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# Membership Has Its Privileges: The Impact of GATT on International Trade

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# Membership Has Its Privileges:
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Abstract: Recent research concludes that membership in the GATT/WTO had no effect on foreign trade. By mistakenly classifying many countries as outsiders, even though they had rights and obligations under the agreement, this work systematically underestimates the effect of GATT. We correct the downward bias in previous estimates. Our analyses show that GATT substantially increased trade, and that its effects were relatively stable across countries and over time.

Keywords: GATT, WTO, gravity, international, panel

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In a recent article in this *Review*, Andrew K. Rose (2004) finds that countries belonging to the General Agreement on Tariffs and Trade (GATT) and its successor, the World Trade Organization (WTO), did not trade more than countries that abstained from membership. A vast literature on GATT and the WTO presupposes that these organizations were important, but, until Rose, there were few systematic efforts to test the assumption that membership increased trade. Rose's contribution is striking because he assembles a large data set, performs a myriad of analyses, and finds scant evidence that the GATT or WTO had any impact. If these organizations did not affect the level of trade, what is all the fuss about? Rose isn't altogether sure and describes his negative findings as an "interesting mystery" (p. 112).

The solution to this mystery lies in understanding who actually participated in GATT.[1] We show that Rose has overlooked a large proportion of countries to which the agreement applied. By mistakenly classifying many countries as nonparticipants, when in fact they had both rights and obligations under the agreement, he systematically underestimates the effect of GATT on international trade. The purpose of this paper is to identify the full set of GATT participants and, once this institutional detail is understood, to show that GATT did indeed contribute to the substantial growth in postwar trade.

The paper has three sections. First, we describe the institutional reach of GATT. Drawing on published and archival material, we document that GATT gave rights and obligations not only to formal members, but also to three categories of *nonmember participants*: colonies, *de facto* members, and provisional members. Second, we show that previous work has missed the role of most nonmember participants, grouping them with countries that had no rights

[1] From this point forward, we use the acronym GATT to refer to both the General Agreement on Tariffs and Trade and the World Trade Organization, unless otherwise specified.

and obligations under GATT.[2] Using the same data and methods as Rose, we show that GATT substantially increased the trade of *both* formal members and nonmember participants, compared with countries outside the agreement. Finally, we perform a series of sensitivity analyses, similar to those reported by Rose, to show that the estimated effects of GATT are relatively stable across time and space and robust to changes in methods of estimation.

## I. GATT Membership and Participation

GATT was established "to remove or diminish barriers which impede the flow of international trade and to encourage by all available means the expansion of commerce" (GATT 1961, p. 1; see also Douglas A. Irwin 1995). In pursuit of these objectives, the organization defined rules to govern trade policy and sponsored eight rounds of trade negotiations, which led to reciprocal reductions in tariffs and nontariff barriers. Succinctly summarized by Kyle Bagwell and Robert W. Staiger (2002b, p. 11), the rules oblige parties "to concentrate national protective measures in the form of tariffs, to apply them on a nondiscriminatory basis, and to honor any tariff bindings made in a GATT/WTO negotiation." These obligations give rise to correlative rights: participants are entitled to be treated according to the same code they must uphold themselves.

The rules of GATT and other international agreements foster trade in a variety of ways. For example, they help governments solve the prisoners' dilemma that occurs when each country sets policy unilaterally according to a terms-of-trade logic (Bagwell and Staiger 1999, 2002a). International agreements can also alleviate time-inconsistency problems that arise from the temptation to reestablish barriers, whether for purely economic reasons or in response to political pressure by protectionist lobbies (e.g. Staiger and Guido Tabellini 1987, 1999; Giovanni Maggi

[2] This critique applies not only to Rose (2004a) but also to Arvind Subramanian and Shang-Jin Wei (2003), who reanalyzed Rose's data in many interesting ways but used the same measure of GATT membership as Rose.

and Andrés Rodríguez-Clare 1998). Finally, in a repeated-game with multiple equilibria, trade agreements help countries coordinate on an efficient outcome.

These benefits could flow from agreements involving as few as two countries, but *multilateral* pacts such as GATT have additional ways to promote trade (Maggi 1999). Under GATT, concessions between any two participants automatically get passed to others according to the most-favored-nation (MFN) principle: a party that accords any "advantage, favour, privilege or immunity . . . to any product originating in or destined for any other country," must extend the same benefit "to the like product originating in or destined for the territories of all other contracting parties."[3] In this way, GATT multiplies the rights and obligations that would emerge from purely bilateral negotiation.

To quantify the effect of GATT on international trade, one must first identify the countries and territories that were bound by the agreement. A close examination of public documents and archival records reveals that GATT rules applied not only to formal members but also to three categories of *nonmember participants*. Certain colonies, newly independent states, and provisional applicants had GATT rights and obligations, even though their names did not appear on the formal membership roster. By overlooking most of these nonmember participants, previous work has greatly understated the reach of the organization.

