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Preferential Trade Agreements and Antidumping Protection*

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Abstract

Are preferential trade agreements (PTAs) stumbling blocks or building blocks towards multilateral trade liberalization? We address this question by investigating the effects of the negotiation and implementation of PTAs on the use of antidumping (AD) (i.e., the most common form of contingent trade protection) by member countries against non-members. Theoretically derived empirical predictions are supported in the empirical analysis based on the 15 most intense users of AD. The results demonstrate that both the negotiation and the implementation of PTAs lead to fewer AD measures against non-member countries, except for members of active custom-union agreements facing large import surges.

Keywords: Preferential trade agreements; antidumping; multilateral cooperation.

JEL classification: F13; F14; F15.

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1 Introduction

The world has witnessed an astounding proliferation of preferential trade agreements (PTAs) since the early 1990s. According to the World Trade Organization (WTO), as of May 2017, the number of notified active PTAs stands at 274, with all WTO members being members of at least one PTA in force.¹ This figure is in fact likely to increase in the near future as many WTO members are currently involved in negotiations for new PTAs. A second major trend that has dominated international commercial policy over the same period is the dramatic increase in antidumping (AD) activity. Although the stated objective of AD is to eliminate the injurious effect of dumping (i.e., exporting a product at less than fair value), its application in practice has nothing to do with maintaining a “fair” trading environment. AD “is simply a modern form of protection” (Blonigen and Prusa, 2003), which is nowadays used on a regular basis by a large number of developed and developing countries.

In this paper, we examine empirically the implications of PTAs for the AD activity of PTA members against non-member countries. This is an important endeavor for two reasons. First, there is ongoing concern that PTAs might be “stumbling blocks” rather than “building blocks” towards multilateral trade liberalization. In this regard, given the worldwide decrease in applied tariff rates and the prominent role that AD plays in modern commercial policy, it is of particular importance to understand the ramifications of PTAs for their member countries’ “external” AD activity (i.e., the AD activity of PTA members against non-members). Second, given the concurrent surge in global AD activity and regionalism, it might be tempting to interpret a simple correlation as evidence of a causal link.

To guide our empirical strategy, we rely on the theoretical work by Tabakis (2010, 2015) in order to derive testable predictions. These papers explore the implications of the (symmetric) formation of, respectively, customs unions (CUs) and free-trade areas (FTAs) for contingent protection. Both papers employ a dynamic game of trade-policy setting, in which countries are limited to cooperative multilateral agreements that are self-enforcing and the economic environment is characterized by exogenous trade-volume volatility. Restricting our attention to AD measures, which is the focus of our paper, three main testable predictions emerge from

¹See https://www.wto.org/english/tratop_e/region_e/region_e.htm.

Tabakis (2010, 2015): (i) the number of AD measures of members against non-members of an FTA agreement should decrease both during its negotiation and after its implementation (with the latter effect being stronger); (ii) the number of AD measures of members against non-members of a CU agreement should decrease during its negotiation; and (iii) the number of AD measures of members against non-members of a CU agreement should increase following its implementation for “high” import volumes, whereas the reverse is true for “low” volumes of imports.

To empirically test these predictions, we carry out an extensive data collection process as we gather data on six events for a large number of PTAs. In particular, we collect the dates of the following events for each PTA in our sample: (i) initiation of process; (ii) formal launch of negotiations; (iii) conclusion of negotiations; (iv) signature of agreement; (v) ratification of agreement; and (vi) entry into force of agreement. Using then AD data over the period 1980–2015 and different econometric strategies, our results do provide clear support to the aforementioned theoretical predictions. Both the negotiation and implementation of PTAs have a significant effect on the extent of AD use of PTA members vis-à-vis non-member countries. What is more important, PTAs generally have a dampening effect on their members’ AD activity against the rest of the world, except when members of an implemented CU agreement face substantial import growth, which is in line with the theoretical predictions of Tabakis (2010). In brief, our results suggest that with one notable exception (i.e., CUs in force facing a substantial growth of imports), PTAs seem to be building blocks towards multilateral trade cooperation as far as AD protection is concerned.

Only three papers look (to the best of our knowledge) at the empirical effects of PTAs on AD. Ahn and Shin (2011) look at the effects of FTAs on the intra-FTA AD filings of major AD users over 1995–2009, and find that FTAs inversely affect AD investigations within the boundary of FTA membership. In comparison, Silberberger and Stender (2016) explore the impact of PTAs on the use of bilateral AD measures over the period 1991–2014, while explicitly considering the degree of intra-bloc tariff liberalization. They find that PTAs generally reduce the likelihood of AD activity among PTA members, but an improvement in the relative tariff treatment among fellow integration partners leads to a higher likelihood of bilateral AD activity than an equal improvement among non-integration trading partners. Finally, Prusa

and Teh (2010), which is the paper closest in spirit to ours, investigate the ramifications of PTAs for both intra-PTA AD filings and AD filings against non-member countries. They find that AD provisions in PTAs decrease the incidence of intra-PTA AD cases, but increase the number of filings against non-PTA members. We differ from these papers in two major respects. First, we distinguish between the negotiation and the implementation phases of PTAs. Second, we distinguish between FTAs and CUs. As the theoretical models by Tabakis (2010, 2015) suggest and our empirical analysis verifies, both distinctions are critical in order to get deeper insights into the ramifications of PTAs for AD protection.

Our paper is also naturally related to the (empirical) literature on whether PTAs are building blocks or stumbling blocks towards multilateral tariff liberalization. Some studies provide evidence in support of a building-block effect of PTAs (e.g., Estevadeordal et al., 2008), whereas others offer evidence showing that PTAs are stumbling blocks towards tariff liberalization at the multilateral level (e.g., Limão, 2006; Karacaovali and Limão, 2008). Our work clearly complements these papers. Moreover, it demonstrates that in order to get a more thorough picture regarding the implications of regionalism for the multilateral trading system, other policy instruments besides most-favored-nation tariffs should be taken into consideration.

