

Institutions and Outcomes: The GATT/WTO and Postwar Trade

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The abundant literature about institutions regards the postwar trade regime as its “beau ideal” (Goldstein, Rivers, and Tomz 2007a, 38). Yet, it was only five years ago that Andrew Rose (2004) published the first systematic empirical analysis of its effects. Contravening conventional wisdom, he found that the General Agreement on Tariffs and Trade (GATT) and its successor, the World Trade Organization (WTO), did not exert any significant impact on trade.

In the wake of the Rose analysis, a cottage industry of empirical studies of the postwar trade regime developed quickly. Joanne Gowa and Soo Yeon Kim (2005) report that the GATT exerted a positive and significant impact only on trade between its largest industrial-country members. Arvind Subramanian and Shang-Jin Wei (2007) find that the regime expanded the imports of its industrial-country members more generally. Judith Goldstein, Douglas Rivers, and Michael Tomz (2007a, 2007b), adding a large number of states to the GATT membership roster, find that the postwar system had a large positive and significant impact on trade between its members irrespective of their level of development.

Neither these nor other papers that respond to Rose’s finding, however, actually test whether the data conform to the empirical implications of the theoretical literature about international institutions.¹ Yet, the ideas it advances imply that the effects of the postwar regime are very likely to vary across different subsets of its member states. Market-failure theory, for example, predicts that its largest members will witness the largest expansion of their trade, because joining the GATT/WTO allows them to realize a welfare-improving equilibrium outcome of the Prisoners’ Dilemma (PD) game that engages them. A theory

¹ See, e.g., Herz and Wagner 2007; Eicher and Henn 2008; Felbermayr and Kohler 2009.

based explicitly on the politics of an anarchic international system implies that the regime will also expand trade in some cases in which its members share political-military ties. In these instances, it operates as the contemporary equivalent of a medieval merchant guild, endowing states with the ability to retaliate and to capture welfare gains in excess of those that standard theory predicts (Greif, Milgrom and Weingast 1994; Greif 2006).

In this paper, I argue that taking the empirical implications of these theories to the data yields a much richer and more informative analysis of the impact of the postwar trade system than do existing studies. The results I present here show that the GATT/WTO did indeed exert its strongest impact on trade between its largest member states. They also show that it expanded trade to a smaller but still sizeable extent between these states and others with similar relative factor endowments. Further, the findings here are consistent with the prediction that joint membership in the regime and in a political-military alliance produces a very strong impact on trade involving less-developed countries (LDCs).

Immediately below, I describe briefly the findings of existing studies. Next, I discuss the empirical predictions that theories about institutions generate. Finally, I report the results of testing these predictions.

Recent Literature

Although no theory predicts that the GATT/WTO will exert a uniform effect on its member states, the benchmark analysis in Rose (2004) includes them all in one “treatment” group. He codes states as members if they either joined the organization at its inception or did so thereafter in accord with the accession protocol in effect when they joined. He uses a gravity model, the industry standard, to estimate the effect of regime membership on bilateral trade flows between 1950 and 1999. Including a series of potentially confounding covariates,

he finds that membership in the postwar trade regime “is *not* associated with enhanced trade” (2004, 98, emphasis original). Although he conducts a wide-ranging series of robustness tests, including some that disaggregate member states, none of their results induces him to change his conclusion.

Gowa and Kim (2005) focus their study on the principal-supplier rule that governed tariff bargaining under the postwar regime. According to this protocol, only a state that was the principal supplier of a good to another’s market could ask the importing state to cut its tariff on that product. As such, Gowa and Kim note, it responded to U.S. domestic political pressure to cut tariffs only on the basis of reciprocity. As the United States also succeeded in removing agriculture from the GATT’s agenda, the principal-supplier rule biased tariff cuts toward the regime’s largest industrial-country members. Using data through 1994, Gowa and Kim find that the evidence is consistent with their argument: it shows that membership in the GATT expanded trade only between Britain, Canada, France, Germany, and the United States.

Subramanian and Wei (2007) emphasize four asymmetries that they believe describe the regime’s operation: 1) only developed countries “engaged actively in reciprocal” tariff cuts; 2) only members participated in tariff bargaining; 3) tariff cuts privileged industrial-country products; and 4) LDCs that acceded to the WTO rather than the GATT were more likely to liberalize their trade (2007, 153-56). Their empirical results are consistent with these asymmetries: imports of developed-country members increase significantly more than do the imports of their less-developed country (LDC) counterparts or base-group states; trade is larger between members than between nonmembers; trade in manufactures rises strongly; and more recent accession to the regime leads to higher LDC trade.

Goldstein, Rivers, and Tomz add a great deal of information to the data other studies rely upon. These additions include information about membership in a much wider range of preferential trade agreements (PTAs) and in unilateral PTAs and data about the current or former colonial status of states. They also extend their period of time studied, beginning in 1946 rather than 1950 and ending in 2004 rather than in 1999.² Their most original and important addition, however, is the membership roster they construct. Based on research in the GATT archives, Goldstein, Rivers, and Tomz conclude that Rose codes as nonmembers many states that actually had standing in the organization. These “nonmember participants” (NMPs) joined the regime in one of three ways: 1) their imperial powers signed them on; 2) they remained in the GATT as “de facto” members after gaining independence;³ or 3) they acquired “provisional” member status once they began but before they completed the accession process (2007b, 40-43).⁴

Using the expanded membership roster, Goldstein, Rivers, and Tomz find that states that joined the GATT/WTO traded about 43 percent more with each other than did base-group states (2007b, 55). They also report that the impact of the membership varies across three types of country pairs: 1) formal-member dyads--i.e., country pairs composed of states

²An example of a unilateral or nonreciprocal agreement is the Lome Convention, in which EU members extend unilateral preferences to imports from their former colonies.

³More precisely, Article XXVI: 5(c) provided for “automatic” accession for newly independent states. They were allowed to join “on the terms and conditions previously accepted by the metropolitan government on behalf of the territory in question” (WTO 2007, p. 213).