Like other international agreements, GATT created rights and obligations for formal members. In October 1947, 23 nations signed the General Agreement at the Palais des Nations in Geneva. These founders pledged that, in relations with other GATT parties, they would extend MFN treatment and respect the tariff concessions they had made. In return, they were entitled to similar treatment from other participants. The founders, as formal members, were

[3] GATT allows certain exceptions to MFN, namely for colonial systems, regional trading arrangements, and the Generalized System of Preferences.

required to pay dues and notify the organization of changes in trade policy. They could participate in multilateral trade negotiations and annual meetings, and they had voting rights. When other countries acceded to the organization, they acquired the same duties and privileges as the founders.

In addition, GATT gave rights and obligations to three other types of countries and territories, none of which could be called formal members. Colonies and overseas territories make up the first group of nonmember participants. According to Article XXVI:5(a) of GATT, "Each government accepting this Agreement does so in respect of its metropolitan territory and of the other territories for which it has international responsibility, except such separate customs territories as it shall notify to the Executive Secretary to the Contracting Parties at the time of its own acceptance." With much of the world under colonial rule in the late 1940s, this clause greatly expanded the potential scope of GATT. When sponsored by their metropole, colonies could receive and give the benefits of membership, even though they were not formal members and did not have voting rights.

Some contracting parties applied GATT to all their colonies without exception. The Netherlands, for example, accepted the agreement on behalf Aruba, Indonesia, the Netherlands Antilles, and Surinam.[4] Belgium, Portugal, Spain, and the United States likewise applied GATT to each of their possessions.[5] As the US elaborated in response to an inquiry from Cuba, "The signature of the United States … was intended to apply to all territories for which the United States has international responsibility," including not only its primary customs zone (the

[4] GATT/CP.4/11 (23 February 1950); GATT/CP.4/SR.3 (24 February 1950). In this footnote and subsequent ones, legal documents and memoranda of GATT and the WTO are referenced by unique identification numbers assigned by the organizations.

[5] For the United States, see GATT/CP.3/SR.5 (20 April 1949): 4-5. Belgium is discussed in GATT/CP.2/11 (3 August 1948) and GATT/CP/108/Add.2 (11 September 1951): 1. For Portugal, see BISD 11S/, paragraph 11. For Spain, see L/1994 (7 May 1963), paragraph 2.

mainland, Alaska, Hawaii, and Puerto Rico), but also American Samoa, Guam, the Kingman Reef, Midway Islands, the Panama Canal Zone, the Pacific Trust Territory, the Virgin Islands, and Wake Island. "Consequently the United States considers that the General Agreement has applied between these territories and Cuba since January 1, 1948…."[6]

Other contracting parties were slightly more selective. France applied the agreement to all its overseas territories except Morocco, and the United Kingdom adopted GATT for its entire empire except Jamaica.[7] When British authorities finally included Jamaica shortly before independence in 1962, GATT members "were required to accord to the trade of Jamaica all the advantages provided for in the Agreement."[8] A similar transformation occurred with respect to the Faroe Islands. After exempting the islands for two years, Denmark announced in 1952 that henceforth "the Annecy Protcol, the Torquay Protocol, as well as supplementary protocols and amendments thereto, should apply also to the Faroe Islands."[9] In sum, GATT gave benefits and obligations to many colonies and dependent territories around the world.

A second mode of informal participation emerged in response to decolonization. Having accepted GATT in respect of their overseas territories, contracting parties needed guidelines for treating territories that gained independence. The General Agreement envisioned two ways by which newly independent territories could become formal members. Most simply, they could invoke Article XXVI:5(c), and thereby become a contracting party "on the terms and conditions previously accepted by the metropolitan government on behalf of the territory in question."[10]

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[6] GATT/CP/33 (13 September 1949).
[7] On France, see GATT/CP/22 (25 May 1949). The UK is discussed in GATT/CP.3/SR.5 (20 April 1949): 5 and L/1809 (6 July 1962).
[8] E. Wyndham White (GATT Executive Secretary) to G. Arthur Brown (Government of Jamaica), 29 August 1962.
[9] G/10 (21 May 1952). Only two contracting parties – Australia and New Zealand – exempted several overseas customs territories from the GATT. Australia applied the GATT to Tasmania but not Papua New Guinea, Nauru, and the Norfolk Islands. New Zealand applied the GATT to the Cook Islands but not Western Samoa and the Tokelau Islands. See GATT/CP.3/SR.5 (20 April 1949): 5 and GATT/CP/108/Add.2 (11 September 1951).
[10] BISD 10S/73.

Alternatively, ex-territories could negotiate new terms and attempt to enter via Article XXXIII. If neither option seemed attractive, the newly independent state could terminate its participation in GATT.

Before making such a decision, many new states wanted time to plan their future commercial policy. The contracting parties "considered it desirable that, in the period between the acquisition of autonomy and the final decision on relations with the General Agreement, the trade relations between the newly independent countries and the contracting parties continue to be governed by the General Agreement."[11] Consequently, they resolved to apply GATT *de facto* in relations with the new territory, provided the territory continued to apply GATT *de facto* in relations with them. Put another way, the contracting parties allowed newly independent states "to benefit from, and to apply on a reciprocal basis, the provisions of the GATT, and, in particular, the rules for most-favored-nation treatment," even though they were not formal members.[12] Participation during this *de facto* period is a second important form of nonmember involvement.