The remainder of the paper is organized as follows. Section 2 provides a non-technical presentation of the theoretical framework that can be used to model the issues under investigation. The empirical predictions that follow from this framework and how they can be econometrically tested are discussed in Section 3. Section 4 is dedicated to the description of the data, with an emphasis on the extensive data collection undertaken to systematically record the various phases (i.e., launch of negotiations, conclusion of negotiations, signature, ratification, and entry into force) of a PTA. The empirical results are discussed in Section 5, while Section 6 concludes.

2 Theoretical Framework

As we discussed in the introduction, our main goal in this paper is to empirically examine the impact of PTAs on their members' "external" AD activity (i.e., the AD activity of PTA

members against non-member countries). To this end, we rely on the theoretical work by Tabakis (2010, 2015) to derive testable predictions. Tabakis (2010) looks at the ramifications of symmetric CU formation for multilateral trade cooperation, while the companion paper, Tabakis (2015), focuses on FTAs. The analysis in both papers rests on two main assumptions, which are common in the literature on trade agreements. First, countries are limited to self-enforcing multilateral agreements, i.e., agreements that balance for each country its short-term terms-of-trade gains from defection from the agreed-upon policies against the long-term welfare losses due to its trading partners' retaliation.² Second, the economic environment is characterized by exogenous trade-volume volatility. As a result, "special" protection (or contingent protection—the two terms will be used interchangeably below) becomes an indispensable *on-equilibrium-path* safety valve, allowing countries to maintain multilateral cooperation amid volatile trade swings. More specifically, a trade agreement should allow countries to temporarily raise their cooperative level of protection—via using special protection—when facing significant import-volume surges so that their incentive to defect is kept in check and multilateral cooperation does not break down.³

Tabakis (2010) demonstrates, in the context of a competing-importers model, that the parallel initiation of different CU negotiations leads to an easing of multilateral trade tensions, especially with respect to the employment of special protection. Intuitively, this stems from the market-power effect of CU establishment due to the harmonization of the member countries' external trade policies. In particular, a CU, relative to any of its member states taken individually, enjoys more substantial market power (i.e., a greater ability to affect world prices) and can, therefore, credibly threaten to punish more harshly any deviation from the cooperative course.⁴ As a result, as countries enter (symmetrically) into CU talks and the establishment of different CUs becomes (more) likely, the expected discounted value of future multilateral cooperation increases. At the same time, countries' static incentive to defect from the cooperative agreement remains unaffected as it is only a function of current trade pat-

²See Bagwell and Staiger (2002) for an in-depth analysis of enforcement issues within the context of GATT/WTO.

³See the seminal work by Bagwell and Staiger (1990) for further elaboration on this result. Bown and Crowley (2013) provide empirical evidence in support of this theoretical prediction.

⁴For empirical evidence that terms-of-trade or market-power considerations do play a significant role in trade policy formulation, see Broda et al. (2008) and Bagwell and Staiger (2011).

terns, upon which the mere initiation of CU talks has no effect. Thus, in comparison with the pre-CU-negotiations period, a more liberal multilateral trading environment is now feasible as countries are less inclined to violate multilateral cooperation and revert to protectionist stances.

This beneficial effect of CU formation on multilateral cooperation is, however, temporary.⁵ Once the negotiations are over and the CU agreements come into force, countries' static incentive to deviate from the cooperative path also intensifies, and thereby, a more protectionist trading environment resurfaces. The reason is that the CUs can more effectively manipulate the terms of trade to their advantage than can any of their member countries when viewed in isolation. An important finding that emerges from the analysis of Tabakis (2010) is that in comparison with the pre-CU world (i.e., a world where there are no CU negotiations in the near horizon), the employment of contingent protection in the post-CU world is more severe for "high" import volumes, but is less frequent overall in the sense that a higher import-volume surge is required to warrant its use (on the equilibrium path).

These theoretical results are illustrated in Figure 1, which depicts the most cooperative level of protection ($\widehat{\tau}^c$) than can be sustained multilaterally as a function of the import volume. Notice that e refers to the common trade shock encountered by all countries in a given period, while \bar{e} refers to the critical trade-shock threshold (or, equivalently, import-volume threshold) above which the employment of contingent protection becomes necessary so that multilateral cooperation does not break down. Considering the various phases the countries' trading relationship passes through, $\widehat{\tau}_1^c$ represents the (most cooperative) equilibrium trade-protection function in the pre-CU world, while $\widehat{\tau}_2^c$ refers to the corresponding one during the CU-negotiations phase. As $\widehat{\tau}_2^c$ is to the right of and parallel to the original curve, this implies that above the threshold \bar{e}_1 , the same level of imports will induce lower protectionist pressures (i.e., fewer AD measures) once countries enter into CU talks. However, once the different CUs are implemented, the $\widehat{\tau}^c$ curve shifts to the left and becomes steeper (see $\widehat{\tau}_3^c$). In particular, as compared with the pre-CU world, less (more) protectionist trade policies will be implemented at the multilateral level in the post-CU world for low (high) import volumes.

⁵It is in fact maximized as the successful conclusion of the CU talks and the ensuing implementation of the CU agreements draw near.

In his follow-up paper, Tabakis (2015) explores the implications of FTA agreements for special protection in the context of a model similar to the aforementioned one. He shows that the parallel formation of different FTAs leads to a gradual but permanent easing of trade tensions at the multilateral level, especially regarding the use of special-protection instruments. The intuition underlying this finding is straightforward. The FTA agreements induce trade diversion, lowering the volume of trade between FTA partners and non-partner countries. This has a dampening effect on countries' static incentive to defect from the cooperative course, allowing for a less protectionist international trading environment to come forth. In fact, a relatively liberal environment can be maintained also during the FTA negotiations, as the *prospective* emergence of different FTAs with the accompanying reduction in multilateral trade barriers raises the expected discounted value of future cooperation, while leaving the short-term terms-of-trade gains from increased protection unaffected.

Again, these theoretical results can be illustrated in a way similar to the CU case. Figure 2 shows such a representation where the $\hat{\tau}^c$ curves can be read in the same way as in Figure 1. Crucially though, $\hat{\tau}_2^c$ lies to the right of $\hat{\tau}_1^c$, and $\hat{\tau}_3^c$ is farther to the right and flatter than both $\hat{\tau}_1^c$ and $\hat{\tau}_2^c$. Thus, there is a gradual but continuous easing of protectionist pressures as countries negotiate and then implement different FTA agreements. Actually, once the FTAs are established, the decrease in protectionism multilaterally will be even larger as compared with the FTA-negotiations phase.

