

# WTO: Ako môže obchodná integrácia ovplyvňovať podnikanie

## WTO: How the trade integration may effect on business

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### Abstrakt

Literárne meranie efektivity WTO členov na malé a stredné podniky prinieslo pozoruhodné výsledky. Rose (2004) vykazuje širokú škálu empirických špecifikácií, ktoré neprodukujú WTO účinky. Tomz, a kol.(2007) použili dáta získané od Rose (2005) a zároveň zahrnuli aj de facto členstvo vo WTO aby získali pozitívne WTO účinky. Rose (2005) taktiež vytvoril pozitívne WTO obchodné účinky po započítaní rôznych obchodných efektov vytvorených z jednotlivých preferenčných obchodných dohôd (PTAs). WTO efekty na obchodné toky nie sú štatisticky relevantné, zatiaľ čo PTAs produkujú silné ale nerovnomerné účinky na obchodovanie. Rozšírením gravitačného modelu pre adresovanie konkrétnych ciest v ktorých WTO môže mať vplyv na obchodné toky, zistujeme, že členstvo vo WTO zvyšuje obchodovanie pred PTA formáciami a zvyšujú obchodovanie medzi najbližšími rozvojovými krajinami (na úkor vzdialeného obchodu). Rozšírený gravitačný model, ktorý vysvetľuje teóriu podmienok obchodovania pre WTO nám ukazuje, že krajiny s väčším stimulom pre vyjednávanie o nižších colných sadzbách pred ich vstupom do WTO majú následne pozitívne a významné skúsenosti v oblasti obchodných účinkov WTO.

### Kľúčové slová

Svetová organizácia obchodu (WTO), obchodná integrácia, malé a stredné podniky

### Abstract

The literature measuring the effects of WTO membership on SMEs has produced remarkably diverse results. Rose (2004) reports a wide range of empirical specifications that produce no WTO effects. Tomz, et al. (2007) use Rose's data but include de facto WTO membership, to find positive WTO effects. Rose (2005) also produced positive WTO trade effects after accounting for the diverse trade effects produced by individual preferential trade agreements (PTAs). WTO effects on trade flows are not statistically significant, while PTAs produce strong but uneven trade effects. Extending the gravity model to address specific avenues in which WTO may have affected trade flows, we find WTO membership boosts trade prior to PTA formation and increases trade among proximate developing countries (at the expense of distant trade). An augmented gravity model that accounts for WTO terms-of-trade theory shows that countries with greater incentives to bargain for tariff reductions before WTO accession experience positive and significant subsequent WTO trade effects.

### Key words

World Trade Organization, trade integration, small and medium enterprises

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### Introduction

Reductions in trade barriers have been the hallmark of the World Trade Organization (WTO) and its predecessor, the General Agreement on Tariff and Trade (GATT). While trade theory holds that tariff reductions should increase trade flows, the empirical literature on the effects of WTO membership has produces surprisingly ambiguous results. This paper unifies

various approaches to accessing WTO effects on SMEs in order to produce four important insights. First, we show that the literature encompassing Rose, SW, and TGR generates one consistent result. These specifications all produce no evidence of positive WTO trade effects once we control comprehensively for three sources of omitted variable bias: multilateral resistance, unobserved bilateral heterogeneity, and individual PTA trade effects.

Second, our robustness analysis shows that once the Rose, SW, and TGR approaches are unified, and their results correctly interpreted, multilateral resistance controls suffice to negate WTO trade effects.

Third, when extending the gravity model to a version more suited to disentangle overlapping WTO and PTA membership, we find that WTO membership boosts trade effects just before PTA accession and increases trade among proximate developing countries, albeit at the expense of distant trade.

Fourth, we extend the gravity model to include terms-of-trade theory (Bagwell and Staiger, 1999, 2002), which is specifically designed to analyze the effect of WTO membership. We find that countries with greater incentives to bargain for tariff reductions during WTO accession negotiations exhibit positive WTO effects on SMEs.

## **Methodology**

Our data is based on an updated version of SW's unbalanced panel. Their bilateral trade values are derived from the IMF's Direction of Trade Statistics, deflated by the U.S. consumer price index. The dataset features not only a WTO dummy, but also a dummy that represents industrialized countries' unilateral trade concessions to developing trading partners under the GATT/WTO's Generalized System of Preferences (GSP) from 1979 onwards. We adjust the SW dataset to attribute a value of zero to GSP country-pairs that represent an industrialized country exporting to a developing country. The reasoning is that GSP is granted as a unilateral preference (for industrialized countries' imports from developing countries only).

To illustrate that WTO trade effects vanish even when accounting for de facto membership, we use TGR's WTO membership definition throughout and refer the interested reader to the working paper version of this study which features results in the original SW and Rose coding (Eicher and Henn, 2008).

The conclusions are unaffected by the coding convention. A single aggregate PTA indicator dummy has been prominent in a number of empirical trade flow studies (see e.g., Rose 2000, 2004, 2005, Glick and Rose 2002, SW, TGR), to capture the average effect of PTAs on trade flows. We extend the SW dataset and introduce a more extensive set of PTAs used by Rose (2005) and Eicher et al. (2010) to properly account for trade effects of a large set of individual PTAs..