*De facto* participants were "expected to observe the substantive provisions of the General Agreement," but they had fewer administrative responsibilities than formal members.[13] They did not pay dues, and they were not required to notify GATT when they established preferential trading agreements or altered their trade policy to deal with balance-of-payments problems, economic development, or national emergencies.[14] *De facto* participants received MFN treatment, were invited participate in multilateral trade negotiations, and could observe the annual GATT sessions. But they could not vote, and they had no right to assistance in resolving

[11] C/130 (28 June 1984): 2.
[12] L/2757 (8 March 1967): 2.
[13] C/130 (28 June 1984): 3.
[14] C/130 (28 June 1984): 3-4. One de facto participant, Cambodia, did pay dues, though this was an anomaly. See C/M/222 (11 July 1988): 26.

disputes between themselves and contracting parties regarding the interpretation of the agreement. In summary, *de facto* participants gave and received the main benefits of GATT, but they had weaker procedural obligations and enjoyed less voice than formal members.

The maximum allowable duration of *de facto* status changed over time. The first countries to enter *de facto* status were Laos and Cambodia, which gained independence in 1949 and 1953, respectively. By late 1957 neither had decided whether to formalize its participation, prompting the contracting parties to set deadlines. In two cases (Laos and Guinea) deadlines passed and *de facto* status expired, but in other cases the new states enlisted as formal members or secured extensions to their *de facto* status. Eventually the contracting parties stopped imposing deadlines and allowed *de facto* participation to continue indefinitely.[15] The practice ended only with the creation of the WTO, which eliminated the possibility of *de facto* participation by requiring countries to accede or lose benefits.

A third type of nonmember participation emerged when the contracting parties allowed some states to accede *provisionally*, as a way to include them while negotiations for full accession were still taking place. When Japan proposed this kind of arrangement in 1953, the Contracting Parties decided that, "pending the conclusion of tariff negotiations with Japan . . . the commercial relations between the participating contracting parties and Japan shall be based upon the General Agreement."[16] The *trauaux preparatories* make clear that "during such period Japan shall be subject to all the obligations and shall receive all the benefits of the General Agreement."[17] The contracting parties made similar arrangements for Switzerland (1958), Israel (1959), Tunisia (1959), Yugoslavia (1959), Argentina (1960), Egypt (1962), Iceland (1964), the Philippines (1973) and Colombia (1975).

[15] BISD 15S/64; L/3457 (9 November 1970):1.
[16] BISD 2S/31.
[17] L/107 (20 August 1953): 2.

Provisional accession affected relations among most but not all GATT participants. When a country acceded provisionally, it acquired GATT rights and obligations only in respect of contracting parties that signed the declaration on provisional accession, not with respect to all contracting parties. The Swiss experience illustrates this phenomenon. During its provisional period, which lasted until 1966, Switzerland could have entered into GATT relationships with as many as 69 contracting parties. In fact, only 61 contracting parties formally accepted the Swiss protocol of provisional accession and put it into force.[18] The other eight contracting parties did not have obligations or rights with respect to Switzerland until it acceded completely in 1966.

In two other ways, provisional members differed from contracting parties. First, they could not vote at GATT meetings. By all estimates this limitation "was not very important as the contracting parties did not usually proceed to a formal vote in reaching decisions; generally, the Chairman took the sense of the meeting" and each provisional member had "the same opportunity as contracting parties to express its opinion."[19] Second, provisional members—not having completed their own negotiations for accession—did not possess negotiating rights in respect to tariff concessions by others. Thus, provisional members were not entitled to compensation if a contracting party withdrew or modified the tariff concessions it had made in previous negotiating rounds. Aside from these minor differences, provisional members had the same obligations and rights as full members.

## II. Did Participation in GATT Increase Trade?

Having identified the countries and territories to which GATT applied, we can now solve Rose's mystery: why do insiders appear to trade at no higher levels than outsiders? The answer,

[18] Authors' calculations from GATT, *Status of Legal Instruments*. Australia, Burundi, Cameroon, the Dominican Republics, Myanmar, New Zealand, and Rwanda did not accept the Swiss protocol. Portugal accepted the protocol but did not put it into force.
[19] SR.14/10 (10 June 1959): 120.

we argue, is that treating nonmember participants as outsiders leads to a systematic downward bias in the estimated effect of GATT. For the most part, Rose treats colonies, *de facto* members, and provisional members as being outside the organization, grouping them with countries that had no rights and obligations. As a consequence, his estimates mainly reflect differences between formal members and the rest of the world. If nonmember participants benefited from GATT (as was indeed the case), analyses that overlook them will underestimate the impact of the agreement by misallocating some treatment recipients to the "control group."

By taking full account of nonmember participants, we correct the downward bias in previous estimates. Insofar as possible, we use the same data and methods as Rose. The primary difference between our analysis and his involves the treatment of provisional members, *de facto* members, and colonies. Recognizing that all three had rights and obligations, we move them from the control group into a new treatment category. After making this change, it becomes clear that GATT substantially increased the trade of *both* formal members and nonmember participants, relative to countries outside the agreement.

Rose's GATT membership indicator is, as a practical matter, nearly equivalent to formal membership. He treats all ten provisional members and fifty-six *de facto* members as if they were outsiders. One *de facto* member, Comoros, is classified as belonging to GATT, but apparently not for reasons related to its *de facto* status. In Rose's data set, Comoros resembles a founding member with rights and obligations dating to 1948. In truth, Comoros has never been a formal member, much less a founder, though it did participate in GATT as a French colony between 1949 and 1975 and subsequently as a *de facto* member. Thus, Comoros was part of GATT, but purely as a nonmember participant.