3 Empirical Predictions and Methodology

The theoretical framework described in the previous section leads to a number of testable predictions regarding the interaction between the negotiation and implementation of PTAs and the use of contingent trade instruments. Among those that qualify as such, AD measures are the ones that are being used the most extensively around the world thanks to their flexibility: they are relatively easy to administer, and a case for their introduction is not that difficult to meet the necessary legal conditions. Countervailing duties and safeguards also fall in this category, but they are not used as extensively because of the more stringent conditions that must be fulfilled. For example, Bown and Crowley (2016, Table 5) report

several statistics related to the share of a country's imports covered by different contingent measures over the period 1995–2013. Their statistics demonstrate that AD is the favoured instrument and when countervailing duties and safeguards are used, they often cover the same products also targeted by AD. It is only for China, the EU, Turkey, and the United States that other instruments have had a meaningful impact on trade but only in some limited years (see Table 5 and Figure 10 in Bown and Crowley, 2016) .

Thinking of AD measures as the instrument, the theoretical models by Tabakis (2010, 2015) lead to the following testable predictions:

1. The number of AD measures of members against non-members of an FTA agreement should decrease both during its negotiation and after its implementation (and even more so during the implementation phase);
2. The number of AD measures of members against non-members of a CU agreement should decrease during its negotiation;
3. The number of AD measures of members against non-members of a CU agreement should decrease (increase) following its implementation for low (high) import volumes.

In order to assess these predictions, we proceed in two steps. First, we evaluate whether the negotiation and implementation of PTAs affect the introduction of AD measures by PTA members against non-member countries, without distinguishing between FTAs and CUs. This serves as a preliminary stage to understand whether there is any *prima-facie* evidence in the data of the effects that should manifest as a result of the establishment of PTAs. Notice that a lack of evidence on the effect of PTA implementation on AD may be due to the somewhat opposite effects that FTAs and CUs may display (as a function of import volumes), while there should be a clear effect of PTA negotiation on AD employment since both FTAs and CUs should lead to fewer AD measures against non-negotiating countries. In the second step, the three predictions are individually tested by considering the differential effects when FTAs and CUs are implemented, also allowing for the interacting effect of the two types of PTAs and the change in import volumes.

In both steps, the dependent variable ($AD_{i,j,t}$) is the count of new AD measures that country i imposes against country j in year t . Given that the dependent variable is a non-negative integer, we employ a negative binomial estimator for all of our regressions.⁶ The basic specification we estimate in the first step is

$$AD_{i,j,t} = \beta_1 PTAs\ negotiation_{i,z,t} + \beta_2 PTAs\ implemented_{i,z,t} + \beta_3 X_{i,j,t-s} + \beta_4 Z_{i,t-s} + \beta_5 W_{j,t-s} + \phi_t + \mu_i + \nu_j + \varepsilon_{i,j,t}, \quad (1)$$

where $PTAs\ negotiation_{i,z,t}$ and $PTAs\ implemented_{i,z,t}$ are our regressors of interest. $PTAs\ negotiation_{i,z,t}$ is the count of PTAs that country i is negotiating with any country $z \neq j$ at time t , with $PTAs\ implemented_{i,z,t}$ counting the number of PTAs that are implemented (i.e., in force) between countries i and $z \neq j$ in year t (out of those that have entered into force during the sample period). Notice that the relevant aspect of these variables is that they measure the involvement of country i in PTAs not featuring the trade partner j , as the focus of our analysis is the effect of PTAs on AD use between members and non-member countries. In some versions we also control for the level of bilateral imports and their growth ($X_{i,j,t-s}$) and the macro conditions—real exchange rate and GDP growth—of importing country i ($Z_{i,t-s}$) and exporting country j ($W_{j,t-s}$).⁷ Year fixed effects (i.e., ϕ_t) are always included, while separate importer and exporter fixed effects (i.e., μ_i and ν_j) or country-pair (i.e., dyad) fixed effects are included in different specifications.

In the second step of the econometric analysis, we distinguish the effect of negotiation and implementation of PTAs depending on whether we consider FTAs or CUs. Thus, our key regressors will be four: $FTAs\ negotiation_{i,z,t}$, $FTAs\ implemented_{i,z,t}$, $CUs\ negotiation_{i,z,t}$, $CUs\ implemented_{i,z,t}$. Furthermore, the specification must account for the differential effect of FTA versus CU implementation as a function of import volumes. Thus, the implementation regressors need to be interacted with $Import\ growth_{t/t-1}$ to verify whether the data confirm that AD measures may actually become more likely as a result of the enforcement of a CU agreement and a surge of imports.

The possible effects of PTA negotiation and implementation on their members' external AD activity are identified through different variation in the data, depending on whether importer

⁶Compared to the poisson estimator that assumes that the mean and the variance of the dependent variable are the same, the negative binomial allows for overdispersion (i.e., larger variance), which is what we observe in our data.

⁷The subscript s indicates alternative lags of the regressors.

and exporter or dyad fixed effects are used. The use of country-pair fixed effects makes for the most demanding specification, as any time-invariant country-pair heterogeneity is absorbed by the fixed effect and any significance of the coefficients of interest (i.e., β_1 and β_2) is derived by variation within the country pair due to different PTAs in which the importing country is involved over time (in terms of negotiations or implementations). If this is the cleanest form of identification, the non-linear nature of the estimator forces us to drop any country pair in which no single AD measure has ever been introduced by the importing country against the trade partner in question during the sample period. Some of these country pairs should be dropped from the estimation because they are such that AD measures are highly unlikely (e.g., very small exporting country or high inter-industry trade flows). However, country pairs may be excluded when a zero for AD measures is a “true” zero: it happens to be zero but AD measures could have occurred. The use of separate importer and export fixed effects provides an alternative identification strategy, which does not exclude these observations. In this case, only importing countries that have used AD at some point during the sample (against any trade partner) are included but this is not a limitation since we do want to restrict the analysis to active and intense users of AD.