## **Discussion**

There is a possibility that the WTO coefficient's lack of significance is due to large variations in WTO accession experiences over time, where some effects may have been offsetting. Tang and Wei (2009) attempt to finesse this issue by focusing only on specific time periods characterized by a flurry of WTO accessions, for example the 1990s. Table 5 addresses the issue by reporting separate WTO coefficients for each decade. Results are provided for each estimation strategy: OLS, multilateral resistance, country-pair fixed effects, and our preferred three-way fixed effects approach. Our baseline results are confirmed for each decade. For each time period, the threeway fixed effect approach eliminates any significant trade effect of WTO membership. Instead, the WTO effect is again negated by the multilateral resistance controls.

Another potential problem that is associated with the particular timing of WTO accessions relates to industrialized countries. The WTO trade effects of industrialized countries are omitted from the analysis when country-pair fixed effects are introduced, because these countries joined GATT/WTO before the start of our dataset in 1950.

Trade between the United States and the United Kingdom might have been higher on average over the period 1950-2000, because both countries were GATT/WTO members from 1948 onward, but this effect is absorbed by the country-fixed effect between them.

The theory holds that larger countries with market power have the largest incentives to negotiate tariff reductions upon WTO accession and thus may also reap the largest trade gains. Regression provides evidence in favor of the theory's prediction. It shows substantial and significant increases in trade for the subset of industrialized country pairs that joined the WTO prior to 1950. The OLS coefficient for these pre-1950 WTO members is significantly larger and the standard error remarkably lower than for the full sample. Once multilateral resistance is introduced, the full sample shows no WTO trade effects, but these pre-1950 WTO members show statistically and economically significant trade creation. This is a notable feat given that multilateral resistance controls eliminated WTO trade effects in virtually all other specifications. Thus, there may be reason to believe that the multilateral trading system indeed boosted trade among these industrialized early joiners. Note, however, that since regression cannot include both country-pair fixed effects and a WTO dummy, a caveat necessarily remains. We cannot identify whether the higher trade among these 15 industrialized nations is indeed due to WTO membership or due to an unobserved trade-enhancing characteristic among them.

Taken together with the strong PTA trade creation from before, these results on industrialized early joiners raise the suspicion that WTO membership may raise trade in more subtle ways than identified by our basic unified framework. In search of more subtle WTO trade effects, this section presents two extensions to our framework. The first extension sets out a gravity model specifically suited to disentangling overlapping PTA and WTO membership. It is then used to investigate whether WTO may have fostered trade regionally, along lines of future PTAs or more generally. We find evidence that WTO membership may underpin regional trade integration among developing countries and in the run-up to PTA formation. The second extension incorporates proxies for the terms-of-trade theory, for which we find support in the data. Our results imply that those countries that had substantial incentives to negotiate tariff reductions during their WTO accession negotiations also exhibit significantly larger and positive WTO trade effects than other members.

Above we assumed that the choice of being in a PTA and/or the WTO is independent. We explore how PTA and WTO membership interact to influence bilateral trade flows. Given that PTA and WTO membership overlaps substantially, it may perhaps be the case that we were not able to find WTO trade effects because of the basic gravity model's inability to disentangle the different impacts. To address this concern, this section's extended gravity model explicitly allows bilateral trade flows to be determined by interactions of PTA and WTO membership.

Suppose country-pair,  $(m, x)$ , consists of WTO members that decide to join a common PTA. We would expect the impact of PTA membership on country  $m$ 's imports from country  $x$  to be smaller than for two non-WTO members that join a common PTA. This statement is true, *ceteris paribus*, if the additional margin of preference implied by the PTA is lower for WTO members (whose MFN tariffs have presumably been negotiated to low levels) than for non-WTO members. At the same time, we would expect that the WTO impact on country  $m$ 's imports from country  $x$  is positive only if the countries are not partners in a free-trade agreement. This statement is true except in the unusual case where the PTA involves a smaller margin of preference than WTO membership. We test these two hypotheses by simplifying

the WTO dummy in into one aggregate term and by augmenting the empirical framework with a WTO/PTA interaction term.

The steady reduction of transport costs over the time period covered by our dataset suggests less regionalization of trade. In contrast, market size effects can lower trade costs sufficiently to boost regional but not distant trade (see Baldwin, 2008). WTO accession may thus exert asymmetric effects on proximate/distant trade. Many of these effects are already addressed by multilateral resistance and country-pair fixed effects. However, country-pair fixed effects account only for average bilateral effects over the entire sample period and they might not capture time-varying effects, especially after trading partners enter the WTO. In addition, it may also be the case that WTO membership increased regional trade particularly for countries that eventually form PTAs.

In this case, some WTO trade effects may be falsely picked up by PTA coefficients. WTO members' trade with future PTA partners did not increase soon after WTO accession. Alternatively, we also investigate whether WTO membership increases trade among PTA partners-to-be over time.

