade – Sequencing Effects

Variable	Linear Fixed Effects Model				PPML Fixed Effects Model			
	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
<i>TPRconcern_First_{mx}t</i>	.0342 (.0220)	.0416* (.0220)			.0651** (.0272)	.0607** (.0278)		
<i>TPRconcern_After_{mx}t</i>	.0105 (.0177)	.0110 (.0177)			.0015 (.0127)	.0067 (.0127)		
<i>TPRconcern_First3_{mx}t</i>			.0258 (.0165)	.0299* (.0165)			.0309* (.0161)	.0320** (.0161)
<i>TPRconcern_After3_{mx}t</i>			.0008 (.0227)	.0009 (.0226)			.0005 (.0135)	.0058 (.0133)
<i>bothWTO_{mx}t</i>	.0817* (.0420)	.0816* (.0421)	.0817* (.0420)	.0816* (.0421)	-.0675 (.0605)	-.0641 (.0601)	-.0687 (.0603)	-.0651 (.0599)
<i>CU_NoEU_{mx}t</i>	.2408*** (.0601)		.2408*** (.0601)		.0628 (.0778)		.0629 (.0779)	
<i>EU_{mx}t</i>	1.0051*** (.0474)	.4663*** (.0559)	1.0055*** (.0474)	.4679*** (.0559)	.2629*** (.0539)	.2772*** (.0525)	.2651*** (.0539)	.2739*** (.0520)
<i>FTA_{mx}t</i>	.1771*** (.0226)		.1772*** (.0226)		-.0461 (.0477)		-.0450 (.0476)	
<i>PS_{mx}t</i>	.0196 (.0421)		.0195 (.0421)		.0946*** (.0261)		.0940*** (.0259)	
<i>GSP_{mx}t</i>	.0065 (.0312)	.0117 (.0312)	.0072 (.0313)	.0126 (.0312)	.0089 (.0307)	.0188 (.0306)	.0127 (.0306)	.0220 (.0305)
<i>COMCUR_{mx}t</i>	.1252*** (.0431)	.0144 (.0418)	.1248*** (.0432)	.0144 (.0418)	.0183 (.0347)	-.0044 (.0341)	.0201 (.0347)	-.0046 (.0341)
<i>BilPTA_{mx}t</i>		.1267*** (.0219)		.1270*** (.0218)		-.0133 (.0435)		-.0124 (.0434)
Obs.	195,468	195,468	195,468	195,468	266,651	266,651	266,651	266,651
R^2	.8955	.8956	.8955	.8956	.9927	.9926	.9927	.9926
Country-pair FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual PTAs	No	Yes	No	Yes	No	Yes	No	Yes

Notes: Clustered standard errors at the country-pair level are in parentheses. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively. Specifications (18), (20), (22) and (24) include individual trade agreement controls; see [Table 3](#) for detailed list.