When including dyad fixed effects, we actually estimate these effects instead of employing the conditional fixed-effects estimator. In the latter case, a conditional likelihood function is used so that the effects are “conditioned out” of the likelihood function and dropped from the estimation. Thus, this estimator is not equivalent to what is usually thought of as a fixed-effects estimator (i.e., there are no different intercepts). In fact, the coefficients of time-invariant variables would still be identified in conditional fixed-effects estimations. The inclusion and estimation of dyad fixed effects may give rise to inconsistent estimates due to the incidental parameter problem in samples with short panels. However, Allison and Waterman (2002) demonstrate that no such bias emerges.

Before moving to discussing the data and the results, a few observations are in order. First of all, our key regressors (i.e., *PTAs negotiation* $_{i,z,t}$ and *PTAs implemented* $_{i,z,t}$) only take into consideration PTAs that affect a minimum level of imports in the year before initiation of the negotiations (if not yet in force) or in the year before entry into force. In fact, we can reasonably expect that the mechanisms discussed in Section 2 are at play only if a PTA

affects a significant amount of trade, else the trade-diversion and market-power effects would not manifest themselves. Theory is silent on what “significant” actually means in practice. In the benchmark regressions, we assume this threshold to be 10%, but we discuss the sensitivity of our results to lower thresholds in the robustness section.⁸

In terms of the sample, it does not include country pairs that are involved in the negotiation or the enforcement of PTAs. In fact, our focus is on verifying whether PTAs have an effect on the use of contingent (i.e., AD) measures between member and non-member countries depending on how the status of PTA negotiations and implementations varies over time. Our empirical predictions focus on a comparison of AD patterns before and after the consideration of PTAs, not a comparison of AD patterns within the PTAs vis-à-vis the AD patterns between member and non-member countries (although we revisit this choice in the section on robustness checks).⁹

4 Data

In order to implement the econometric strategy discussed in the previous section, three sets of data are needed. Comprehensive details on the various phases of PTAs is the first building block and the one that proves the most difficult to collect. Data on the use of AD is the second building block, while trade and macro variables constitute the final set of data. In the following, we discuss each of these datasets in turn.

Regarding PTAs, our sample includes all trade agreements notified to the GATT/WTO that satisfy all of the following three conditions: (i) they have entered into force from 1980 onwards and are still active, or they are not yet in force but their negotiation has been announced “early” to the WTO; (ii) they involve at least one of the 15 most intense users of AD (to be defined below); and (iii) for their member countries identified by condition (ii), the intra-PTA import share is at least 0.2%. For these PTAs, we then carry out an extensive data collection process as we gather for each of them the dates of the following events: (i) initiation of process (e.g., the launching of a joint feasibility study or the expression of intention

⁸As expected, the effects become less precisely estimated when using lower thresholds.

⁹In the case of negotiating country pairs, we exclude those for which the import share affected by the trade agreement is at least 1%.

to explore the possibility of a PTA); (ii) formal launch of negotiations; (iii) conclusion of negotiations; (iv) signature of agreement; (v) ratification of agreement; and (vi) entry into force of agreement. The information comes from a wide range of online sources, including (but not limited to) the WTO, the European Commission, the European Parliament, the Office of the United States Trade Representative, the Foreign Trade Information System (SICE) of the Organization of American States, the Asia Regional Integration Center of the Asian Development Bank, partner countries' official sources (e.g., the Ministry of Foreign Affairs of South Korea or the Ministry of Commerce of China), or national legislative bodies (for ratification dates). As a last resort, we use historical data from newspapers.

Data on the worldwide usage of AD (since 1980) comes mainly from the Global Antidumping Database (Bown, 2015) and are complemented by the data from Moore and Zanardi (2009) for some countries and years.¹⁰ In particular, these sources allow us to construct the dependent variable, $AD_{i,j,t}$, as the count of the AD measures that an importer has introduced against an exporter in a given year. Since we would expect an effect from PTAs to the use of AD to occur only for those countries that do make systematic use of this form of contingent protection, we limit the sample of importing countries to the 15 most intense AD users: the five traditional users (i.e., Australia, Canada, the EU, New Zealand, and the United States) and the ten most active new users: Argentina, Brazil, China, India, Mexico, Peru, South Africa, South Korea, Taiwan, and Turkey.

As for the import data (at a country level), they are taken from the IMF Direction of Trade Statistics (DOTS) and they serve two purposes. First, we need to control for the size of imports and their growth as they are known determinants of AD measures. Not less importantly, one of the empirical predictions stemming from Tabakis (2010) is that the effect of CUs on AD usage of their members against third countries depends on the volume of imports. Hence, import growth (between t and $t - 1$) becomes another key regressor when distinguishing the effects of FTAs and CUs on AD usage.

Finally, macro controls as (the log of) bilateral real exchange rate and importer and exporter GDP growth rates (between t and $t - 3$) are included as they have been shown to affect

¹⁰For the sample used in the econometric analysis, only the data for Canada before 1995, the EU before 1987 and New Zealand before 1995 are taken from Moore and Zanardi (2009).

the introduction of AD measures (e.g., see the seminal work by Knetter and Prusa, 2003). These variables are taken from the World Development Indicators (WDI).

Merging these three sets of data, the sample consists of 15 importing countries and all of their trade partners over the years from 1980 until 2015, with a later starting year if an importing country has implemented an AD law more recently or AD data are not available (see Table A1 in the Appendix for details of included years by country). Notice though that starting from the consideration of all potential trade partners of the 15 importing countries identified above, import and macro data are missing for many observations and their inclusion forces us to drop many observations.

5 Empirical Results

The results of the first step of our estimation strategy are presented in Table 1. In this case, we do not distinguish between FTAs and CUs in their effects on the use of AD against third countries. Still, it should be the case that higher values of *PTAs negotiation* $_{i,z,t}$ lead to fewer AD measures (i.e., the effects of FTAs and CUs during their negotiation is the same). The estimated coefficient for *PTAs implemented* $_{i,z,t}$ should be negative, except if the effect from members of CUs facing high import growth dominates.