⁴NMPs disappear with the GATT, as the WTO required states to accede formally. Except for Tunisia (a provisional member for 30 years), the 10 states in the 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 other members as long as the latter had acceded to the declaration on provisional accession (Goldstein, Rivers, and Tomz 2007a, 2008).

that signed the 1948 Havana Charter or later completed a standard accession protocol; 2) NMP dyads—i.e., those that include two states that acceded to the regime in nonstandard ways; and 3) “mixed” dyads—i.e., those that include one formal member and one NMP.⁵ Relative to the base group, formal members trade about 41 percent more with each other; the corresponding statistics for NMP and mixed-dyad trade are about 56 percent and 46 percent, respectively (2007 b, 55).⁶ The authors themselves admit that they find these differences surprising because all groups “had essentially the same rights and obligations” (2007a, 2011). For his part, Rose regards as implausible the idea that it is possible to redeem the reputation of the postwar system by “reclassifying many developing countries that are spiritually but not technically GATT members” (2007, 2020).

Goldstein, Rivers, and Tomz contend, however, that regime membership seems “to benefit all countries no matter their level of development: trade expands “by more than 70 percent when both trading partners were industrial nations, by about 45 percent when trade was between an industrial and a developing economy, and by approximately 33 percent” between LDCs (2007b, 56-7). They attribute the gap between their findings and conventional wisdom” to the tariff cuts and bindings the regime urged on LDCs and to the market access these states gained as a consequence of the most-favored nation (MFN) (2007b, 57). As in other cases, MFN treatment mandates that each state accord the benefits of any tariff cut it makes to all other member nations.⁷

⁵It is also worth noting that NMP dyads account for only about one percent of GATT/WTO members, while formal country pairs represent almost 85 percent of them.

⁶In their IO article, the authors report that only the difference between formal and mixed dyads is statistically significant (2007b, 54, n39). All pair wise differences are significant in their earlier AER paper (2007a, 2013).

⁷The charter text is at: wto.int/english/docs_e/legal_e/GATT/WTO47_01_e.htm.

I return to this issue below. Next, I explain the empirical implications that two of the most prominent theories about the impact of international institutions on trade generate.

Theory

Market-failure theory

The canonical representation of the free-trade problem in the existing literature relies on the logic of a PD game (e.g., Bagwell and Staiger 2002). In standard trade theory, tariff bargaining conforms to a PD game when it engages “large” states—that is, countries that wield sufficient market power to affect their terms of trade. In these cases, each state’s dominant strategy is to impose an “optimal” tariff, an import tax that maximizes the real income gains that better terms of trade deliver net of the costs of a drop in trade volume.⁸ If large countries all impose tariffs, however, prices will not change but trade will drop, making each worse off than if they had all adhered to free trade.⁹ In cases in which countries expect their interactions to continue indefinitely and monitoring is possible, they are better off if they open their markets to each other’s products.

According to the logic of market-failure theory, the most prominent explanation of international institutions, a regime can help large states to improve their welfare in two ways (Keohane 1994). First, as it can provide a negotiating framework and forum, it can reduce the marginal cost states incur when they engage each other repeatedly in tariff bargaining. Alternatively or in addition, it can supply information to states about whether their trading

⁸Empirical evidence shows that states do set tariffs in ways that are consistent with their market power (Broda, Limão, and Weinstein 2006; Bagwell and Staiger 2006).

⁹This is so whether they tax imports to improve the relative price of their exports or to protect domestic industries. In both cases, it is “their ability to shift the costs of protection onto one another through terms-of-trade movements” that matters (Bagwell and Staiger 2002, 3).

partners are complying with their free-trade accord. Either way, institutions raise the net payoffs that accrue to large states when they open their markets to each other.

In contrast, small states do not play a role in market-failure theory. By definition, a small state cannot affect its terms of trade: the effects of any tariff it imposes “move through the local prices within the country and thus reside entirely within national boundaries” (Bagwell 2007, 4). As a result, the only effect of a small country’s tariff is to reduce its own aggregate welfare, as it inflicts costs on consumers that are larger than the gains it delivers to producers and the government. As a result, free trade is the dominant strategy of a small state. As such, large countries have no incentive to engage small states in tariff bargaining. Small states also have no reason to bargain with each other, as their trade policies do not generate any negative externalities.

As in Gowa and Kim (2005) then but for different reasons, market-failure theory implies that a regime will exert its strongest impact on its largest member states, because it helps them to reach a Pareto-improving equilibrium outcome of the PD game that engages them.¹⁰ It also implies that the tariff cuts these states make will privilege each other’s exports, as the only concessions that interest them involve the goods that they produce and exchange (Bagwell, Mavroidis, and Staiger 2002, 57). In market-failure theory, then, a principal-supplier rule is endogenous to the distribution of market power within the institution; it is not a by-product of U.S. domestic politics.¹¹

¹⁰The dominance of large countries is also consistent with the hypothesis that it is their political power that mattered. However, this framework does not explain why cutting tariffs on each other’s products makes them better off.

¹¹As Ludema and Mayda (2009, 138) show, when an MFN clause exists, the rule is an optimal response to the free-rider problem because it reduces uncompensated externalities.

When an MFN clause exists, market-failure theory also predicts a smaller but still significant increase in trade involving countries which have relative factor endowments similar to those of the largest member states. Although large countries will try to internalize the benefits of their tariff cuts, their efforts are unlikely to succeed completely. Thus, the GATT/WTO should also increase trade involving small states with production profiles that resemble those of its largest members, as a consequence of the ability of the former to free ride on the tariff cuts of their larger counterparts. The retaliatory power of the latter will also necessarily protect the smaller countries against cheating to the extent the exports of large and small industrialized states are costly to differentiate.

Historical accounts of the postwar regime are consistent with market-failure theory in several important ways. Even before the GATT took effect, a 1946 press statement made explicit the link between a principal-supplier rule and the MFN clause:

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 interested in granting to exporting country B concessions on products of which B is the main supplier, because...country A will [then] secure the highest concessions from B on other goods which A exports to country B (cited in Irwin et al. 2008, 116, n64).

