

**Institutions and Outcomes: The GATT/WTO and Postwar Trade**

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**Preliminary. Please do not cite or circulate.**

## **Institutions and Outcomes: The GATT/WTO and Postwar Trade**

A large literature about international institutions regards the GATT/WTO as the paradigmatic case of a successful international organization.<sup>1</sup> Yet, it was only four years ago that Andrew Rose published the first systematic analysis of the impact of the GATT on trade between its members (2004). He found that it exerted at most a small effect. Although his paper precipitated a cottage industry of studies about the postwar trade regime, a consensus about its impact remains elusive.

This is so partly because these papers approach the same issue in very different ways. The benchmark analysis in the Rose paper, for example, assumes that the effect of the GATT is uniform across its member states. Judith Goldstein, Douglas A. Rivers, and Michael Tomz also examine the impact of the GATT on its members as a whole (2007a, 2007b), but they focus on three subsets of states distinguished on the basis of the ways their members acceded to the postwar trade regime. Arvind Subramanian and Shang-Jin Wei (2007) disaggregate GATT members into industrialized and less-developed countries, while Joanne Gowa and Soo Yeon Kim (2005) focus exclusively on trade between industrialized countries.

As such, none of these papers takes seriously the empirical implications of what is now a very large literature about the *raison d'être* of institutions. The most prominent theory about their value added predicts that a small set of very large member states will dominate tariff bargaining under GATT auspices. It also predicts that trade between states that have relatively similar factor endowments will expand, a product of the externalities that tariff cuts between large states create. Finally, it predicts a marginal role for other states, because they lack the market power that is the coin of the realm in tariff negotiations.

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<sup>1</sup>Hereafter, I refer to the GATT/WTO as the GATT.

Another approach in the literature on trade institutions assumes that markets are imperfectly competitive. It argues that an institution's value added inheres in its ability to resolve a time-inconsistency problem. It is based on the same logic that some observers argue explains the creation of merchant guilds (Greif, Milgrom and Weingast 1994; Greif 2006). A ruler in the medieval era could not induce foreign traders to enter his market because his monopsony power meant that he could not make his promise to pay for their products credible. If the ruler helped organize merchants into a guild, however, he would endow them with a credible threat of retaliation, eliminating the time-inconsistency problem.

A contemporary firm can face a problem analogous to that of a medieval trader. In order to export to a particular market, a firm must often sink costs into assets dedicated to it. In doing so, it endows its trading partner with an ex post incentive to renege on the contract terms that had been negotiated. Thus, a firm will make the necessary investment only if its intended trading partner can credibly commit to keep its market open. Because a punishment mechanism is typically part and parcel of a trade organization, its members can make their promises credible. This will facilitate trade flows, however, only if trading partners seek to maximize their joint welfare. This suggests that the GATT will reinforce the trade effects of states that are member of a common joint welfare maximizing political institutions.

In this paper, I test the predictions of both theories. The results of the analyses show that very different processes do govern trade expansion between different subsets of GATT member states. Market power plays the preeminent role in the case of industrial states, while political institutions make the decisive difference in other cases. Thus, while the GATT does exert a strong impact on trade flows between its largest members, a relatively small fraction of LDC member states also gain if political institutions link them to other member states.

I begin by describing the results that recent studies report. Then, I briefly explain the empirical implications of theories about the postwar trade regime. Finally, I turn to the data.

## Recent Literature

As is the industry standard, Rose uses a gravity model of trade to estimate the effects of the GATT on bilateral trade flows between 1950 and 1999. He codes states as GATT members if they either joined the organization at its inception or did so thereafter in accord with the standard accession protocol in effect at the time they joined.<sup>2</sup> In his benchmark analysis, he estimates the effect of the GATT on trade between its members as a whole. He finds that it exerts “only small effects” on trade between country pairs that include either one or two member states (2007, 2019).<sup>3</sup>

Using Rose’s data, Gowa and Kim (2005) initially analyze the impact of the GATT on two sets of states: industrial-country pairs and all other member dyads. They find that the organization exerts a significant effect only on industrial-country trade. They argue that the principal-supplier rule, which they attribute to the U.S. interest in stabilizing Western Europe and to U.S. domestic politics, governed tariff bargaining and that it privileged trade between the GATT’s largest members: the United States, the U.K., Germany, France, and Canada. They report that the postwar regime exerted a positive and statistically significant effect only on trade between the members of this “privileged group” (2005, 473).

Subramanian and Wei also distinguish between developed states and LDCs, relying on the conventional wisdom that only “developed member countries engaged actively in reciprocal liberalization under GATT” (2007, 152). They find that the GATT increased industrial-country imports but did not have any impact on the imports of LDCs (2007, 161). They also report that industrial countries trade significantly more with each other than they

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<sup>2</sup> In the early years of the GATT, both acceding states and existing members granted tariff concessions; thereafter, only the acceding state did so.