Table 1 includes eight specifications that differ because of fixed effects, of whether control variables are included or not, and depending on the functional form of *PTAs negotiation* $_{i,z,t}$ and *PTAs implemented* $_{i,z,t}$ (in logs in the last four columns). Even before discussing the differences of these modeling strategies, it is obvious that the results are quite robust: the negotiation and implementation of PTAs between an importing country i and third countries $z \neq j$ (in year t) reduces the number of AD measures that country i imposes against trading partner j (in year t). Thus, it is the case that the data provide broad support for the theoretical predictions discussed in Section 2.

Looking in detail at the results in Table 1, the first specification includes only year, importer and exporter fixed effects together with the key regressors of interest. It is clearly the case that this minimalist version should be augmented by the trade and macro controls that the literature shows to be important determinants of AD activity. Although their inclusion in

column (2) forces us to drop many observations due to missing data, it is reassuring that the smaller sample does not change the sign and significance of the coefficients of interest, even though they are smaller in absolute terms. Thus, if anything we may underestimate the true values of the effects when these regressors are included. These control variables do display the role that we expect from previous findings: large import volumes and import growth lead to more AD measures, as is the case for an appreciation of the exchange rate of the importing country (while GDP growth rates do not display a significant role). Columns (3) and (4) are analogous but they are based on dyad fixed effects. This strategy imposes a loss of observations also for the minimalist specification (i.e., any country pair without a single AD measure over the sample is dropped), implying a smaller difference of observations when the controls are included. Still, the results are very much in line with the previous ones: there are no significant differences between the estimates in columns (2) and (4), except for a larger coefficient for the level of imports.

The last four columns re-estimate the same specifications with the key regressors of the count of PTA negotiations and implementations replaced by the log of one plus the count of these. This alternative formulation imposes a non-linear effect of PTA negotiation and implementation and the results confirm this to be the case. Again, the reduced samples due to the inclusion of control variables do not change the conclusions.

The purpose of Table 1 was to establish *prima-facie* evidence supporting the theoretical predictions of Tabakis (2010, 2015) and dispel any concern of sample selection due to the availability of trade and macro controls. This second aspect is crucial as we move to the second step where the role of import growth is essential to test the empirical predictions in all of their details. The results of the second step are reported in Table 2, which does not include any minimalist specification since import growth is more than just a control variable and cannot be excluded. Columns (1) and (3) employ year, importer and exporter fixed effects, while columns (2) and (4) use dyad fixed effects. As for the functional form of the count of PTAs, in the last two columns we use their log counterparts.

In terms of negotiations, in all specifications it appears that it is the negotiation of CUs that leads to significant downward pressure on AD measures. The coefficient estimates for FTAs are always negative but they are imprecisely estimated. Considering the implementation of trade

agreements, FTAs have a negative effect but it is only significant with the non-linear version of the regressors. As theory suggests, the interaction between implementation of FTAs and import growth presents a negative sign denoting a further dampening effect on AD measures although the coefficients are not statistically significant. Implementation of CUs has an overall negative effect (although only significant in the first two columns) but the interaction term with import growth is positive and significant indicating that for large enough trade surges the market-power effect of CUs dominates and leads to more AD measures. This is in line with the empirical prediction derived from Tabakis (2010). As for the other regressors, their significance is very much in line with the results of Table 1, except for import growth that loses significance when not interacted.

In conclusion, the estimates of Tables 1 and 2 provide clear support for the theoretical predictions discussed in Section 2. The negotiation and implementation of PTAs has an effect on the extent of AD use of PTA members vis-à-vis third countries. The more interesting part is that the mechanisms at play (i.e., market power and trade diversion) lead to fewer AD measures, except when CU member countries face substantial import growth.

5.1 Robustness Checks

Tables 1 and 2 already include various robustness checks and demonstrate that our results are not sensitive to different modeling choices. They address the issue of sample selection due to available data, they rely on different econometric strategies (i.e., sets of fixed effects), and they consider different functional forms for the count variables related to PTA negotiations and implementations. However, all the results presented so far are based on PTAs that affect at least 10% of the import volume of the importing country (in the year before enforcement or before the start of negotiations when the agreement is not yet in force by the end of 2015). The choice of this threshold is based on the interest to consider PTAs that can be expected to have meaningful trade effects. Still, this threshold is simply assumed and we need to verify whether the results are sensitive to this assumption.

Thus, we re-estimate our specifications using a threshold of 5%. In such case, we would expect the results to become weaker and probably less statistically significant as “smaller” PTAs are now included. Table 3 presents the results of such an exercise, only reporting

estimates based on the use of dyad fixed effects, as they lead to the most demanding of the specifications.¹¹ The first two columns parallel Table 1 with the second column employing the log version of the PTA count variables; the remaining two columns mirror Table 2, again with the linear and non-linear formulation of the key regressors. Overall, the results are very much in line with our previous conclusions but with smaller coefficients (in absolute terms) and/or lower levels of significance for our main regressors of interest (while the coefficients for the other variables do not present any significant change). And if we were to lower the threshold further to 1% (results not reported to save on space but available upon request), the main results would still survive. In conclusion, it does not seem that the threshold plays a crucial role in verifying that the empirical predictions discussed in Section 3 are borne out in the data although the point estimates of the effects are somewhat reduced when considering lower thresholds.

Finally, we re-estimate our results without excluding the country pairs negotiating or enforcing a PTA. At the end of Section 3, we argued that these observations should be excluded since the theoretical models by Tabakis (2010, 2015) only lead to empirical predictions on the pattern of AD between member and non-member countries of a PTA. Still, we can include the observations so far discarded although we are agnostic on how negotiations and implementations of PTAs affect the parties involved in the PTAs. Table 4 proposes the same type of specifications as in Table 3 with these extra observations (almost 2,400) and dummy variables that control for country pairs that are members of the same PTA ($PTA\ dummy_{i,j,t}$) or are negotiating a PTA ($Negotiation\ dummy_{i,j,t}$). The results show that the conclusions we reached earlier are still valid (if anything, the results are possibly stronger in terms of significance), while confirming that PTA members introduce fewer AD measures against each other but are more prone to protectionist measures (against each other) during the years when their PTA is negotiated.¹²

¹¹Specifications not reported are available upon request.