The adoption of the principal-supplier rule dictated that states exchange offers and requests to cut tariffs on an item-by-item basis rather than on the basis of a linear or across-the-board approach. This is consistent with the evidence that extensive bilateral talks began before and continued during official negotiating rounds. Thus, for example, U.S. and Japanese officials

met at least 43 times in an effort to hammer out an accord between them that they could conclude during the Kennedy Round.¹²

In addition, despite the fact that it was at that round that the contracting parties agreed to the use of a linear approach to tariff cutting and that the European Union (EU) assumed the role that individual representatives of its member countries had previously played, item-by-item bilateral bargaining remained a staple of postwar bargaining.¹³ Participants at the Kennedy round, for example,

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 successive rounds of negotiations. During the Tokyo Round, countries typically proposed tariff cuts “to the ‘principal supplier’ (the largest exporter) of a particular product. They also focused their requests for tariff cuts on countries that were “the largest importer of their goods.” As such, large states got “the most action,” and bilateral bargaining produced the most consequential tariff cuts (Winham 1986, 202). The decision to approve the use of a linear approach did not, therefore, eliminate bilateral negotiations but “only gave the participants an additional tool to employ” (Hoda 2001, 47).

In addition to the principal-supplier rule, other GATT/WTO practices demonstrate the commitment of its largest members to restrict the free riding that the MFN clause permitted.

¹²Memo from U.S. Mission, Geneva, to Department of State. Minutes of the Forty-Third Meeting between the U.S. and Japanese Kennedy Round Delegations. Declassified Documents 2008.

¹³ I use the EU to denote the European Economic Community, the European Community, and the European Union.

One was tariff specialization—i.e., entries in the tariff schedule that defined very narrowly the product to which a particular tariff applied (Trebilcock and Howse 1999, 127). Because even this practice did not prevent all spillovers, “settling-up sessions” occurred. They subjected tariff cuts that had been agreed upon earlier “to threats of withdrawal or revision unless non-reciprocating countries [also] agreed to offer concessions” (Trebilcock and Howse 1999, 117). Given the insulation from tariff cuts of labor-intensive industrial products and agricultural goods, smaller industrial countries were the most logical targets of these threats.

In sum, market-failure theory implies that the effects of the postwar regime will vary across industrial states and LDCs, as well as among the developed countries themselves. Its largest states will be its principal beneficiaries. However, the MFN clause inevitably creates some free-riding opportunities that smaller industrial states can exploit. As the relative factor endowments of LDCs differed and they were rarely the “principal suppliers of anything,” it seemed unlikely that their trade would witness an increase comparable to that of their industrialized counterparts (Wilkinson and Scott 2008, 486).

Security externalities

The extent to which international politics motivated the creation, organization, and operation of the GATT/WTO suggests that it would be very surprising if market-failure theory alone sufficed to explain its effects. Even before 1945, the United States sought to create a postwar trade organization that could help stabilize the continental balance of power and preempt the reemergence of trade blocs. Absent an anarchic international system and the Cold War it helped to precipitate, it would be hard to explain, for example, why the United States supported the creation of the EU, a European trade bloc that excluded it from membership and diluted its market power.

It would also be hard to explain the concern high-level U.S. political officials repeatedly expressed about the adverse effects of protection on national security, even in cases in which these effects seemed likely to be trivial. At a 1959 National Security Council meeting, for example, President Eisenhower objected to a proposed hike in clothespin tariffs. He pointed out that the industry employed less than 300 workers, all of them in Maine, while “no less than eleven foreign countries” exported clothespins. He concluded that “friendly foreign countries” and the United States itself would be better off if workers in Maine produced baseball bats instead.¹⁴

The link between trade and international politics finds expression in the theoretical literature in terms of the security externalities that trade generates—that is, the increase in potential political-military power that states realize as a result of the real income gains that trade produces. These externalities offer political-military allies stronger incentives to trade freely with each other than with either neutrals or adversaries (Gowa and Mansfield 1993, Gowa 1994). Thus, for example, while the United States applied MFN rates to most of its trading partners whether or not they were GATT/WTO members, it applied its statutory rates to imports from “most Communist countries and areas” (U.S. Tariff Commission 1965, 60). In 1999, the average tariff it levied on imports from these countries was about 30 percent, roughly 10 times the corresponding MFN rate (Broda, Limão, and Weinstein 2008, 2061).

In certain cases, joint membership in a trade institution and in an alliance will exert a positive impact independent of the effect of either alone. Whether it does so depends on both

¹⁴“Summary of 6/4/59 NSC meeting: effects of U.S. import trade policy on national security; and world developments affecting national security” (Declassified Documents 2008). The United States raised its tariff on spring but not standard clothespins, compensating Sweden and Denmark in the process (Operations of the Trade Agreements Program, Report (1958/59-1959/60), p. 15).

the size of states and the extent to which their relative factor endowments are similar.¹⁵ The incentives of very large states to open their markets to each other vary with their membership in a trade institution and in an alliance: an institution helps them to resolve their PD-game problem and their alliance ties enhance their incentives to trade with each other. However, joint membership in both types of organizations does not exert an independent effect on their trade. The same is true of smaller countries with relative factor endowments similar to those of their larger counterparts, as they can benefit from alliance ties with larger countries and free ride to some extent on the latter's tariff cuts.

However, joint membership in both trade and political-military organizations can affect small countries with dissimilar production profiles. In these cases, a time-inconsistency problem can arise when firms in small countries invest in production for markets abroad. Ex ante, a relatively efficient firm in a small state can realize larger profits if it markets its products abroad as well as at home, because doing so allows it to exploit scale economies in production.¹⁶ Exporting, however, often requires sinking costs into relation-specific assets—that is, investments made to support a particular transaction with a particular partner. As such, the exporting firm and its home country become vulnerable to an ex post effort to renegotiate the division of the surplus, creating a dynamic-inconsistency problem (Mansfield and Bronson 1997, 95).

¹⁵Even in standard theory, the efficiency losses associated with a tariff can induce a large state to forego its use against small-state allies. Yet, this does not affect the small country's policy, as free trade is its dominant strategy. I focus here on situations in which the actions small-country actors take vary as a function of their alliance and GATT/WTO membership status.

¹⁶The same disparity between ex ante and ex post incentives exists in even more recent trade theory, which exploits the existence of firm heterogeneity to explain why only a small fraction of firms in an industry can afford to sink the costs necessary to export (Melitz 2003; Tybout 2004; Das, Roberts, and Tybout 2007; Bernard et al. 2007).