<sup>3</sup> In his robustness tests, he disaggregates members in several ways, including, for example, industrial-country status. None led him to change his conclusion.

do with LDCs (2007, 164), which they attribute to the emphasis countries placed on securing reciprocal tariff cuts.

Goldstein, Rivers, and Tomz (2007a, 2007b) make major changes to the Rose data. For example, they record a much larger number of colonial linkages and preferential trading agreements (PTAs); add a measure of unilateral PTAs, and include data between 1946 and 2004. Most importantly, they change the coding of GATT members, arguing that Rose assigned to the base group many states that actually had standing in the organization.<sup>4</sup> Based on extensive archival work, they point out that GATT privileges also extended to a group of states that they label “nonmember participants” (NMPs). This group includes colonies signed on by their metropolises; “de facto” members—former colonies that remained in the GATT without any commitment to lower their trade barriers; and ten “provisional” members, states that had begun but not completed the accession process (2007b, 40-43).<sup>5</sup>

Expanding the membership roster accordingly, they report that members of the GATT trade about 43 percent more with each other than do base-group members (2007b, 55). They also estimate the impact of the GATT on three different types of member dyads: 1) states that were either founding members or had completed formal accession processes; 2) parties that gained standing as a result of other membership protocols; and 3) “mixed” dyads—i.e., country pairs that include one “formal” member and one NMP. They find that trade between NMPs is about 56 percent higher than is that of base-group members (2007a, 55). The corresponding statistics for formal and mixed dyads are 41 and 46 percent, respectively

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<sup>4</sup>Their data (GRT\_IO\_2007.zip) are at [www.stanford.edu/~tomz](http://www.stanford.edu/~tomz).

<sup>5</sup> Except for Tunisia (a provisional member for 30 years), states in this third category shifted relatively quickly to formal membership status. On average, they completed the requisite negotiations within five years. They enjoyed the same rights as GATT members as long as the latter had acceded to the declaration on provisional accession (GRT 2007a, 2008).

(2007a, 55).<sup>6</sup> They themselves admit that they find these differences puzzling, because all members had essentially the same rights and privileges (2007b, 55).<sup>7</sup>

The large changes that Goldstein, Rivers, and Tomz made to Rose's data alone suggest that it would make sense to rerun the analyses of other recent studies to check whether their results are robust to the changes. However, it makes more sense to subject the most recent data to empirical testing that conforms to the predictions that the large literature on international institutions makes. I turn to these predictions now.

### **Theory**

The canonical representation of the free-trade problem in the existing literature is based on the Prisoner's Dilemma (PD) game. As is well known, states engaged in a PD game are better off if they cooperate with than defect against each other. However, each is even better off if alone defects. Repeated interactions allow states to realize a Pareto-improving equilibrium outcome only if each can monitor the behavior of others. Because incentives to cheat and to conceal cheating exist, institutions that can monitor state interactions can facilitate cooperation.

It is precisely this logic that observers argue explains the origins of the GATT (e.g., Bagwell and Staiger 2002). In standard trade theory, tariff bargaining conforms to a PD game when states are "large"—that is, when a state has sufficient market power to influence its terms of trade. The dominant strategy of a single large state is to impose an "optimal" tariff, an import tax that maximizes the gain that accrues to a country as a result of the improved terms of trade it induces net of the costs it generates because of its adverse effect

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<sup>6</sup> The difference between formal and NMP members is not significant ( $p = 0.09$ ) in their IO article (Goldstein, Rivers, and Tomz 2007b, 54, n39) but they are significant in their earlier AER article (2007a).

<sup>7</sup> They also compare industrial and other countries. They report that trade increases by 70 percent between industrial countries; by 33 percent for LDC dyads, and by 45 percent for country pairs in which one state is industrialized and the other is an LDC (2007b, 56).

on trade volume. When more than one country acts on this logic, however, relative export prices do not change but trade drops, making all of them worse off than if none had imposed a tariff. Thus, large countries are better off if they agree to trade freely with each other than if they both use trade barriers.<sup>8</sup>

Nonetheless, each state engaged in a PD game is even better off if can free ride on the tariff reductions of other countries. Thus, large states will agree to lower their trade barriers only if they can detect free riding. Because monitoring can be costly, however, each state also has an incentive to free ride on the efforts other states make to detect cheating. This implies that the *raison d'être* of a trade institution is to collect information that will allow the parties to internalize the welfare gains that their cooperation produces (Keohane 1994, 97).