¹²These conclusions are still valid even when interaction terms between our key regressors and the new dummy variables are added to these regressions (results available upon request).

6 Conclusions

This paper has explored the implications of PTAs for their member countries' external AD actions (i.e., the AD measures of members against non-member countries). We have relied on the theoretical work by Tabakis (2010, 2015) to guide our empirical strategy. Three main testable predictions regarding PTAs and AD measures emerge from these papers: (i) the number of AD measures of members against non-members of an FTA agreement should decrease both during its negotiation and after its implementation; (ii) the number of AD measures of members against non-members of a CU agreement should decrease during its negotiation; and (iii) the number of AD measures of members against non-members of a CU agreement should increase following its implementation for “high” import volumes, whereas the reverse is true for “low” volumes of imports. To empirically test these predictions, we have first constructed a dataset containing extensive information regarding the negotiation, signature, ratification, and implementation of a large number of PTAs. Using then AD data over the period 1980–2015 and different econometric strategies, we have provided clear evidence in support of the aforementioned predictions. PTAs have, in general, a dampening effect on their member countries' AD activity against the rest of the world, except when members of an implemented CU agreement face large import surges. These results highlight a building-block effect of PTAs on multilateral trade cooperation (at least as far as AD protection is concerned).

In conclusion, this paper offers yet further evidence that strategic interactions—either across countries or between a given country's policies—play a pivotal role in trade policy formulation (see, e.g., Bown and Crowley, 2007; Tabakis and Zanardi, 2017). In particular, we have demonstrated that a country's decision to engage in regionalism has important ramifications for its AD activity vis-à-vis third countries. What is more significant, our analysis highlights the importance of taking into consideration other policy instruments besides most-favored-nation tariffs in order to get a more complete picture regarding whether PTAs are building blocks or stumbling blocks towards multilateral trade cooperation.