A nonmyopic small-country firm will invest in exporting only if the destination country can credibly commit to keep its market open. An alliance between the home and destination country can help to do so, as it gives each state a stake in the welfare of its trading partners. Because the income transfer a tariff generates is inefficient, a state interested in maximizing the political-military power of the alliances to which it belongs also has an interest in forgoing import taxes. As a result, it can make its open-market commitments credible. GATT/WTO membership, in turn, provides allies in these cases with insurance against renegeing in the event their political ties wane.

This insurance is superfluous for its largest member states, as they wield a retaliatory threat that is independent of their regime status and subgame perfect. The same is true of smaller industrial countries, because their relatively similar production profiles enable them to free ride not only on the tariff cuts but also on the enforcement power of their larger counterparts. In the case of LDCs, however, the value added of regime-supplied insurance is substantial. Their access to a dispute-resolution mechanism (DRM) can reduce the risk that its current allies will renege on their trade commitments in the future.¹⁷

This provides LDC member states with a credible threat of retaliation analogous to that which a medieval merchant guild made available to its members. In the medieval era, a ruler could not persuade foreign merchants to sell in his market because of his incentives to expropriate their goods. By helping merchants to organize into a guild, however, he could empower them to act collectively and endow them with a credible threat of retaliation against him. Moreover, his reputation can suffer if other traders learn of the guild's action. As a

¹⁷See Davis and Bermeo (forthcoming) for a discussion of LDC use of the DRM.

result, the ex ante and ex post incentives of a ruler converge when a guild exists, making both sides better off than in its absence (Greif, Milgrom and Weingast 1994; Greif 2006).

Although the GATT/WTO is not a perfect substitute for a guild, it does provide LDCs with some recourse against the threat that waning alliance ties create. The prospect that DRM decisions will favor small-state plaintiffs can deter cheating, not necessarily because their trading partner anticipates heavy economic costs but because, as in the case of rulers and guilds, of the adverse effect that negative decisions can exert on its reputation for compliance. Available evidence shows that the DRM utilization rates of LDCs correspond roughly to their share of world trade: during the tenure of the GATT, LDCs initiated about 11 percent of all disputes begun under it; the corresponding statistic for the WTO years is about 33 percent (Bown 2004, 64).¹⁸

Taking explicitly into account the impact on trade of the politics of life in an anarchic system suggests, therefore, that the regime can increase trade involving LDCs when they are members of it and also members of a common political-military alliance—that is, joint membership in alliances and in the regime may increase trade above the level of either alone when at least one state is an LDC. The theory implies, therefore, that omitting a role for alliances risks confounding their effects and those of the GATT/WTO, exaggerating the impact of the postwar regime alone on LDC trade.¹⁹

Empirical Analyses

¹⁸Although Bown reports that LDCs had more success under the WTO, he attributes this to better targeting by LDC plaintiffs (2004, 72)

¹⁹Mansfield and Bronson (1997) show that joint membership in a PTAs and an alliance also has an effect on trade independent of either alone.

As in earlier studies, I use a gravity model to analyze bilateral trade flows. The dependent variable is the logged value of the annual imports of each state in a country pair from the other between 1946 and 2004. Each analysis includes year fixed effects, which account for factors influencing trade that vary across time but are constant across dyads. As both recent theoretical analyses of the gravity model and concerns about unobserved heterogeneity recommend, I also include dyadic fixed effects, which control for characteristics that vary across dyads but are constant across time.²⁰

The covariate of principal interest is an indicator variable that assumes a value of one if both states in a dyad are GATT/WTO members, disaggregated as I describe below. As in Goldstein, Rivers, and Tomz (2007a, 2007b), other dichotomous variables assign a value of one to dyads in which only one state is a member of the GATT/WTO and to country pairs in which both states belong to a currency union, a reciprocal or unilateral PTA. In addition, I include a variable that indicates whether both states signed a trade agreement negotiated under the Generalized System of Preferences (GSP), which allows developed countries to give select LDCs unilateral access to their markets.²¹ With two exceptions, I use the Goldstein, Rivers, and Tomz data to measure these variables.²²

²⁰Thus, I do not include covariates that are constant across time (e.g., contiguity, landlocked, island) as they will drop out of any dyadic fixed-effect analysis. Recent work also suggests including time-varying importer and exporter fixed effects, but the memory required to do so for the size of the data set makes this infeasible. Dyadic fixed effects, however, do control for the time-invariant component of multilateral trade resistance (Felbermayr and Kohler 2009, 6-7).

²¹Unilateral PTAs provide one-way market access but are not GSPs (e.g., the Lome Convention) (Goldstein, Rivers, and Tomz 2007b, 46).

²²Their data set (Tomz_IO_2007.zip) is posted at: www.stanford.edu/~tomz.

One exception is population, which their data set does not include. Because it is a standard element of gravity models, I use the Penn World Tables to measure the logged annual value of the product of the population of the states in a dyad between 1950 and 2004 (Heston et al. 2006). For the years between 1946 and 1949, I rely on Angus Maddison's data.²³ Population data exist for all but about 8000 observations in the sample.

The second exception is the Goldstein, Rivers, and Tomz measure of countries with colonial ties. They state that they distinguish country pairs that include an imperial power and its colony, two colonies of the same empire, or two former colonies of the same metropole (2007b, 51). However, their colonial-indicator variable only takes on a value of one in the roughly 1600 observations that include two members of an existing empire.²⁴ I replace their measure of colonial ties with a variable (*AnyColony*) that assigns a value of one to country pairs in which states are current or former colonies of the same empire. I assign a value of zero; however, to country pairs that include a former metropole and colony, as tariff cuts in conjunction with the MFN clause progressively diluted the preferences that tied imperial powers to their dependencies. About 22,000 current or former colonial dyads exist, accounting for about six percent of the sample.

The recoding of the colonial variable helps to explain the puzzling Goldstein, Rivers, and Tomz finding that the way states acceded to the GATT/WTO influences their trade. The distribution of colonial pairs across the three groups is highly skewed. States with colonial ties account for about 7 percent of formal-member dyads; about 14 percent of mixed dyads; and 41 percent of NMP country pairs. Because states that share colonial ties on average

²³ <http://www.ggdnc.net/maddison>.