Thus, the theory predicts that large states will have strong incentives to join a trade institution and that they will dominate the bargaining that occurs under its auspices. The tariff cuts they make will privilege each other's products, as their interest lies in lowering trade barriers only on the goods that they produce and exchange. As a result, any spillovers that their agreements nonetheless generate are likely to benefit only those states with similar factor endowments—that is, other industrial countries.

By definition, small states cannot affect their terms of trade. The effects of any tariff a small state imposes “move through the local prices within the country and thus reside entirely within national boundaries” (Bagwell 2007, 4). As such, a small country's dominant strategy is free trade, as any other trade policy exacts a net welfare costs: consumers lose more than producers and the government gain. As a result, large states have no reason to

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<sup>8</sup>This holds irrespective of the reasons states actually impose import taxes. That some do so in the service of domestic import-competing industries is irrelevant, as what matters “is their ability to shift the costs of protection onto one another through terms-of-trade movements.” Thus, in “both the traditional and political-economy approaches to trade agreements, the purpose of a trade agreement is to offer a means of escape from a terms-of-trade driven Prisoners' Dilemma” (Bagwell and Staiger 2002, 3).

engage countries that lack market power in tariff bargaining: small states do not have any bargaining chips in the PD game. This is part of the reason that many goods in which developing countries have a comparative advantage—e.g., agriculture, textiles and clothing—have remained off the GATT negotiating table.

However, small states can play a role in tariff bargaining when imperfect markets exist. In order to export, firms must often invest in establishing distribution networks abroad, acquiring information about foreign-trade regulations, or training employees in a foreign language. Firms that pay these fixed costs will see their output expand. As factor prices rise accordingly, less efficient firms will leave the industry, raising its productivity. Nonetheless, potentially profitable firms will sink costs into exporting only if their intended trading partner can credibly commit not to raise its tariff *ex post*. It has a temptation to do so because sunk-cost investments make it profitable to renegotiate the contract terms agreed to *ex ante* (McLaren 1997).

GATT membership can resolve this time-inconsistency problem. Because it allows states to credibly threaten retaliation even against larger trading partners, it also enables the latter to make credible promises to keep their markets open (see, e.g., Maggi 1999). This does not explain why some countries would abstain from rent extraction, however. Tying hands will appeal to an importing country only if it has an interest in the welfare of its trading partner. Because a tariff imposes a net efficiency loss—i.e., the state that imposes it gains less than the target country loses, a state that seeks to maximize joint welfare will be better off if it adheres to the contract terms it had negotiated *ex ante*. This is especially so when markets are imperfect because the exit of relatively inefficient firms creates gains from trade that do not exist in standard theory (Feenstra 2006, 632).

An interest in joint welfare maximization can arise, in turn, if both states are members of a political organization and the strength of the organization as a whole depends on the

strength of each of its members. The aggregate power of a political-military alliance, for example, is directly related to the strength of each of its members (Gowa and Mansfield 1993; Gowa 1994). The same is true of colonial empires: their ability to compete with each other also is a function of their aggregate economic and military power. This suggests that on average allies and colonies of existing empires will trade more with each other than will other states without similar ties. It also suggests that the GATT will reinforce this effect, as it insures states against the possibility that waning political links between them will lead states to renege on their tariff commitments. Thus, states that are GATT members and members of another political institution should trade more freely with each other than do states that are either only GATT members or only members of other institutions.

Note that this framework does not apply to all GATT member trade. Whether or not they belong to the GATT, it is in the self interest of large states to retaliate against each other in the event any of them reneges. Thus, although the allies among them should trade more with each other than do members of the base group, the effect of the GATT on core-country trade should not vary as a function of whether they are allies. More generally, the effect of the GATT is likely to be muted among industrial countries, since the variation among them is limited to allies and neutrals and almost 70 percent of them are allied with each other by 2003.

I turn now to the data.

### **Empirical Analyses**

All of the analyses in this paper are based on a gravity model of bilateral trade, the industry standard. Thus, I estimate bilateral trade flows here as a function of the distance between the countries in a country pair, as well as the annual logged product of their output. I also include dyadic-fixed effects as recent studies of the gravity model suggest and as a way to control for unobserved heterogeneity among the country pairs in the sample. Thus, the

coefficients measure the change in trade between states in a country pair when both become members of, e.g., the GATT or a PTA. Each specification also includes year fixed effects to account for factors that vary across time but are constant across dyads.

The dependent variable records the logged value of the annual imports of each state in a country pair from the other between 1946 and 2004. The covariate of principal interest is a dummy variable that assumes a value of one when both states in a country pair are GATT members. I also create dummy variables that assume a value of one when dyads include only one GATT member state or when both states are members of currency unions, reciprocal or nonreciprocal PTAs, or GSPs (agreements that grant unilateral market access to LDCs).<sup>9</sup> I rely on the GRT data to measure these variables.