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Figure 1: Custom Unions

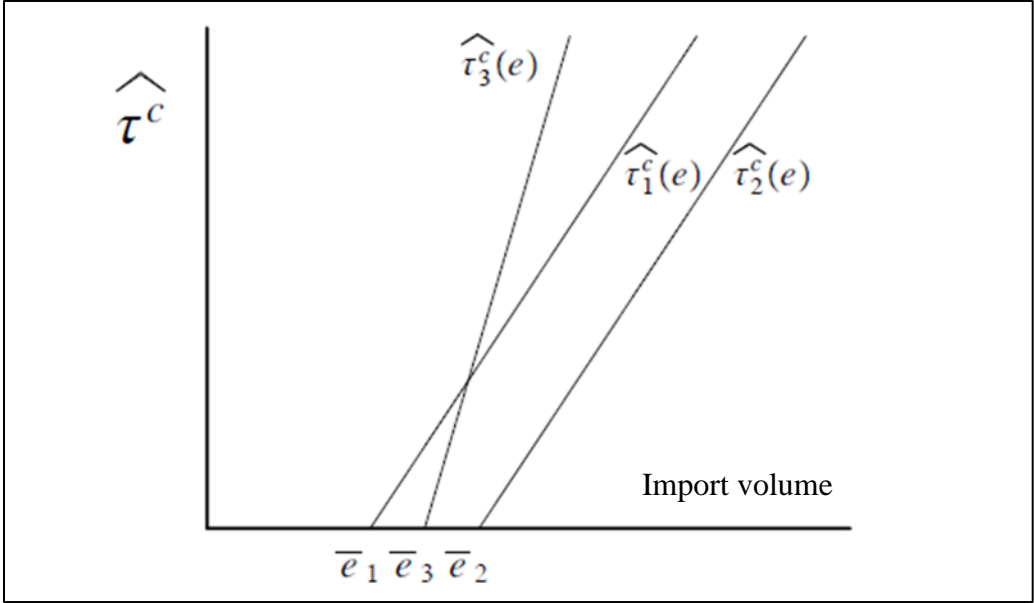


Figure 2: Free-Trade Areas

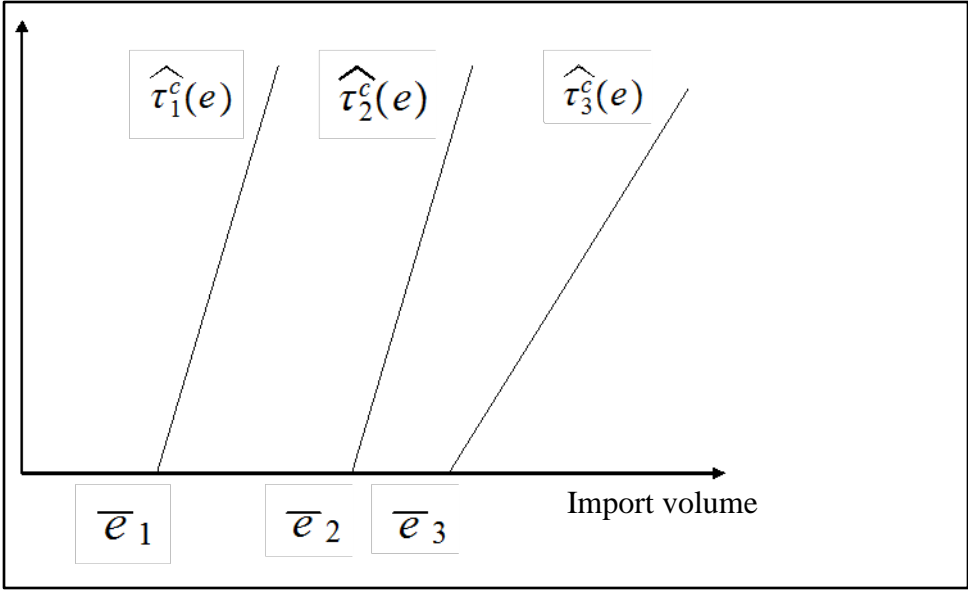


Table 1: Step 1

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| | ln(1+PTAs negotiation) and ln(1+PTAs implemented) | | | | | | | |
| PTAs negotiation _{i,z,t} | -0.078 ^{***} (0.016) | -0.062 ^{***} (0.017) | -0.062 ^{***} (0.018) | -0.060 ^{***} (0.019) | -0.250 ^{***} (0.056) | -0.216 ^{***} (0.059) | -0.193 ^{***} (0.061) | -0.213 ^{***} (0.064) |
| PTAs implemented _{i,z,t} | -0.076 ^{***} (0.024) | -0.048 ^{**} (0.024) | -0.061 ^{**} (0.026) | -0.048 ^{**} (0.024) | -0.414 ^{***} (0.119) | -0.295 ^{***} (0.114) | -0.358 ^{***} (0.122) | -0.313 ^{***} (0.118) |
| Import growth _{i,j,t/t-1} | | 0.173 ^{***} (0.058) | | 0.208 ^{***} (0.065) | | 0.166 ^{***} (0.059) | | 0.200 ^{***} (0.066) |
| ln(Imports) _{i,j,t-1} | | 0.567 ^{***} (0.044) | | 0.714 ^{***} (0.075) | | 0.564 ^{***} (0.044) | | 0.714 ^{***} (0.075) |
| ln(Real exchange rate) _{i,j,t-1} | | 0.357 ^{***} (0.117) | | 0.285 ^{**} (0.121) | | 0.372 ^{***} (0.116) | | 0.299 ^{**} (0.119) |
| Importer GDP growth _{i,t/t-3} | | 0.571 (0.475) | | -0.072 (0.487) | | 0.593 (0.476) | | -0.077 (0.490) |
| Exporter GDP growth _{j,t/t-3} | | -0.019 (0.456) | | -0.088 (0.472) | | -0.007 (0.455) | | -0.078 (0.471) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Importer FE | Yes | Yes | No | No | Yes | Yes | No | No |
| Exporter FE | Yes | Yes | No | No | Yes | Yes | No | No |
| Dyad FE | No | No | Yes | Yes | No | No | Yes | Yes |
| Observations | 36,826 | 23,604 | 14,768 | 11,548 | 36,826 | 23,604 | 14,768 | 11,548 |
| Pseudo R ² | 0.27 | 0.28 | 0.20 | 0.23 | 0.27 | 0.28 | 0.21 | 0.23 |

Notes: The dependent variable is the count of AD measures introduced by country i against country j in year t . PTAs are included in the regressors if they affect at least 10% of the import value of the importing country. The table reports the estimated coefficients of negative binomial regressions with standard errors clustered at country-pair level; ***, **, * denote significance at the 1%, 5%, and 10% level, respectively.

Table 2: Step 2

| | (1) | (2) | (3) | (4) |
|--|----------------------------------|----------------------------------|--|----------------------------------|
| | | | ln(1+negotiation) and ln(1+implemented) | |
| FTAs negotiation $_{i,z,t}$ | -0.031 (0.021) | -0.030 (0.024) | -0.083 (0.067) | -0.099 (0.080) |
| CUs negotiation $_{i,z,t}$ | -0.097 ^{***} (0.025) | -0.089 ^{***} (0.026) | -0.402 ^{***} (0.091) | -0.371 ^{***} (0.095) |
| FTAs implemented $_{i,z,t}$ | -0.050 (0.044) | -0.049 (0.050) | -0.507 ^{**} (0.222) | -0.524 ^{**} (0.236) |
| FTAs implemented $_{i,z,t}$ x Import growth $_{i,j,t/t-1}$ | -0.035 (0.069) | -0.014 (0.079) | -0.090 (0.231) | 0.017 (0.225) |
| CUs implemented $_{i,z,t}$ | -0.053 ^{**} (0.021) | -0.054 ^{***} (0.020) | -0.093 (0.127) | -0.148 (0.122) |
| CUs implemented $_{i,z,t}$ x Import growth $_{i,j,t/t-1}$ | 0.125 ^{***} (0.028) | 0.091 ^{***} (0.029) | 0.345 ^{***} (0.066) | 0.288 ^{***} (0.073) |
| Import growth $_{i,j,t/t-1}$ | 0.072 (0.063) | 0.140 [*] (0.066) | 0.027 (0.068) | 0.088 (0.072) |
| ln(Imports) $_{i,j,t-1}$ | 0.569 ^{***} (0.044) | 0.707 ^{***} (0.076) | 0.558 ^{***} (0.043) | 0.687 ^{***} (0.074) |
| ln(Real exchange rate) $_{i,j,t-1}$ | 0.357 ^{***} (0.118) | 0.285 ^{**} (0.123) | 0.393 ^{***} (0.121) | 0.316 ^{**} (0.127) |
| Importer GDP growth $_{i,t/t-3}$ | 0.530 (0.475) | -0.084 (0.489) | 0.700 (0.475) | 0.098 (0.493) |
| Exporter GDP growth $_{j,t/t-3}$ | -0.106 (0.452) | -0.166 (0.464) | -0.195 (0.460) | -0.239 (0.474) |
| Year FE | Yes | Yes | Yes | Yes |
| Importer FE | Yes | No | Yes | No |
| Exporter FE | Yes | No | Yes | No |
| Dyad FE | No | Yes | No | Yes |
| Observations | 23,604 | 11,548 | 23,604 | 11,548 |
| Pseudo R ² | 0.28 | 0.23 | 0.28 | 0.23 |

Notes: The dependent variable is the count of AD measures introduced by country i against country j in year t . PTAs are included in the regressors if they affect at least 10% of the import value of the importing country. The table reports the estimated coefficients of negative binomial regressions with standard errors clustered at country-pair level; ***, **, * denote significance at the 1%, 5%, and 10% level, respectively.