Rose correctly observes that some colonies "were covered because of their relationship with a founding member" (p. 101), but his empirical analyses reflect this fact to a very limited degree. He classifies most colonies—all but Bermuda, Comoros, and Reunion—as belonging to GATT only when trading with their metropolitan power, not when trading with anyone else. To take an example, pre-independence Uganda is viewed as a GATT member only when paired with the United Kingdom. There are, of course, many pairings of colonies with countries other than their colonizer, so colonies are treated as insiders in only a minute share of the observations. The data set contains two additional errors involving colonies. It misses the participation of colonial Zaire, Lesotho, and Namibia, placing them outside GATT even in relations with their metropolitan power. At the same time, it presents colonial Jamaica, Morocco, Papua New Guinea, and Vanuatu as belonging to GATT, when in fact metropolitan powers did not apply the agreement to these territories.[20]

In contrast, the coverage of formal members in Rose (2004) is nearly comprehensive, with three exceptions. First, the paper does not recognize Benin as a member until 1996, when in fact the country acceded via Article XXVI:5 in 1963. Second, the Kyrqyz Republic is treated as never having belonged, even though it joined the WTO in 1998. Third, Rose claims that Cuba and Czechoslovakia "left the GATT when their governments were overthrown" (p. 101). In truth, Cuba has been a formal member continuously since 1948 and Czechoslovakia was a formal member from the founding of GATT until 1993, when the country split into the Czech Republic and Slovakia. This third error does not affect the statistical analysis, because neither Cuba nor Czechoslovakia is included in Rose's regressions.

[20] The United Kingdom did apply GATT to Jamaica, but only for the week immediately preceding Jamaican independence in 1962. Similarly, Australia applied GATT to Papua New Guinea for two weeks prior to independence in 1975.

To what degree does a focus on formal members understate trading relationships governed by GATT? By our count, 78 of the 178 countries in Rose's data set were at one time nonmember participants. The left panel of Table 1 summarizes the discrepancies between participation and formal membership as measured in dyad-years, the unit of analysis in Rose's research and ours. Over 20 percent of the observations in Rose's data set involve at least one colonial, *de facto*, or provisional member, so participation exceeds formal membership in a large share of cases. Table 1 also cross-classifies participation with Rose's membership variable. Although Rose regards a few nonmember participants as belonging to GATT, he overlooks the role of the agreement in more than 20 percent of the records.[21] Once we correct this omission, the effect of GATT becomes apparent.

TABLE 1 ABOUT HERE

Rose uses a gravity model to estimate the impact of GATT membership on trade between pairs of countries. We adopt the same approach in Table 2 but augment his specification with measures of nonmember participation. Following Rose, the dependent variable is the logarithm of average imports and exports in a given year for each dyad. In addition to indicators for whether one or both countries in the dyad participated in GATT, the independent variables include the logarithm of the products of GDP and GDP per capita, the logarithm of the distance between country centroids, indicators of colonial relationships, common languages, geographic characteristics, and other controls. To correct for common shocks and trends, all specifications include a fixed effects (FE) for years. Details are given in Rose (2004), the source for all variables except GATT participation.

[21] The right panel of Table 1 also shows a small number of cases in which Rose overstated the role of GATT. The cases involve the following countries, who were treated as belonging to GATT for selected years in which they did not actually participate: Comoros, Jamaica, Morocco, Papua New Guinea, and Vanuatu.

The first equation in Table 2 reproduces the "Benchmark Default" specification from Rose (2004) Table 1. These and similar estimates lead Rose to conclude that GATT membership did not increase trade. In fact, the estimated coefficients on GATT membership are slightly negative in this and many other of Rose's numerous regressions. When he uses country or dyadic FE estimators, Rose sometimes finds positive GATT effects, though he judges them "small compared to other effects" and "economically insignificant" (p. 104).

TABLE 2 ABOUT HERE

In the second column of Table 2, we replace Rose's membership measure with one that includes only formal members, thereby reclassifying countries that Rose counted as belonging even though they had not acceded and become full contracting parties. This change does nothing to solve the mysterious nonassociation between GATT membership and higher trade. The estimated effects of formal GATT membership in equation (2) are even more negative and statistically significant than what Rose reported in his paper.[22]

The solution to the mystery lies in the behavior of nonmember participants. Equation (3) adds indicators for whether the countries in each dyad were nonmember participants. We now find significantly higher trade when both countries had GATT rights and obligations, either as formal members or as nonmember participants, compared with dyads in which neither country belonged to the agreement. The effects are uneven in size but statistically significant.

The next two equations in Table 2 add FE for countries and dyads, respectively, while maintaining the year effects that were present in previous specifications.[23] We focus on equation (5), which has the largest set of fixed effects, though the estimates in equation (4) are similar. According to equation (5), trade between two formal members is about 62 percent higher

[22] In all remaining equations, "formal membership" refers to our measure, not Rose's.
[23] To accommodate dyadic effects we delete variables that remain constant over time for pairs of countries.