The GRT authors also include a colonial-orbit variable, which they report assumes a value of one when a country pairs includes an imperial power and its colony; two colonies of the same empire; or two former colonies of the same metropole.<sup>10</sup> It actually does so, however, only for the roughly 1600 observations that include two members of colonial empires still in existence and in about 30 other cases.<sup>11</sup> Here, therefore, I replace the GRT colonial-variable with a dummy variable that assigns a value of one to country pairs in which both states are current or former colonies of the same empire. There are about 19,000 such dyads, accounting for about five percent of the sample.

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<sup>9</sup> Nonreciprocal PTAs involve grants of unilateral market access that differ from agreements that were part of the Generalized System of Preferences (e.g., the Lome Convention) (GRT 2007b, 46).

<sup>10</sup>GRT 2007b, 51. For example, they code 21 dyads that include Singapore as current colonies, although it gained its independence from Britain as part of Malaysia in 1957 and from Malaysia in 1965. I recode these dyads here. The data used to construct the former colony come primarily from the CIA factbook.

<sup>11</sup>A robustness test shows that omitting the former-colony variable does not change the coefficient on the GATT in Table 1. Complete results are available from the author for this and all other results that I report in the text.

To analyze the data based on the empirical implications of PD-game based theory, I first disaggregate GATT members into three groups. Reflecting the important role the theory assigns to market power, I create a small group of very large industrialized states. As the theory implies that that free riding is most likely to benefit smaller countries that have factor endowments similar to those of the core states, I create a second group that consists of small industrial states paired with each other as well as with a core state,. In the third group are all other country pairs that include two GATT members.

I rely on the IMF to identify industrial countries. They include: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, South Africa, Spain, Sweden, Switzerland, the United Kingdom, the United States, and Yugoslavia (until 1992). I assign the largest states in terms of gross domestic output to the core group, as they are likely to wield the greatest amount of market power—i.e., the U.K., the U.S., France, Germany, and Japan. This group includes 1082 dyads, slightly less than one-half of one percent of all GATT member dyads.

The composition of the principal-supplier or “privileged” group in Gowa and Kim (2005) differs. It includes Canada and excludes Japan. As Figure 1 shows, however, Japan’s GDP is larger than that of any other core-group state for almost all years in the sample, while Canada’s GDP is considerably smaller than is that of any other member.<sup>12</sup> Its exports also consist primarily of raw materials and semi-processed goods. Because the linear approach applied only to industrial products, it would not be of much benefit to Canada. Thus, Canada, along with Australia, New Zealand, and South Africa, opted out of the bargaining protocol in effect at the Kennedy Round. As in earlier trade talks, Canada nonetheless tried to diversify its trade , but its ability to do so was “throttled..by the reality that only the Americans had

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<sup>12</sup> The U.S. GDP is not graphed here to allow differences between the other core states to emerge more clearly. It consistently has a much larger GDP than any other core state.

sufficient interest in the Canadian market to make concessions that were helpful to Canadian exporters (Hart 1998, 97).

In addition to singling out a core group, PD-game based theory suggests creating a subset of GATT members that consists of “other-industrial” countries –i.e., relatively small industrial countries paired with each other as well as with core states. It does so because it is the exports of these countries that are most likely to benefit most from the spillovers that core-group bargaining generates and the resource reallocations these spillovers prompt. This group, for example, includes a dyad composed of Austria and Switzerland, as well as one that pairs Austria with the United States. There are about 23,000 dyads in this group, representing about 11 percent of GATT members. In the third group are all other GATT country pairs—that is, dyads made up of one industrial country and one LDC and dyads composed of two LDCs. This group accounts for about 90 percent of all GATT member dyads.

That the data seem likely to be consistent with the predictions of the most salient theory about the value added of institutions is suggested by the correspondence between it and the GATT bargaining protocol. The latter had two key elements: the principal-supplier rule and the practice of reciprocity. As its name suggests, the principal-supplier rule allowed a country to request another to cut its tariff on a particular product only if it was the principal supplier of that product to the other’s market. Despite the fact that the parties adopted a linear approach to cutting tariffs as early as the Kennedy Round, it remained a powerful determinant of outcomes. Kennedy-Round participants

quickly found that meaningful concessions usually could be given only between the principal supplier of industrial goods and the major importers. Multilateral negotiations were useful for exchanges of information and for general discussions of structural problems of trade and production in different industries, but they did not facilitate [the] specific discussions of reciprocity...that were a necessary part of the exchange of concessions. Consequently, what was a multilateral negotiation in name became a large, complicated series of bilateral (or plurilateral) negotiations in fact (Winham 2001, 65).

The same was true of succeeding tariff rounds. As Anwarul Hoda observes, the “really” consequential exchanges at each of these rounds “took place bilaterally,” especially between the “major players.” Thus, a linear approach did not eliminate the need for bilateral negotiations but “only gave the participants an additional tool to employ” in their bargaining (2001, 47).