Table 3: Robustness of included PTAs

| | (1) | (2) | (3) | (4) |
|--|----------|----------|-----------|-----------|
| | | ln(1+X) | | ln(1+X) |
| PTAs negotiation _{i,z,t} | -0.028* | -0.084 | | |
| | (0.014) | (0.055) | | |
| PTAs implemented _{i,z,t} | -0.045** | -0.273** | | |
| | (0.021) | (0.110) | | |
| FTAs negotiation _{i,z,t} | | | 0.006 | 0.079 |
| | | | (0.016) | (0.063) |
| CUs negotiation _{i,z,t} | | | -0.081*** | -0.267*** |
| | | | (0.024) | (0.083) |
| FTAs implemented _{i,z,t} | | | -0.035 | -0.347** |
| | | | (0.031) | (0.139) |
| FTAs implemented _{i,z,t} x Import growth _{i,j,t/t-1} | | | 0.003 | 0.085 |
| | | | (0.044) | (0.169) |
| CUs implemented _{i,z,t} | | | -0.055*** | -0.105 |
| | | | (0.021) | (0.174) |
| CUs implemented _{i,z,t} x Import growth _{i,j,t/t-1} | | | 0.081*** | 0.299*** |
| | | | (0.030) | (0.080) |
| Import growth _{i,j,t/t-1} | 0.214*** | 0.207*** | 0.136** | 0.061 |
| | (0.065) | (0.065) | (0.069) | (0.081) |
| ln(Imports) _{i,j,t-1} | 0.731*** | 0.738*** | 0.717*** | 0.715*** |
| | (0.077) | (0.077) | (0.074) | (0.074) |
| ln(Real exchange rate) _{i,j,t-1} | 0.289** | 0.305** | 0.273** | 0.277** |
| | (0.121) | (0.120) | (0.121) | (0.123) |
| Importer GDP growth _{i,t/t-3} | 0.058 | 0.150 | 0.007 | 0.269 |
| | (0.502) | (0.512) | (0.506) | (0.518) |
| Exporter GDP growth _{j,t/t-3} | -0.072 | -0.075 | -0.118 | -0.164 |
| | (0.475) | (0.475) | (0.460) | (0.468) |
| Year FE | Yes | Yes | Yes | Yes |
| Dyad FE | Yes | Yes | Yes | Yes |
| Observations | 11,548 | 11,548 | 11,548 | 11,548 |
| Pseudo R ² | 0.23 | 0.23 | 0.23 | 0.23 |

Notes: The dependent variable is the count of AD measures introduced by country i against country j in year t . PTAs are included in the regressors if they affect at least 5% of the import value of the importing country. The table reports the estimated coefficients of negative binomial regressions with standard errors clustered at country-pair level; ***, **, * denote significance at the 1%, 5%, and 10% level, respectively.

Table 4: Robustness of included country pairs

| | (1) | (2) | (3) | (4) |
|--|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| | | ln(1+X) | | ln(1+X) |
| PTAs negotiation _{i,z,t} | -0.051 ^{***} (0.016) | -0.166 ^{***} (0.055) | | |
| PTAs implemented _{i,z,t} | -0.045 ^{**} (0.019) | -0.258 ^{***} (0.094) | | |
| FTAs negotiation _{i,z,t} | | | -0.027 (0.019) | -0.065 (0.065) |
| CUs negotiation _{i,z,t} | | | -0.080 ^{***} (0.023) | -0.317 ^{***} (0.087) |
| FTAs implemented _{i,z,t} | | | -0.030 (0.030) | -0.366 ^{**} (0.154) |
| FTAs implemented _{i,z,t} x Import growth _{i,j,t/t-1} | | | 0.022 (0.061) | 0.067 (0.203) |
| CUs implemented _{i,z,t} | | | -0.067 ^{***} (0.017) | -0.178 [*] (0.102) |
| CUs implemented _{i,z,t} x Import growth _{i,j,t/t-1} | | | 0.098 ^{***} (0.030) | 0.295 ^{***} (0.078) |
| Import growth _{i,j,t/t-1} | 0.223 ^{***} (0.061) | 0.216 ^{***} (0.062) | 0.145 ^{**} (0.065) | 0.105 (0.070) |
| ln(Imports) _{i,j,t-1} | 0.700 ^{***} (0.070) | 0.701 ^{***} (0.070) | 0.695 ^{***} (0.070) | 0.688 ^{***} (0.069) |
| ln(Real exchange rate) _{i,j,t-1} | 0.310 ^{***} (0.114) | 0.319 ^{***} (0.112) | 0.300 ^{***} (0.115) | 0.331 ^{***} (0.117) |
| Importer GDP growth _{i,t/t-3} | 0.087 (0.447) | 0.097 (0.446) | 0.021 (0.448) | 0.205 (0.450) |
| Exporter GDP growth _{j,t/t-3} | -0.022 (0.433) | -0.014 (0.431) | -0.064 (0.427) | -0.155 (0.430) |
| PTA dummy _{i,j,t} | -0.442 ^{***} (0.169) | -0.429 ^{**} (0.171) | -0.438 ^{***} (0.167) | -0.411 ^{**} (0.172) |
| Negotiation dummy _{i,j,t} | 0.346 ^{**} (0.155) | 0.336 ^{**} (0.155) | 0.322 ^{**} (0.155) | 0.335 ^{**} (0.158) |
| Year FE | Yes | Yes | Yes | Yes |
| Dyad FE | Yes | Yes | Yes | Yes |
| Observations | 13,921 | 13,921 | 13,921 | 13,921 |
| Pseudo R ² | 0.23 | 0.23 | 0.23 | 0.23 |

Notes: The dependent variable is the count of AD measures introduced by country i against country j in year t . PTAs are included in the regressors if they affect at least 10% of the import value of the importing country. The table reports the estimated coefficients of negative binomial regressions with standard errors clustered at country-pair level; ***, **, * denote significance at the 1%, 5%, and 10% level, respectively.

Table A1: Sample period of included importing countries

| Country | First year | Last year |
|----------------|-------------------|------------------|
| Argentina | 1989 | 2015 |
| Australia | 1989 | 2015 |
| Brazil | 1988 | 2015 |
| Canada | 1980 | 2015 |
| China | 1997 | 2015 |
| European Union | 1980 | 2015 |
| India | 1992 | 2015 |
| Mexico | 1987 | 2015 |
| New Zealand | 1982 | 2015 |
| Peru | 1992 | 2015 |
| South Africa | 1992 | 2015 |
| South Korea | 1986 | 2015 |
| Taiwan | 1983 | 2015 |
| Turkey | 1989 | 2015 |
| USA | 1980 | 2015 |

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