(calculated using $e^{0.48} - 1 \approx 0.62$) than trade between pairs of nonparticipants. When one country is a formal member and the other is a nonmember participant, trade is estimated to increase by about 75 percent, compared to commerce between outsiders. The effect when both countries are non-member participants is hardest to estimate and has the largest standard error. In equation (5), trade between two nonmember participants is estimated to be 141 percent higher than trade between countries without GATT rights and obligations. It is difficult to explain why the effect should be larger for nonmember participants than formal members, given that both had essentially the same rights and obligations.[24] When we impose a restriction of equality in equation (6), we obtain an estimate that is plausible and not qualitatively different from any of the subgroup estimates.

Which estimates should one believe, OLS or FE? In our case, both OLS and FE produce positive and significant GATT effects, so the issue is less critical than in Rose, where the two sometimes conflict. Nonetheless, the choice of estimator is consequential. The primary advantage of FE estimates is robustness to certain forms of misspecification and endogeneity. Their main disadvantage is inefficiency, since they do not exploit cross-sectional variation between dyads. Given the large size of this data set, inefficiency is not too serious a problem. Unless the proportion of variance between units is very large (which it is not), there is sufficient within-dyad variation to obtain good estimates using FE. Furthermore, discrepancies between OLS and FE suggest unobservable dyadic differences that bias the OLS estimator (see Jerry Hausman and William Taylor 1981) and would, in large samples such as ours, tilt any mean square error comparison in favor of FE.

[24] With so many observations we can reject the hypothesis of equality at conventional significance levels.

There are also theoretical reasons to prefer FE over OLS (Robert Feenstra 2004, pp. 161-163). James Anderson and Eric van Wincoop (2003) derive a gravity-type specification from a model with each country producing a single differentiated good, CES utilities, and market clearing. Their model implies the presence of a "multilateral resistance" term that can be approximated using country and time fixed effects.[25] Moreover, Scott Baier and Jeffrey Bergstrand (2004) conclude that, for research on trade agreement, the best approach to dealing with endogenous unit effects is either fixed effects or differencing. For these reasons, as well as those discussed above, we prefer FE estimates over OLS. In a recent paper Rose (*forthcoming*, p. 5) takes the same position, writing "I follow the profession in placing most confidence in the fixed effects estimators; I have no clear ranking between country-specific and country pair-specific effects."

In equation (6) we reduce the number of GATT parameters by imposing the restriction that formal membership has the same effect as nonmember participation. This simplifies the presentation and facilitates comparison with Rose, without changing our conclusions in any important way. Compared to relations between outsiders, we estimate that trade is approximately 72 percent higher when both sides of the dyad participate in GATT and nearly 31 percent higher when only one side participates. We regard equation (6) as our own benchmark specification, and conclude that GATT had an economically and statistically significant effect on trade.

The final column of Table 2 considers the effect of Article XXXV, a clause that signatories sometimes used to limit their obligations with respect to another signatory. Article XXXV states that GATT "shall not apply as between any contracting party and any other

[25] Anderson and van Wincoop suggest an alternative estimation procedure involving cross-equation nonlinear constraints. This approach is computationally intractable for the number of countries and time periods in Rose's data.

contracting party if: (a) the two contracting parties have not entered into tariff negotiations with each other, and (b) either of the contracting parties, at the time either becomes a contracting party, does not consent to such application." To date, more than sixty countries have resorted to Article XXXV or the equivalent provision of the WTO agreement,[26] but they have been highly selective. In total, invocations affect only 989 of the 234,597 observations in the data set.

Equation (7) shows the invocation of Article XXXV reduces the benefits of GATT. When neither party invokes the article, GATT increases trade by more than 70 percent. The use of Article XXXV by one trading partner cuts the benefits in half, lowering the gain to 34 percent ($e^{0.54-0.25}-1 \approx 0.34$), and invocation by both parties wipes out the effect of GATT altogether.[27] Nevertheless, the occasional use of Article XXXV does not weaken our main conclusion that GATT led to a statistically and economically significant increase in trade.[28]

## II. Sensitivity Analyses

Rose performs a large number of sensitivity analyses, varying the sample, model specification, and method of estimation. We follow a similar procedure to show that the estimated effects of GATT participation are stable for subsamples of countries and time periods and relatively insensitive to estimation procedure.

Table 3 reestimates our baseline model but allows the effect of GATT to vary over time, from one negotiating round to the next. The equation on the left side of the table includes fixed effects for years only, while the equation on the right (our preferred specification) incorporates a

[26] Article XIII of the WTO agreement resembles Article XXXV of GATT.
[27] In fact, two countries that invoke Article XXXV against each other trade less than two complete outsiders. This does not imply that GATT reduces trade. On the contrary, it reveals what happens when, at the time of accession, two countries have such hostile relations that they choose not to apply GATT to each other, even though they recognize the agreement as binding in relations with other trading partners.
[28] We also looked more closely at the trade patterns of provisional members. As expected, the surge in trade was smaller (44 percent instead of more than 70 percent) when the partner did not sign the declaration on provisional accession.

full set of controls for dyads and years. In both equations, the estimated effect of GATT participation is positive and economically substantial in every round except the last. The anomalous estimates for the final period (after the Uruguay round, which established the WTO) are difficult to explain but should probably be discounted because, by that time, participation in GATT was nearly ubiquitous. Otherwise, the results in Table 3 are quite stable. Using the model with fixed effects for dyads and years, the stimulus to trade when both countries participate ranges between 57 and 125 percent between 1948 and 1994. Except that for the period before the Annecy round (where we only had a single year of data) and after the Uruguay round, the estimates are statistically significant at the 0.05 level or better.