The principal-supplier rule appealed to the core states because it allowed them to focus their tariff cuts on each other’s products without technically violating Article I of the GATT charter or creating an abundance of free-riding opportunities. Article 1 mandated adherence to the most-favored nation rule –i.e., that “any advantage, favor, privilege or immunity granted by any contracting party to any product originating in or destined for any other country shall be accorded immediately and unconditionally to the like product originating in or destined for the territories of all other contracting parties.”<sup>13</sup>

The GATT charter included an MFN clause in order to preempt the need for the long series of renegotiations that seemed likely to ensue if one or more parties to a trade agreement subsequently concluded an accord with a third party. It also opened the door to free riding, however, because it allowed states to benefit from the tariff cuts other states made without making compensating cuts of their own. The principal-supplier rule responded to this problem because, in principle at least, it restricted the benefits of tariff cuts to a “very large extent” only to core-group members (Trebilcock and Howse 1999, 179). A 1946 UN press release made the linkage between the MFN clause and the principal-supplier rule explicit:

Since the supreme role of the most-favored-nation treatment governs the relationship between the negotiating parties, it must be expected that importing country A will be interest in granting to exporting country B concessions on products of which B is the main supplier, because in this way country A will secure the highest concessions from B on other goods which A exports to country B (cited in Irwin et al. 2008, 116, n64).

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<sup>13</sup> The text of the GATT Charter is at [wto.int/english/docs\\_e/legal\\_e/gatt47\\_01\\_e.htm](http://wto.int/english/docs_e/legal_e/gatt47_01_e.htm).

This interest in internalizing the effects of core-state tariff cuts was also evident in two other GATT practices. Tariff specialization, in which countries engaged in “separating or ‘ex-outing’ of portions of a tariff item for negotiating purposes,” was also intended to limit free riding. When the United States cut its tariff on British goods in 1939, for example, it revived a “separate classification for bone china” to restrict application of the lower rate to the English manufacturers who were practically the sole exporter of chinaware containing calcified bone” (Gowa and Kim 2005). The “settling-up sessions” had the same intent, as states that had agreed to concessions threatened to withdraw them unless prospective free riders offered their own concessions (Finger, cited in Trebilcock and Howse 1999, 179). Because tariff cuts typically applied to industrial goods, “settling up” negotiations most likely engaged states with relatively similar factor endowments—that is, industrial countries other than the core group.

As the theory suggests, the GATT bargaining protocol effectively relegated LDCs to the sidelines, as they were rarely the “principal suppliers of anything” (Wilkinson and Scott 2008, 486). Its focus on very large countries reflected “the core problem in...terms-of-trade models”—that is, the real-income costs that noncooperative tariff setting produces (Irwin et al., 2008, 198). The emphasis on reciprocity reflects the effect of unilateral tariff setting on trade volume, as any tariff that a large country imposes decreases access to its home market. As such, as Kyle Bagwell and Robert W. Staiger observe, it makes sense that “real-world” trade-policy negotiators emphasize the market-access implications of trade policy “( 2002, 28, emphasis original). Thus, the GATT “can be understood as an institution whose central design features make it well equipped to help governments in their attempt to escape from a terms-of-trade driven Prisoners’ Dilemma” (Bagwell and Staiger 2002, 188).

Whether they actually explain the adoption of the GATT’s bargaining protocol is less clear. The United States was the principal advocate of the principal-supplier approach both

before and after the GATT came into existence. The item-by-item approach it required made it relatively easy to protect import-sensitive industries, facilitating congressional approval of tariff-negotiating authority (Irwin 2008, 62). U.S. officials nonetheless were well aware that tariffs imposed costs both at home and abroad. During a 1959 National Security Council meeting, for example, President Eisenhower noted that clothespin tariffs affected “no less than eleven foreign countries.” Yet, he added, Maine alone was home to the entire industry, and less than 300 workers were employed in it. Both the United States and “friendly foreign countries,” he observed, would be better off if these workers made baseball bats instead.

Figure 2 disaggregates GATT members into core states, other industrial countries, and other dyads. It displays the mean value of trade of the dyads in each group in each year between 1948 and 2004. The differences across them are clearly in the predicted direction. While their trade varied even in 1948, the variation increased much more rapidly thereafter. Trade between core-group members expanded at a much higher rate than it did between members of either other group. It also grew more rapidly between members of the other-industrial group than between other country dyads.