Finally, WTO trade creation may also have fostered regional trade integration irrespective of current or future PTA membership. To explore this possibility, regression examines the effects of distance on the magnitude of WTO trade creation. The basic results are largely similar to those in regression, where the impact of PTAs on trade flows was strong for WTO member or non-member countries. Once we allow WTO trade effects to vary with distance.

Strict economic interpretations of Rose's, SW's, or our findings can be difficult at times because the basic gravity model does not provide a specific theoretical framework to analyze WTO trade effects. Bagwell and Staiger (2010a) suggest that the absence of theoretical guidance which specifically addresses WTO effects on trade calls into question whether the Rose/SW gravity approach can claim to provide a comprehensive assessment of WTO trade effects. In this section we augment the gravity model to proxy for effects suggested by the terms-of-trade theory, which has been specifically designed to analyze the effects of WTO membership.

Bagwell and Staiger (1999) put forth a terms-of-trade-theory of GATT which finds WTO membership particularly useful for governments that seek to escape a terms-of-trade-driven prisoners' dilemma. The notion is that large countries with market power and the ability to influence world prices will do so through trade barriers that move the terms of trade in their favor. The resulting retaliation from other large countries then generates the terms-of-trade prisoner's dilemma. Since larger countries have greater incentives to attempt to change the terms of trade in their favor, terms-of-trade theory suggests that the magnitude of negotiated tariff reductions prior to WTO accession is larger for such countries. Larger tariff reductions then imply greater post-accession trade gains.

The terms of trade approach has been taken to the data by Broda et al. (2008), who focus on market power, and by Bagwell and Staiger (2010b) import volumes. Bagwell and Staiger show that the terms-of-trade theory implies that negotiated tariff reductions at WTO accession increase the larger the country's ability to alter foreign exporter prices, the larger the country's prenegotiation import volume, and the smaller the rate at which the costs of protection-induced domestic distortions rise as tariffs rise. Using data on WTO accession negotiations in a panel of 16 countries from 1995-2005, Bagwell and Staiger (2010b) show that terms-of-trade theory is consistent with observed patterns of negotiated tariff concessions. Specifically, the authors derive an econometric model that suggests the international cost-shifting incentives increase with a country's import volume. Accordingly, the larger a country's Nash import volume, the greater should be its incentive to negotiate tariff cut at WTO accession. The key insight from Bagwell and Staiger (2010b) is that country

characteristics affect accession negotiations, tariff concessions, and hence the subsequent trade gains that can be generated by WTO membership. Their data clearly shows that for recent WTO accession countries, greater import volumes were associated with larger tariff cuts, which should then generate larger trade gains. Following Staiger and Bagwell (2010), we focus on import volumes as a proxy for the gains a country may reap from liberalization. Specifically, we attempt to discern whether countries with higher import volumes in their WTO accession year possessed greater terms-of-trade incentives to negotiate tariff reductions, which then generated larger subsequent trade gains.

## **Estimation results**

Our result complements Staiger and Bagwell (2010), who find in a sample of 16 countries (from 1995-2000) that those countries whose import quantities exceeded the 80<sup>th</sup> percentile agreed to greater than average tariff concessions in their WTO accession negotiations, and that the tariff concessions increased dramatically for countries whose import quantities exceeded the 90th percentile. We observe a similar effect in Table 8 in terms of magnitudes of WTO trade gains in our sample of 177 countries over 50 years. However, our effect relates to post-WTO accession import gains rather than tariff concessions at WTO accession. Presumably these import gains were generated by correspondingly larger tariff concessions at accession.

## **Conclusions**

This paper reexamines the effects of WTO membership on bilateral trade flows. First we show that a number of previous approaches can be combined into one unified framework. This framework controls comprehensively for omitted variable bias in three dimensions: individual PTA effects, multilateral resistance, and unobserved bilateral heterogeneity. Our results show that all previous approaches (Rose, 2004, 2005; Subramanian and Wei, 2007; and Tomz, Goldstein, and Rivers, 2007) produce the result that WTO membership does not generate statistically significant trade effects. The analysis highlights that the diverging and conflicting results regarding WTO trade effects in the literature were generated by omitted variable bias.

In contrast, we find that PTAs create trade strongly, but unevenly across individual agreements. The magnitude of our individual PTA estimates resolves a number of empirical puzzles. Most notably, the non-tariff reducing APEC is shown to exert comparatively little trade impact, and the strongly tariff reducing EU is shown to be trade creating. Trade theory motivates the inclusion of comprehensive multilateral resistance controls to pick up variations in relative trade costs. These controls are shown to be insufficient to generate unbiased estimates of trade agreements' impacts on trade flows. Of crucial importance are also country-pair fixed effects that control for unobserved bilateral characteristics.

In two extensions of the gravity model that account for specific ways in which theory suggests WTO trade creation, we find positive and significant trade effects. Our first extension disentangles overlapping WTO and PTA membership effects. We find that WTO membership increases trade effects just before PTA accession. In addition, WTO membership fosters regional trade integration among developing country members at the expense of more distant trade. Our second extension augments the gravity model with proxies for the WTO terms-of-trade theory. Here we find that countries with greater incentives to bargain for tariff reductions during WTO accession negotiations exhibit positive and significant WTO trade effects

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