²⁴ There are about 23 dyads that Goldstein, Rivers, and Tomz code as members of a colonial orbit that I recode as zeroes (e.g., according to the CIA factbook, Egypt became independent in 1922 and Indonesia in 1945).

trade much more with each other than do other states, it may be that it is differences in the composition of the three groups rather than in their mode of accession that explains why the impact of the GATT seemingly varies across them.

To test whether this is so, I disaggregate the groups based on whether their members share colonial ties. I create an indicator variable that assigns a value of one to all colonial pairs that are GATT members (*GATT-colony*) and is zero otherwise. I also create three other variables that assume a value of one for the remaining dyads in the formal-member, mixed-dyad, and NMP group. Table 1 reports the results of an analysis that includes these variables, as well as population and all covariates that Goldstein, Rivers, and Tomz include. Because the WTO required all of its members to formally accede to the organization, neither the mixed-dyad group nor the NMP group exists after 1995. The analysis, therefore, is limited to the years between 1946 and 1994.²⁵

[Insert Table 1 about here]

The results show that the effects of the GATT on trade by accession mode converge considerably when controlling separately for states with colonial ties. GATT accession produces an increase of about 46 percent in trade between members of the formal and mixed-dyad groups. The corresponding statistic is 51 percent in the case states in the NMP group. None of the pair wise differences between the groups is any longer statistically significant.²⁶ Countries with a common imperial power or that share a colonial heritage trade about 150 percent more with each other than do base-group members. GATT membership, however, has no additional effect on their trade. Thus, consistent with Goldstein, Rivers, and Tomz's

²⁵ Including a control for the advent of the WTO and extending the analysis through 2004 does not alter these results.

²⁶ The p-value for the difference between formal and NMP dyads is 0.71; it is 0.73 for the difference between formal and mixed dyads; and 0.623 for mixed and NMP dyads.

intuition, mode of accession, independent of colonial ties, does not affect trade between GATT members.

Market-failure theory

To test the predictions of market-failure theory, I first disaggregate regime members into two groups: industrial and nonindustrial countries. As in the Rose and Goldstein, Rivers, and Tomz papers, I assign states to industrial status relying on the International Monetary Fund (IMF) definition of them. Thus, the industrial-country group includes: 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).²⁷

Next, I disaggregate the industrial-country states into two groups. I assign to the core group the five largest states, defined in terms of GDP. The relative size of Britain, France, Germany, Japan, and the United States enables each of them to wield considerable market power. This group includes 1082 dyads, about one-half of one percent of member dyads.²⁸ All other industrial-country pairs are in the second group. They include, for example, a dyad composed of Austria and Switzerland, as well as a Britain-Austria pair. There are about

²⁷The COW data set changes the coding of Yugoslavia as of 1991. The IMF also replaces Yugoslav trade data with successor-state data beginning in 1992. Goldstein, Rivers, and Tomz code Yugoslavia as an industrial-country through 1992. Following the COW and IMF coding, I include Yugoslavia in the industrial-country group only through 1991.

²⁸Gowa and Kim (2005) include Canada and exclude Japan from their “privileged” group. However, Japan’s GDP exceeds that of Canada and other core states (except for the United States) for almost all years in the sample. Canadian output is consistently below that of any other core-group member. Calculated based on data from the Penn World Tables (Heston et al. 2006).

23,000 country pairs in this group, representing about 10.5 percent of GATT/WTO members. Finally, the third group includes all other GATT/WTO country pairs: those with either one industrial country and one LDC or two LDCs.²⁹ About 89 percent of all GATT/WTO member dyads are in the third group.

As is standard, I also control for dyads in which only one state in a GATT/WTO member. However, because the logic of market-failure theory implies that free riding will privilege industrial states in this group, I subdivide these “onein” dyads into two groups: 1) pairs of industrial states (*Onein/industrial states*), and 2) all others (*Onein/nonindustrial states*). In the first of these groups are, for example, France and Spain before 1963 and Britain and Portugal before 1962.

In Table 2, I report the result of an analysis of bilateral trade that includes a variable indicating each of these three groups and that also includes all other covariates standard in the literature--that is, membership in PTAs, whether uniltateral or not, GSPs, and currency unions; the logged product of the population of each country in each pair in each year; and colonial ties. As is standard, I also include the logged products of the gross domestic product (GDP) of each country in each pair in each year, as well as dyadic and year fixed effects. In the text, I express the coefficients on the dichotomous variables as the percentage change in trade (i.e., $e^\beta - 1$) relative to the base group. The model I estimate is:

$$\begin{aligned} \ln(\text{imports})_{ijt} = & \alpha + \beta_1(\text{Core states})_{ijt} + \beta_2(\text{Other industrial states})_{ijt} \\ & + \beta_3(\text{Nonindustrial states})_{ijt} + \beta_4(\text{Onein/industrial states})_{ijt} \\ & + \beta_5(\text{Onein/nonindustrial states})_{ijt} + \beta_6(\text{PTA recip})_{ijt} + \beta_7(\text{PTA unilat})_{ijt} \\ & + \beta_8(\text{Currency Union})_{ijt} + \beta_9(\text{GSP})_{ijt} + \beta_{10}(\text{Any Colony})_{ijt} \end{aligned}$$

²⁹Disaggregating this group into industrial countries paired with an LDC and LDCs paired only with each other shows that no statistically significant difference exists between the two groups (p-value = 0.128).

$$+ \beta_{11}(\ln(gdp_i * gdp_j))_t + \beta_{12}(\ln(pop_i * pop_j))_t + \mu_i + \sum \delta_t Year_{t+} + \varepsilon_{ijt} \quad (1)$$

The results in the first column of Table 2 are consistent with market-failure theory. They show that the regime exerts its strongest impact on core-state trade: their bilateral imports are three times as high as are those between-base group states.³⁰ Trade between states in the other-industrial group is smaller than that of core-group trade but still more than double that of base-group states. The corresponding statistic for other member states is about 40 percent. The difference between each treatment group and the base group is statistically significant, and pair wise comparisons show that the differences between the groups themselves are also significant.

[Insert Table 2 about here]

The results in Table 2, col. 1, also show that the effect of industrial-country status extends to dyads in which only one country is a GATT/WTO member (i.e., *Onein/industrial states*). Trade between these states is about 46 percent higher than is trade between base-group members. Indeed, neither a substantive nor statistically significant difference exists between the trade of these “onein” dyads and trade between the 90 percent of GATT/WTO member dyads that include at least one LDC (p-value = 0.48). These results are consistent with the claim that market-failure theory makes about the dominance of industrial states in the postwar regime.