Of course, the graph does not reflect the impact of other factors affecting trade flows. In Table 1, col. 1, therefore, I report the result of an analysis that disaggregates GATT members as in Figure 1 but that also includes the standard covariates. These include variables indicating if both or only one state in a dyad is a GATT member; if both states belong to a reciprocal or nonreciprocal PTA, a currency union, or a GSP; and if country-pair members include two current or former members of a colonial empire. I also control for the logged product of the gdp of each state in a dyad in each year. Thus, the model I estimate is:

$$\begin{aligned}
 \ln(\text{imports})_{ijt} = & \alpha + \beta_{1ijt}(\text{CoreGATT}) + \beta_{2ijt}(\text{OtherIndusGATT}) \\
 & + \beta_{3ijt}(\text{OtherGATT}) + \beta_{4ijt}(\text{OneGATT}) + \beta_{5ijt}(\text{PTArecip}) \\
 & + \beta_{6ijt}(\text{PTAanonrecip}) + \beta_{7ijt}(\text{CurrencyUnion}) + \beta_{8ijt}(\text{GSP}) \\
 & + \beta_{9ijt}(\text{Colonies}) + \beta_{10ijt}(\ln(\text{gdp}_i * \text{gdp}_j)) + \sum \delta_t \text{Year}_t + \varepsilon_{ijt} \quad (1)
 \end{aligned}$$

The results that Table 1 presents show that trade between states in the core group increases by about 250 percent relative to the base group (p-value  $\leq$  0.0001). Trade between members of the other-industrial group is about 97 percent higher than is that between base-group members. Finally, other member states witness about a 40 percent increases in their trade relative to the base group. The difference between each group and the base group is statistically significant (p-value  $\leq$  0.0001 in all cases), and pair wise comparisons of the three groups show that the trade of each differs significantly from the other (p-value  $\leq$  0.003).

Table 1 also makes clear that other trade-related groups matter. Relative to the base group, trade between current or former colonies of the same imperial empire increases by about 150 percent and trade between two states that join a reciprocal PTA increases by about 40 percent. Currency unions effect about a 65 jump in their members' trade (p-value  $\leq$  0.0001 in each case).

Neither unilateral trade agreements nor GSPs affect trade, however, despite the fact that these agreements were intended to expand LDC exports. This finding is consistent with other studies of the impact of these preferential trade pacts, as they tend to impose tight constraints on the types of goods and countries that they are intended to benefit. They are also consistent with the idea that LDCs play only a marginal role in the GATT. As in other studies of trade in the same and different periods, income also has a large, positive, and significant impact on bilateral trade flows.

The logic of the principal-supplier rule and the attempts that core-group members made to extract compensation during settling-up talks suggests that differences may also exist between two subsets of states in the other-industrial group. In the settling-up talks, each core state sought compensation from other industrial countries for any benefits they might receive as a consequence of the tariff cuts that the large states made on each other's products. This suggests that trade might expand to a greater extent between core states and smaller industrial

countries than between the smaller countries themselves. To test this idea, I subdivide the set of other-industrial GATT members into two groups: 1) core states paired with relatively small industrial countries, and 2) small industrial states paired with each other.

Table 1, col. 2, reports the results of an analysis that includes these two groups, as well as all other covariates in model (1). In the interest of clarity, I report only the parameter estimates on the country-group variables, as the coefficients on all other variables are identical to those in the first column. As before, core-group members trade more with each other than do base-group countries by a factor of 2.5 (p-value  $\leq 0.0001$ ). They also trade significantly more with each other than do members of either other group of industrial dyads.

As the GATT bargaining process suggests, trade does in fact increase to a greater extent between core states and other industrial states than between small industrial countries themselves. The corresponding statistics are about 123 percent and 84 percent, respectively, a statistically significant difference (p-value = 0.03). As in the first column of Table 1, other GATT members witness about a 40 percent increase in their trade. The evidence in the table as a whole about industrial-country trade is consistent with PD-game based theory: trade between the largest states expands most dramatically, while trade between other industrial states also expands.

However, the table also shows that trade between GATT member pairs that include at least one LDC increases by almost 40 percent relative to the base group. This effect should not be overstated, as even trade between countries in which only one state is a GATT member increases by about 23 percent relative to the base group. While some recent work shows that even some LDCs seem to be able to use trade policy to affect the relative export

prices of some goods (e.g., Broda, Lim, and Weinstein 2006), it seems clear that that LDCs were not central players in the tariff bargaining that occurred under GATT auspices.<sup>14</sup>

It is more likely that a different dynamics explains their trade. As I noted above, the GATT can reinforce the trade ties that political linkages between countries create. To test this idea, I create a variable that assumes a value of one when states in a country pair are members of a political-military alliance; it is zero otherwise. Using Brett Ashley Leeds's data, I code alliance members through 2003. I interact this term with each of the three GATT country-group dummies. To generate an analogous set of variable for colonial empires, I use the GRT data to indicate country pairs that include two current colonies of a single imperial power. Using a new data set, I also identify pairs of former colonies of the same imperial power. As in the alliance case, I interact each of these terms with GATT membership.