TABLE 3 ABOUT HERE

The effect of GATT is fairly stable across space, as well. Table 4 reports the estimated coefficients on GATT participation for various subsets of countries, selected according to their degree of industrialization, level of income, or geographic region.[29] All estimates come from models that include a large set of control variables, including fixed effects for dyads and years. Except in the North African/Middle East subsample, GATT has an economically significant effect on trade ranging from 48 percent to 97 percent when both countries participate in the agreement. Thus, the benefits of GATT are not unique to a particular region or to countries at a certain level of development.

These findings speak to a growing literature about the effect of GATT on developing countries. In a recent paper, Subramanian and Wei (2003) conclude that GATT promotes trade

[29] We follow Rose (p. 104) in classifying countries as industrial if their IMF country code is less than 200. We use Rose's indicators of income and geography after correcting a few errors. First, we reclassified Gabon as a middle-income country and Guinea-Bissau as low-income, according to the instructions at http://faculty.haas.berkeley.edu/arose/ERRORWTO.htm. Second, we added the Bahamas and Bermuda to Latin America; added Gabon and Reunion to Sub-Saharan Africa; added Israel, Kuwait, Qatar, the United Arab Emirates, Cyprus, and Turkey to the Middle East; and added Japan, Hong Kong, and Singapore to East Asia. Perhaps due to a computational error, Rose had not assigned these countries to a geographic region.

"strongly but unevenly": it increases trade among industrial countries but is less consequential for the developing world. Their analysis, like Rose's, understates the effect of GATT by misclassifying many developing countries as outsiders. After correcting this misclassification, we find that GATT substantially raises the trade of developing countries.

How has GATT achieved this outcome? We emphasize three channels. First, GATT requires developing countries to extend minimum tariffs to other participants, many of whom were previously subject to higher rates. Through the simple application of the most-favored-nation principle, then, GATT broadens the geographic coverage of free trade: it widens the set of countries to which minimum tariff rates apply. Second, the organization has required many developing countries to lower and bind their tariffs. In some cases, this occurred because developed countries negotiated on behalf of their colonies; in other cases, developing countries participated directly in GATT rounds. Finally, GATT gives developing countries access to markets of other GATT participants, including ones that have liberalized considerably. For these reasons, GATT is not simply a "rich-country club."

TABLE 4 ABOUT HERE

Following Rose, we also conducted a series of cross-sectional analyses at five-year intervals beginning in 1950. Each regression in Table 5 controls for the standard set of gravity variables but involves data at a single moment in time, and therefore omits fixed effects for dyads and years. Again, in every case except for the last, we find that participation in GATT increases trade by 25 to 120 percent when both sides of the dyad belong to the agreement. There is no apparent trend in the cross-sectional estimates, with large effects both at the beginning and the end of the series.

TABLE 5 ABOUT HERE

## IV. Conclusions

This paper solves a mystery, first identified by Rose (2004), about the effects of GATT and the WTO on international trade. Using a large data set and a variety of techniques, Rose found little evidence that members of GATT and the WTO trade more than countries outside the organization. We show that this negative finding arises from a tendency, common in most work on international agreements, to overlook the role of nonmember participants. GATT created rights and obligations not only for contracting parties but also for countries and territories that did not appear on the formal membership roster. By treating colonies, *de facto* members and provisional members as if they were outside the organization, previous research has understated the institutional research and economic effects of GATT.

Once we account for all participants, our analyses show that participation in GATT—either as a formal member or as a nonmember participant--substantially increased trade. Grouping nonmember participants with nonparticipants causes a substantial downward bias in the estimated effect of GATT membership. When this misclassification is corrected, we find that the agreement proved beneficial for both formal members and nonmember participants, which traded at higher levels than countries outside GATT. These findings withstand a variety of sensitivity tests involving changes in sample definitions and estimation techniques. Overall, GATT exerted a positive effect on trade in nearly all time periods and for most groups of countries.

Several areas deserve further investigation. To the extent that GATT promotes trade by requiring MFN, it would be helpful to have a better understanding of the impact of MFN itself. As it turns out, some countries extend MFN more broadly, offering it even to those outside GATT. At the moment, no comprehensive source of data exists on who grants MFN to whom.

The collection and analysis of such data would represent a major contribution to our understanding of postwar trade. Such work would also shed light on trade in the age before GATT, when countries embedded MFN clauses in bilateral commercial treaties.

Moreover, GATT is embedded in a larger regime of trade agreements. It coexists with a myriad of overlapping commercial pacts, some reinforcing the General Agreement and others rendering it superfluous for particular dyads and years. It would be useful to consider whether and how the effect of any single trade agreement depends on the presence or absence of others. Perhaps the effect of any single trade agreement is conditional on the network of agreements in which it resides.