Table 2 also makes clear that dyadic income exerts a large, positive, and significant impact on bilateral trade flows and that trade-related groups other than the GATT/WTO also affect trade. Most notably, current or former members of colonial empires trade more than twice as much with each other as do states in the base group. The corresponding statistics for

³⁰Unless I state otherwise, the p-values of all estimates that I report as significant are ≤ 0.0001 .

reciprocal PTAs and currency unions are about 40 percent and 65 percent, respectively. In contrast, both unilateral PTAs and GSPs exert small negative effects on trade (p-values = 0.054 and ≤ 0.0001 , respectively). These results are consistent with those of other studies.

The logic of market-failure theory and the GATT/WTO practices consistent with it suggest that trade expansion may also vary across the two subsets of states that the “other industrial” group subsumes. Because each core state sought to extract compensation for any benefits its tariff cuts endowed on smaller industrial states, trade should expand to a larger extent between core states and smaller industrial countries than between the latter. To test this idea, I divide the set of other industrial country regime members into two groups: 1) core states paired with relatively small industrial countries (*Big-small*), and 2) small industrial states paired with each other (*Small-small*).

Table 2, col. 2, reports the results of an analysis that adds variables that assume a value of one in cases of asymmetrical and symmetrical industrial-country pairs. In the interest of clarity, I report only the estimates on the industrial-group variables; other estimates are identical to those in the first column. As before, core-group trade increases relative to that of the base group by a factor of three. Trade between members of other industrial-country pairs varies as market-failure theory implies: it increases by about 170 percent in the case of large-small states pairs and by about 115 percent in the case of smaller industrial countries paired with each other. This difference is both substantively large and statistically significant (p-value = 0.002).

Thus, the evidence that Table 2 presents is consistent with the prediction of market-failure theory that regime effects will vary systematically both among industrial countries and between industrial countries and LDCs. While the most dramatic trade expansion occurs

between core states, trade also expands by progressively smaller but still sizeable amounts in cases in which member-country dyads include either one large and one relatively small industrial country or two relatively small industrial countries. Even nonmember industrial countries witness an expansion of their trade that is as large as is that which two nonindustrial-country GATT/WTO members realize.

Security externalities

Market-failure theory does not predict, however, the impact that the GATT/WTO exerts on LDC trade. Table 2 shows that trade between dyads that include at least one LDC is about 40 percent higher than is base-group trade. Although recent work shows that some LDCs do exert market power with respect to some goods (e.g., Broda, Limão, and Weinstein 2008), it is clear that these countries were not central players in the tariff bargaining that occurred under the auspices of the postwar regime.

To examine whether the theory linking trade to security can help to explain the LDC results, I create a variable that takes on a value of one when both states in a country pair are allies.³¹ I interact this term with each of the three GATT/WTO country groups. In addition to these groups, therefore, I also distinguish: 1) allied core states, 2) allied pairs in the other industrial group and 3) other allied member states.³² To be consistent with the theory, the results should show that: 1) allies trade more with each other than do base-group states; and 2) GATT/WTO membership exerts a positive and significant impact on trade between allies when at least one of them is an LDC.

³¹I use data from the Alliance Treaty Obligations and Provisions Project (<http://atop.rice.edu>). As these data end in 2003, the analyses that include alliances end in that year.

³²As before, no difference exists between dyads with one industrial country and one LDC and those with two LDCs.

The results in the first column of Table 3 show that the evidence is consistent with the theory. Allies trade about 17 percent more with each other than do base-group members, a statistically significant result. Joint membership in alliances and the GATT/WTO does not affect trade either between core-group members or between states in the other industrial group (p-value = .867 and 0.209, respectively). As the theory predicts, the regime exerts an extremely strong impact on trade between allies only when one of them is an LDC. Allied states in the nonindustrial-country group trade about three times more with each other than do other dyads in the same group. On net, alliances between nonindustrial-country GATT/WTO members raises their trade by a factor of almost two relative to the base group, which makes trade between them only slightly smaller than trade between large and small industrial country regime members (p-value = 0.55).

[Insert Table 3 about here]

That it is the GATT/WTO insurance mechanism that matters in these cases emerges more clearly if I distinguish between states based on their ability to avail themselves of it. NMPs had access to the same basic privileges as did formal members, but the de facto members among them—i.e., those states that joined the regime without completing a formal accession protocol—did not have the “right to assistance in resolving disputes between themselves and contracting parties” (Goldstein, Rivers, and Tomz 2007b, 42, n 15). Thus, the theory based on security externalities predicts that the regime should not affect trade between allies if either or both are de facto members. Because all de facto members are former colonies, they are a subset of nonindustrial dyads.

To test this hypothesis, I add to the analysis a variable that assumes a value of one in instances in which GATT/WTO dyads include at least one de facto member. I also add

another variable that interacts these dyads with the alliance variable. The results in Table 3, col. 2, are consistent with the theory: they show that regime membership does not affect trade between allies if either of them has not completed a formal accession protocol after gaining independence (p-value = 0.60). Thus, GATT/WTO membership magnifies the impact of alliances only if the states they link can actually utilize the insurance against renegeing that it provides.

Finally, the theory implies that the effect on trade of alliance termination should vary with regime membership—that is, trade should decline as alliances end only if the states they linked are not GATT/WTO signatories. Table 3, col. 3, reports the results of an analysis that distinguishes between former allies on this basis. It includes a variable that assumes a value of one when former allies are regime members and another variable that takes on a value of one in other cases of former allies. The results show that no change in trade occurs if former allies are regime members (p-value = 0.162). In the case of other former allies, however, trade drops off by about 40 percent. These data are consistent with the existence of a mechanism that helps to insure LDCs against the renegeing that can ensue when alliances end.