The relevant theory implies that allies that are GATT members should trade more with each other than do other allies, although even the latter should trade more with each other than do base-group members. Analogously, membership in the GATT should have a positive and significant impact on trade between current colonies, and trade between current colonies should be higher than that between former colonies or the base group.

Table 3 presents the results of an analysis that controls for membership in alliances and in colonial empires. The results show that allied pairs that include one LDC trade about 16 percent more with each other than do base-group members ( $p\text{-value} \leq 0.0001$ ). If these allies are also GATT members, however, their trade is about five times as high—i.e., about 90 percent higher than that of the base group ( $p\text{-value} \leq 0.0001$ ). Joint membership in alliances and the GATT for the states in these country pairs, in fact, makes their trade expansion statistically indistinguishable from trade between states in the other-industrial

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<sup>14</sup>If it were the case LDC market power explained their trade patterns, trade between LDCs themselves would seem likely to expand to a greater degree than trade between industrial countries and LDCs. The data below reject this, however.

group (p-value = 0.85). In the case of industrial-country dyads, however, alliances do not matter: their trade is the same whether or not their members are allies.

Joint membership in colonial empires and the GATT has an impact similar to that of allied GATT members. Two current colonies that are also GATT members trade more than twice as much as base-group members (p-value  $\leq 0.001$ ) and about half again as much as current colonies that are not members of the postwar trade regime (p-value = 0.0612). The GATT also exerts a large impact on trade between former colonies: their trade is more than twice as high as is that of their non-GATT counterparts (p-value = .008).

These results are consistent with the predictions that trade theory based on imperfect markets makes and with the prediction of PD-game based theory. The GATT exerts a strong impact on nonindustrial countries if they are also members of a political organization. These dyads, however, account for only a very small fraction of all such pairs--about 11 percent. Other nonindustrial dyads, however, experience an increase in their trade of about 32 percent, not much larger than the 22 percent increase that dyads that include only one GATT member realize.

### **Conclusion**

This paper examines the impact of what is perhaps the most-highly regarded institution of the postwar world. Taking the predictions that the literature on international institutions generates explicitly into account, it shows that the data are consistent with the hypothesis that large states with market power will cut tariffs on each other's products and that they will try to internalize the gains that accrue from doing so. Trade does in fact expand much more between large states than it does between other states. As the theory predicts, other industrial countries also witness an increase in their trade, as the practice of settling-up negotiations and the resource reallocations they generate suggest.

The evidence this paper presents also suggests, however, that the value added that the literature often attributes to these institutions—i.e., supplying information—is not very important.<sup>15</sup> Because tariff cuts privilege particular products of particular countries, reneging should trigger fire alarms. That is, because it is exporters of a particular product that suffer in the event of cheating, these producers can be counted on to demand the restoration of the status quo ex ante. This, in turn, should deter instances of free riding. In equilibrium, in other words, no cheating should occur.

Taking seriously the time-consistency problem that imperfect markets create shows that GATT membership has delivered sizeable trade increases only to a relatively small fraction of its LDC members—that is, those that are parties to political institutions in which joint welfare maximization is the goal. That most LDCs gain relatively little from the GATT and that most industrial countries realize gains from the organization whether or not they are members of other institutions is also consistent with the predictions of standard economic theory.

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<sup>15</sup> As Wilfred Ethier observes, much of the theoretical literature about dispute-settlement mechanisms assumes that cheating is imperfectly observable. In reality, however, trade disputes generally focus on the legitimacy of actions (2001, 221-22).

## References

Ethier, Wilfred J. 2001. Theoretical Problems in Negotiating Trade Liberalization. European Journal of Political Economy 17: 209-32.