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**Table 1—Relationship between Participation and Formal Membership**

| | Formal Membership | | | Rose | | | |
|---|---|---|---|---|---|---|---|
| Participation | Both in | One in | None in | Both in | One in | None in | Total |
| Both in | 112,520 | 37,237 | 3,229 | 114,151 | 35,903 | 2,932 | 152,986 |
| One in | 0 | 63,161 | 8,747 | 599 | 62,862 | 8,447 | 71,908 |
| None in | 0 | 0 | 9,703 | 0 | 45 | 9,658 | 9,703 |
| Total | 112,520 | 100,398 | 21,679 | 114,750 | 98,810 | 21,037 | 234,597 |

## Table 2—Effect of GATT on Bilateral Trade

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| Both participate in GATT | | | | | | | |
| *Both formal members* | -0.04 | -0.17 | 0.17 | 0.54 | 0.48 | | |
| | (0.05) | (0.03) | (0.07) | (0.06) | (0.06) | | |
| *Both nonmember participants* | | | 0.80 | 0.86 | 0.88 | 0.54 | 0.54 |
| | | | (0.14) | (0.12) | (0.09) | (0.06) | (0.06) |
| *Formal member and non-member participant* | | | 0.41 | 0.64 | 0.56 | | |
| | | | (0.07) | (0.06) | (0.06) | | |
| Only one participates in GATT | | | | | | | |
| *Formal member* | -0.06 | -0.27 | 0.06 | 0.24 | 0.23 | | |
| | (0.05) | (0.04) | (0.07) | (0.06) | (0.06) | 0.27 | 0.27 |
| *Nonmember participant* | | | 0.33 | 0.40 | 0.34 | (0.06) | (0.06) |
| | | | (0.09) | (0.08) | (0.07) | | |
| Both invoke Article XXXV | | | | | | | -1.88 |
| | | | | | | | (0.63) |
| Only one invokes Article XXXV | | | | | | | -0.25 |
| | | | | | | | (0.14) |
| GSP | 0.86 | 0.86 | 0.85 | 0.70 | 0.18 | 0.19 | 0.19 |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Log product real GDP | 0.92 | 0.92 | 0.93 | 0.18 | 0.47 | 0.45 | 0.45 |
| | (0.01) | (0.01) | (0.01) | (0.05) | (0.05) | (0.05) | (0.05) |
| Log product real GDP per capita | 0.32 | 0.32 | 0.31 | 0.52 | 0.21 | 0.22 | 0.22 |
| | (0.01) | (0.01) | (0.01) | (0.05) | (0.05) | (0.05) | (0.05) |
| Regional FTA | 1.20 | 1.20 | 1.19 | 0.94 | 0.76 | 0.77 | 0.77 |
| | (0.11) | (0.11) | (0.11) | (0.13) | (0.07) | (0.07) | (0.07) |
| Currency union | 1.12 | 1.15 | 1.11 | 1.17 | 0.61 | 0.61 | 0.61 |
| | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) |
| Currently colonized | 1.08 | 0.98 | 0.94 | 0.73 | 0.28 | 0.31 | 0.31 |
| | (0.23) | (0.23) | (0.23) | (0.26) | (0.16) | (0.16) | (0.16) |
| Log distance | -1.12 | -1.12 | -1.13 | -1.31 | | | |
| | (0.02) | (0.02) | (0.02) | (0.02) | | | |
| Common language | 0.31 | 0.30 | 0.31 | 0.27 | | | |
| | (0.04) | (0.04) | (0.04) | (0.04) | | | |
| Land border | 0.53 | 0.51 | 0.52 | 0.28 | | | |
| | (0.11) | (0.11) | (0.11) | (0.11) | | | |
| Number landlocked | -0.27 | -0.27 | -0.27 | -1.53 | | | |
| | (0.03) | (0.03) | (0.03) | (0.32) | | | |
| Number of islands | 0.04 | 0.03 | 0.02 | -1.03 | | | |
| | (0.04) | (0.04) | (0.04) | (0.19) | | | |
| Log product land area | -0.10 | -0.10 | -0.09 | 0.37 | | | |
| | (0.01) | (0.01) | (0.01) | (0.03) | | | |
| Common colonizer | 0.58 | 0.56 | 0.52 | 0.60 | | | |
| | (0.07) | (0.07) | (0.07) | (0.06) | | | |
| Ever in a colonial relationship | 1.16 | 1.16 | 1.15 | 1.28 | | | |
| | (0.12) | (0.12) | (0.12) | (0.11) | | | |
| Common country | -0.02 | -0.03 | -0.02 | 0.32 | | | |
| | (1.08) | (1.07) | (1.07) | (0.58) | | | |
| Fixed effects | years | years | years | countries & years | dyads & years | dyads & years | dyads & years |
| Standard error of the regression | 1.980 | 1.978 | 1.976 | 1.817 | 1.313 | 1.313 | 1.313 |
| $R^2$ | 0.648 | 0.649 | 0.650 | 0.704 | 0.853 | 0.853 | 0.853 |

*Notes*: Number of observations is 234,597. Robust standard errors, clustered by dyad, are in parentheses.