The results in Table 3 also help to explain why Goldstein, Rivers, and Tomz find that the GATT/WTO exerts stronger effects on trade involving LDCs than conventional wisdom suggests. About 25 percent of the increase they report is due to joint membership in alliances and regime membership rather than to the latter alone. Absent alliance ties, members of nonindustrial dyads realize about a 30 percent increase in their trade relative to the base group.³³ This is about 10 percent of the size of the trade expansion that large industrial

³³To calculate the impact of the regime on trade involving LDCs, I used the specification in Table 5 (Goldstein, Rivers, and Tomz 2007b, 58) but combined the nonindustrial dyads into a single group.

countries realize and about 25 percent of the increase in trade between states in the other-industrial group. Trade expansion involving LDCs that is comparable in magnitude to that some industrial countries realize depends on membership in both alliances and the postwar regime.

Robustness Tests

Here, I report on the sensitivity of the results presented above to changes in the specification of the model. First, I ask about the robustness of the results that the analysis of market-failure theory produces—i.e., those that the first column of Table 2 present.³⁴ These results are robust to restricting the period examined to the years in which the GATT existed; including a structural break for the 1995 advent of the WTO and covariates that interact each of the three member groups with the WTO term; adding a control for EU membership; adding Canada to the core group; and adding observations for which the IMF reports trade as either zero or missing.³⁵

The alliance results that column 1 of Table 3 reports are also robust to restricting the analysis to the years in which the GATT existed; to including a structural break for the advent of the WTO; and to the additions of zero or missing trade observations. The same is true if I distinguish between the impact of alliances that include the United States among its members and all other alliances. That this might matter is suggested by especially large role the United States played throughout the history of the GATT/WTO and by the fact that about 80 percent of all postwar alliances include the United States as a member.

³⁴Complete results for all robustness tests are available from the author.

³⁵I am grateful to Michael Tomz for supplying these data. In the specifications for the robustness tests I report here, I set the value of bilateral trade for the missing or zero observations equal to the log of 10,000.

Conclusion

This paper shows that taking account of both the economics and politics that produced the GATT/WTO creates a very different picture of its impact than do existing studies. The analyses here show that, in accord with market-failure theory and in contrast to the results that Gowa and Kim (2005) report, tariff negotiations privileged trade most dramatically between its largest industrial-country members but also to a still sizeable if smaller extent between large and small industrial countries and between the relatively small industrial countries themselves.

In contrast, the impact of GATT/WTO membership on trade involving LDCs is comparable in size to that of industrial countries only in cases in which alliance ties also exist. Absent the latter, small countries are vulnerable to hold up if their firms sink costs into exporting. In their presence, it is possible for their destination countries to make a credible commitment not to raise tariffs *ex post*. Although weakening alliance ties can recreate a time-consistency problem, small countries can better insure themselves against this event when they can access the DRM that joint membership in a regime makes possible. The data show that the 11 percent of nonindustrial dyads linked by alliance ties realize an expansion of their trade comparable in magnitude to that of some industrial countries.

Thus, two processes seem to have governed trade expansion under the auspices of the postwar regime. In one, the GATT/WTO seems to have facilitated the ability of large states to escape the “bad” equilibrium outcome that a single-shot PD game inevitably produces. In the other, the regime supplied small-state allies with an analogue of a medieval merchant guild, lowering the risk associated with production for export. As such, this paper suggests that considerable value added inheres in an analysis of the postwar trade regime that takes

into account the economics and politics that both created it and influenced its operation.

References

- Bagwell, Kyle. 2007. Remedies in the WTO: An Economic Perspective. Economics Department Discussion Papers. Columbia University.
- Bagwell, Kyle and Robert W. Staiger. 2002. The Economics of the World Trading System. Cambridge, MIT Press. London: MIT Press.
- _____. 2006. What Do Trade Negotiators Negotiate About? Evidence from the World Trade Organization. NBER Working Paper 12727.
- Bagwell, Kyle, Petros C. Mavroidis, and Robert W. Staiger. 2002. It's a Question of Market Access. American Society of International Law. 96, 1: 56-76.
- Bernard, Andrew B., J. Bradford Jensen, Stephen J. Redding, and Peter K. Schott. 2007. Firms in International Trade. Journal of Economic Perspectives 21,3:105-30.
- Bown, Chap P. 2004. Developing Countries as Plaintiffs in GATT/WTO Trade Disputes. The World Economy 27, 1: 59-80.
- Broda, Christian, Numo Limão and David Weinstein. 2008. Optimal Tariffs and Market Power: The Evidence. American Economic Review 98,5: 2032-65..
- Das, Sanghamitra, Mark J. Roberts and James R. Tybout. 2007. Market Entry Costs, Producer Heterogeneity, and Export Dynamics, Econometrica, Econometric Society 75 (3): 837-73.
- Davis, Christina L. and Sarah Blodgett Bermeo. Forthcoming. Who Files? Developing Country Participation in GATT/WTO Adjudication. Journal of Politics.
- Declassified Documents Reference System. 2008. Farmington Hills, MI: Gale.
- Eicher, Theo S. and Christian Henn. 2009. In Search of WTO Trade Effects: Preferential Trade Agreements Promote Trade Strongly but Unevenly. IMF Working Paper WP/09/31.
- Felbermayr, Gabriel and Wilhelm Kohler. 2009. WTO Membership and the Extensive Margin of World Trade: New Evidence. Department of Economics, University of Hohenheim, Germany.
- Goldstein, Judith L., Douglas Rivers and Michael Tomz. 2007a. Do We Really Know That the WTO Increases Trade? Comment. American Economic Review 97.5: 2005-18.
- _____. 2007b. Institutions in International Relations: Understanding the Effects of the GATT and the WTO on World Trade. International Organization 61,1 (Winter): 37-67.