Figure 1. GDP of Japan, Britain, France, Germany, and Canada

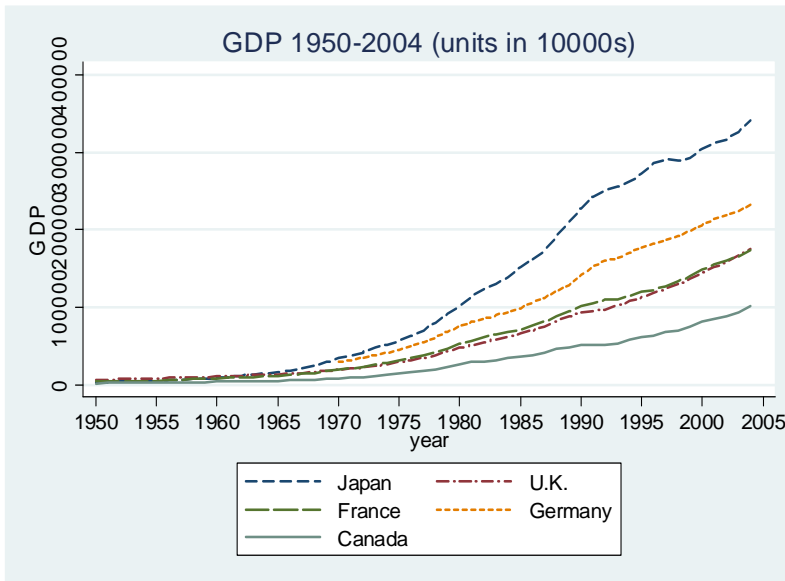
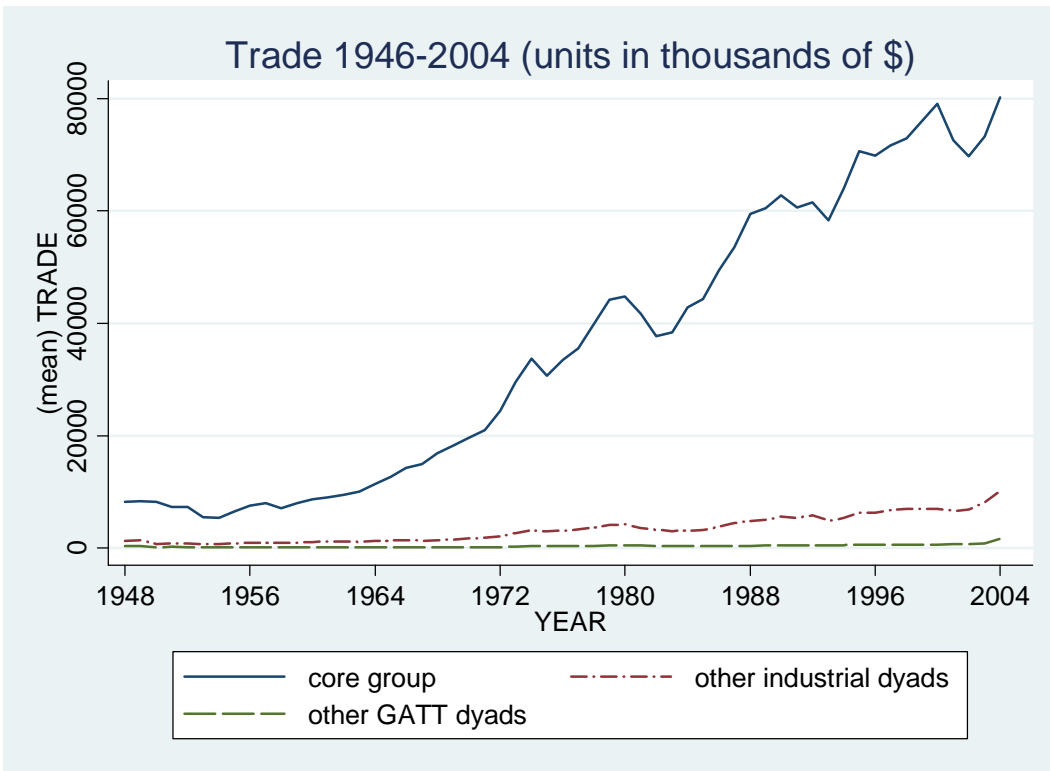


Figure 2



**Table 1. The Impact of the GATT/WTO on Bilateral Trade, 1946-2004<sup>a</sup>**

Core group	1.26 (0.20)	1.27 (0.20)
Other industrial dyads	0.68 (0.06)	
Big-small		0.81 (0.09)
Small-small		0.61 (0.07)
Other GATT	0.34 (0.03)	0.34 (0.03)
One in GATT	0.21 (0.03)	
Reciprocal PTA	0.33 (0.02)	
Nonreciprocal PTA	- 0.06 (0.03)	
GSP	-0.09 (0.02)	
Currency union	0.50 (0.09)	
Colonies	0.91 (0.11)	
GDP	0.66 (0.01)	
R <sup>2</sup>	0.84	
N	381656	

**Table 2. The Impact of Political Institutions on Trade between  
GATT Members, 1946-2003<sup>a</sup>**

Core GATT	1.26 (0.20)
CoreGATT/allies	-0.14 (0.13)
Other industrial dyads	0.66 (0.06)
Industrial dyads/allies	-0.08 (0.05)
Other GATT	0.28 (0.03)
OtherGATT/Allies	0.23 (0.04)
Allies	0.15 (0.04)
Current Colony	0.94 (0.14)
CurrentColony/GATT	0.27 (0.14)
Former colony	0.32 (0.18)
Former colony/GATT	-0.05 (0.09)
R	0.83
N	381656