## Table 3—Effects by GATT Round

| | Fixed effects for years | | Fixed effects for dyads and years | |
|---|---|---|---|---|
| | Both participate in GATT/WTO | One participates in GATT/WTO | Both participate in GATT/WTO | One participates in GATT/WTO |
| Before Annecy round (1949) | 1.17<br>(0.62) | 0.43<br>(0.56) | 0.81<br>(0.47) | 0.07<br>(0.46) |
| Annecy to Torquay round (1951) | 0.59<br>(0.11) | 0.29<br>(0.10) | 0.76<br>(0.11) | 0.41<br>(0.10) |
| Torquay to Geneva round (1956) | 0.65<br>(0.11) | 0.40<br>(0.11) | 0.77<br>(0.11) | 0.38<br>(0.10) |
| Geneva to Dillon round (1961) | 0.61<br>(0.10) | 0.42<br>(0.10) | 0.68<br>(0.09) | 0.35<br>(0.09) |
| Dillon to Kennedy round (1967) | 0.38<br>(0.09) | 0.22<br>(0.09) | 0.53<br>(0.08) | 0.20<br>(0.08) |
| Kennedy to Tokyo round (1979) | 0.43<br>(0.10) | 0.27<br>(0.10) | 0.48<br>(0.08) | 0.21<br>(0.08) |
| Tokyo to Uruguay round (1994) | 0.33<br>(0.12) | 0.10<br>(0.12) | 0.45<br>(0.09) | 0.17<br>(0.09) |
| After the Uruguay round | -0.86<br>(0.13) | -0.77<br>(0.13) | -0.01<br>(0.15) | -0.16<br>(0.14) |
| Std error of regression | 1.98 | | 1.31 | |
| $R^2$ | 0.65 | | 0.85 | |

*Notes*: Dependent variable is log of real trade, measured by dyad-year. Both models control for GSP, regional FTA, currency union, currently colonized, log product real GDP, and log product real GDP per capita. The first model, which does not include dyadic fixed effects, controls for log distance, common language, land border, number landlocked, number islands, log product land area, common colonizer, ever colony, and common country. Robust standard errors, clustered by dyad, are in parentheses.

## Table 4—Effects by Type of Country

| | Both participate in GATT/WTO | One participates in GATT/WTO | Number of observations |
|---|---|---|---|
| No industrial countries | 0.66<br>(0.08) | 0.31<br>(0.07) | 114,615 |
| Only industrial countries | 0.39<br>(0.20) | 0.10<br>(0.19) | 14,394 |
| Industrial with non-industrial country | 0.49<br>(0.10) | 0.32<br>(0.09) | 105,588 |
| At least one high-income country | 0.46<br>(0.09) | 0.24<br>(0.08) | 132,559 |
| At least one middle-income country | 0.50<br>(0.07) | 0.24<br>(0.06) | 151,972 |
| At least one low-income country | 0.61<br>(0.12) | 0.38<br>(0.11) | 106,599 |
| At least one least-developed country | 0.49<br>(0.16) | 0.28<br>(0.14) | 69,085 |
| At least one from Latin America | 0.45<br>(0.09) | 0.28<br>(0.08) | 78,786 |
| At least one from Sub-Saharan Africa | 0.40<br>(0.16) | 0.09<br>(0.15) | 88,082 |
| At least one from N. Africa or Mideast | 0.13<br>(0.11) | 0.00<br>(0.09) | 53,728 |
| At least one from South Asia | 0.41<br>(1.16) | 0.11<br>(1.16) | 19,874 |
| At least one from East Asia | 0.68<br>(0.14) | 0.25<br>(0.13) | 49,263 |

*Notes*: Dependent variable is log of real trade, measured by dyad-year. All models include fixed effects for dyads and years and control for GSP, regional FTA, currency union, currently colonized, log product real GDP, and log product real GDP per capita. Robust standard errors, clustered by dyad, are in parentheses.

## Table 5—Cross-Sectional Analysis

| | Both participate in GATT/WTO | One participates in GATT/WTO | Number of observations |
|---|---|---|---|
| 1950 | 0.60 | 0.26 | 1,115 |
| | (0.10) | (0.09) | |
| 1955 | 0.79 | 0.40 | 1,468 |
| | (0.11) | (0.11) | |
| 1960 | 0.48 | 0.31 | 2,625 |
| | (0.10) | (0.10) | |
| 1965 | 0.38 | 0.26 | 3,361 |
| | (0.11) | (0.11) | |
| 1970 | 0.40 | 0.20 | 4,737 |
| | (0.12) | (0.13) | |
| 1975 | 0.22 | 0.14 | 5,354 |
| | (0.15) | (0.15) | |
| 1980 | 0.40 | 0.36 | 5,895 |
| | (0.16) | (0.17) | |
| 1985 | 0.52 | 0.25 | 6,232 |
| | (0.22) | (0.23) | |
| 1990 | 0.76 | 0.54 | 6,620 |
| | (0.30) | (0.30) | |
| 1995 | -0.51 | -0.67 | 7,640 |
| | (0.24) | (0.25) | |

*Notes*: Dependent variable is log of real trade, measured by dyad-year. Each model includes regional FTA, currency union, log distance, log product real GDP, log product real GDP per capita, common language, land border, number landlocked, number islands, log product land area, common colonizer, currently colonized, ever colony, common country, and an intercept. Models from 1970 control for GSP, as well. Robust standard errors are in parentheses.