- Gowa, Joanne and Soo Yeon Kim. 2005. An Exclusive Country Club: The Effects of the GATT on Trade, 1950-94. World Politics 57, 4 (July): 453-78.
- Gowa, Joanne. 1994. Allies, Adversaries, and International Trade. Princeton, N.J.: Princeton University Press.
- _____ and Edward D. Mansfield. 1993. Power Politics and International Trade. American Political Science Review 87, 2: 408-20.
- Greif, Avner. 2006. Institutions and the Path to Economic Modernity: Lessons from Medieval Trade. NY: Cambridge University Press.
- Greif, Avner, Paul Milgrom and Barry R. Weingast. 1994. Coordination, Commitment and Enforcement: The Case of the Merchant Guild, Journal of Political Economy, 10 (4): 745-776.
- Herz, Bernhard and Marco Wagner. 2007. Do the World Trade Organization and the Generalized System of Preferences Foster Bilateral Trade? BGPE Discussion Paper No. 20.
- Heston, Alan, Robert Summers and Bettina Aten. 2006., Penn World Table Version 6.2, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania.
- Hoda, Anwarul. 2001. Tariff Negotiations and Renegotiations Under the GATT and the WTO: Procedures and Practices. NY: Cambridge University Press.
- Hoekman, Bernard M. and Petros C. Mavroides. 2007. The WTO: Law, Economics, and Politics. London: Routledge.
- Keohane, Robert O. 1994. After Hegemony: Cooperation and Discord in the World Political Economy. Princeton: Princeton University Press.
- Ludema, Rodney D. and Anna Maria Mayda. 2009. Do Countries Free Ride on MFN? Journal of International Economics 77: 137-50.
- Maddison, Angus. 2008. Historical Statistics for the World Economy: 1-2006 AD. <http://www.ggdc.net/maddison>.
- Mansfield, Edward D. and Rachel Bronson. 1997. Alliances, Preferential Trading Arrangements, and International Trade. American Political Science Review 91, 1: 94-107.
- Melitz, Mark, 2003. The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity. Econometrica 71, 6: 1695-1725.

- Memorandum. Discussion at the 409th Meeting of the NSC. June 14, 1959. Declassified Documents Reference System. 2008. Farmington Hills, MI: Gale.
- Rose, Andrew K. 2004. Do We Really Know That the WTO Increases Trade? American Economic Review 94, 1 (March): 98-114
- _____. 2007. Do We Really Know That the WTO Increases Trade? Reply. American Economic Review 97,5:20019-26.
- Subramanian, Arvind and Shang-Jin Wei. 2007. The WTO Promotes Trade, Strongly but Unevenly. Journal of International Economics. Elsevier. 72, 1 (May) 151-75.
- Summary of 6/4/59 NSC meeting: Effect of U.S. import trade policy on national security; and world developments affecting national security. Miscellaneous. National Security Council. SECRET. Issue date: June 4, 1959. Declassified Documents Reference System. 2008. Farmington Hills, MI: Gale.
- Trebilcock, Michael J., and R. Howse 1999. The Regulation of International Trade, Routledge, London; NY.
- Tybout, James R. 2004. Trade Policy and Industrial Sector Responses: Using Evolutionary Models to Interpret the Evidence, with Erkan Erdem, in Susan Collins and Dani Rodrick, eds., Brookings Trade Forum 2003 Washington, D.C.: The Brookings Institution.
- U.S. Tariff Commission. 1965. Operation of the Trade Agreements Program, v. 15 1962/63. GPO: Washington, D.C.
- U.S. Tariff Commission. 1964. Operation of the Trade Agreements Program, 24th Report July 1960-June 1962. GPO: Washington, D.C.
- Wilkinson, Rorden and James Scott. 2008. Developing Country Participation in the GATT: A Reassessment. World Trade Review 7,3: 473-510.
- Winham, Gilbert. 1986. International Trade and the Tokyo Round Negotiation. Princeton: Princeton University Press.

Table 1. Bilateral Trade, 1946-1994
Formal Members, Mixed Dyads, and NMPs

No colonial pairs	
Formal members	0.38 (0.04)
Mixed dyads	0.38 (0.04)
NMPs	0.41 (0.08)
All colony pairs	0.95 (0.16)
Colonial pairs/GATT member	-0.04 (0.11)
R ²	0.84
N	276922

Note. Regressand: logged bilateral trade flows, measured in 1967 U.S. dollars. Fixed-effects analysis using *areg* in Stata 10 with robust standard errors clustered on directed dyads in parentheses. Controls for PTAs, currency unions, GSPs, GDP, population, and dyad and year fixed effects included but not reported.

Table 2. The Impact of the GATT/WTO/WTO on Trade, 1946-2004

	(1)	(2)
GATT/WTO members		
Core states	1.41 (0.21)	1.42 (0.21)
Other industrial states	0.82 (0.07)	
Big-small		0.99 (0.10)
Small-small		0.77 (0.08)
Nonindustrial states	0.33 (0.03)	0.33 (0.03)
Onein/industrial dyads	0.39 (0.07)	
Onein/other dyads	0.19 (0.03)	
Reciprocal PTA	0.32 (0.02)	
Nonreciprocal PTA	-0.06 (0.03)	
GSP	-0.08 (0.02)	
Currency union	0.53 (0.09)	
Colonies	0.77 (0.14)	
GDP	0.65 (0.01)	
Population	0.03 (0.03)	
R ²	0.84	
N	373,728	

Note. Regressand: logged bilateral trade flows measured in 1967 U.S. dollars. Fixed-effects analysis using *areg* in Stata 10 with robust standard errors clustered on directed dyads in parentheses. The analysis in col. 2 includes controls for PTAs, currency unions, GSPs, colonies, GDP, population, and dyad and year fixed effects but they are not reported here.

Table 3. The Impact of the GATT/WTO and Alliances on Trade, 1946-2003

	(1)	(2)	(3)
GATT/WTO members			
Core group	1.37 (0.22)	1.37 (0.22)	1.37 (0.22)
Allies	-0.04 (0.22)	-0.04 (0.22)	-0.03 (0.22)
Other industrial states	0.81 (0.07)	0.80 (0.07)	0.80 (0.07)
Allies	-0.07 (0.06)	-0.08 (0.06)	-0.07 (0.06)
Nonindustrial states	0.27 (0.04)	0.26 (0.04)	0.27 (0.04)
Allies	0.23 (0.04)	0.24 (0.04)	0.23 (0.04)
Nonindustrial states/de facto		0.35 (0.04)	
Allies		-0.11 (0.10)	
Alliances	0.16 (0.04)	0.16 (0.04)	0.15 (0.04)
Former allies/member states			0.10 (0.07)
Former allies/nonmember states			-0.49 (0.12)
R ²		0.83	
N		371,705	

Note. Regressand: logged bilateral trade flows. Fixed-effects analysis using *areg* in Stata 10 with standard errors clustered on directed dyads in parentheses. Controls for PTAs, currency unions, GSPs, colonies, GDP, population, and dyad and year fixed effects included but not reported.