# Trade Remedies and World Trade Organization Dispute Settlement: Why Are So Few Challenged?

**Chad P. Bown**

**ABSTRACT**

Antidumping and related trade remedies are the most popular policy instruments that many of the largest importing countries in the World Trade Organization (WTO) system use to restrict international trade. This paper empirically investigates the trade remedy and WTO dispute settlement interaction by focusing on determinants of WTO members' decisions of whether to challenge U.S. trade remedies imposed between 1992 and 2003. While I confirm that the size of the economic market at stake and the capacity to retaliate under potentially authorized sanctions influence the decision to formally challenge a measure, I also find that if the negatively affected foreign industry has the capacity to directly retaliate through a reciprocal antidumping measure of its own, its government is less likely to pursue the case on its behalf at the WTO. I speculate that potential complainants may be avoiding WTO litigation in favor of pursuing reciprocal antidumping and hence "vigilante justice."

## 1. INTRODUCTION

Antidumping and other national trade remedy laws such as countervailing duties and safeguards occupy an uneasy position in the General

CHAD P. BOWN is Associate Professor in the Department of Economics and International Business School at Brandeis University. A portion of this research was conducted while the author was the Okun-Model Visiting Fellow in Economic Studies at the Brookings Institution and as a visiting scholar in the Development Economics Research Group at the World Bank, which are both thanked for financial support. For helpful discussions and comments on an earlier version of this paper, the author wishes to thank, without implication, Alan Sykes, Eric Posner, Tom Prusa, Robert Staiger, Kyle Bagwell, Michael Moore, Nuno Limão, Marc Busch, Susan Collins, Barry Bosworth, Steve Charnovitz, and seminar participants at the Conference on International Dispute Resolution (University of Chicago Law School), the Brookings Institution, George Washington University, and the U.S. International Trade Commission. Gloria Sheu and Eric Haven provided outstanding research assistance.

[*Journal of Legal Studies*, vol. 34 (June 2005)]
© 2005 by The University of Chicago. All rights reserved. 0047-2530/2005/3402-0016$01.50

Agreement on Tariffs and Trade (GATT)/World Trade Organization (WTO) system. National governments have been explicitly authorized under various GATT and WTO agreements to implement such laws and to set up procedures through which domestic industries and/or workers initiate petitions and use the trade remedy laws' provisions to limit competition from injurious imports. Nevertheless, although trade remedies are, in principle, consistent with a member's WTO obligations, negatively affected trading partners routinely request that formal WTO dispute settlement panels be established to examine the consistency of their use. Table 1 illustrates how, by one measure—simply counting the requests for consultations received under the WTO's Dispute Settlement Understanding (DSU)—disputes relating to trade remedies made up nearly one-half of all WTO disputes initiated between 1999 and 2004. This is a clear shift in litigation emphasis from the period immediately following the WTO's inception, when fewer than one in seven disputes concerned trade remedies.[1]

That such a large share of the WTO dispute settlement caseload involves challenges to antidumping laws, countervailing duties, and safeguards is perhaps not surprising, given the relative transparency of these policies and the cross-country proliferation of antidumping measures in particular. Zanaradi (2004), for example, reports that countries imposed over 1,000 antidumping measures after over 1,600 investigations between 1995 and 2001 alone.[2] Furthermore, WTO dispute panels have held and the Appellate Body has confirmed WTO inconsistencies with at least one element of almost every trade remedy action on which they have ruled (Durling 2003; Sykes 2003).[3] Finally, it is important to point

1. Note that these numbers are rough measures, as there are frequently examples of both multiple disputes covering the same imposed remedy (for example, the 2002 U.S. safeguard over steel led to nine separate disputes being initiated) and multiple trade remedies being challenged in a single dispute (for example, *United States—Laws, Regulations and Methodology for Calculating Dumping Margins* ("*Zeroing*"), WT/DS294, which challenged 21 separate U.S. trade remedies).

2. To the extent that WTO members desire reform of the agreements covering trade remedies, an increased frequency of initiated disputes may be a negotiating tactic to increase visibility and the likelihood that they will receive a place on the negotiating agenda during the ongoing round.

3. Durling (2003, p. 131) notes that for disputes over antidumping measures, in 12 of the 13 cases that reached the panel stage between 1995 and 2002, panels found at least some WTO inconsistency. For cases in which a U.S. antidumping measure was at issue, the record is six out of seven WTO disputes. Sykes (2003) discusses WTO rulings on challenged safeguard actions, and Cunningham and Crib (2003) discuss WTO rulings on U.S. countervailing duty cases.

**Table 1.** World Trade Organization Trade Disputes, 1995–2004

| Respondent Trade Policy under Dispute | Disputes Initiated 1995–98 | Disputes Initiated 1999–2004[a] |
|---|---|---|
| Antidumping law, practice, or measure[b] | 13 | 41 |
| Countervailing duty law, practice, or measure | 4 | 10 |
| Other trade remedy law, practice, or measure (for example, safeguards) | 4 | 27 |
| Total trade remedy disputes | 21 | 78 |
| Total non-trade-remedy disputes | 133 | 89 |
| Total disputes ($N = 321$) | 154 | 167 |

[a] Through November 15, 2004.

[b] For a dispute challenging more than one type of trade remedy (for example, both an imposed antidumping measure and a countervailing duty), I avoid double counting by entering it as challenging one type of trade remedy only (typically, an antidumping measure).

out that the record of successful WTO challenges is not due to the targeting of relatively "new users" of trade remedy laws, who might be inexperienced in their use. To the contrary, the successful legal challenges to trade remedies have largely targeted developed countries with a history of trade remedy use, that is, countries with the most experienced bureaucratic agencies that administer trade remedy investigations with resources and access to potentially sophisticated legal (and economic) analysis. The implication is that the measures being successfully challenged are imposed by countries whose trade remedy laws serve as models that countries new to establishing their own statutes and investigative procedures are quick to emulate.

From this perspective, that is, given the relatively transparent process through which a trade remedy action is implemented, the increasing frequency with which trade remedies are applied worldwide, and the fact that virtually all challenged measures that proceed to a panel and/or Appellate Body decision are found to have some inconsistency with WTO standards, the more poignant research question is, why have so few of these applied trade remedies actually been challenged at the WTO?[4] What factors influence an adversely affected country's decision

4. This has similarities to a question raised by Blonigen and Prusa (2003, p. 276) in their survey of the economics research literature on antidumping. They observe that given the ease of apparent access to antidumping protection and "[d]espite the statistics . . . detailing the substantial and growing use of AD [antidumping] laws, one question is why there aren't more AD filings." On the other hand, some commentators have argued that

of whether to formally challenge an imposed trade remedy through formal dispute initiation at the Dispute Settlement Body (DSB)?

This paper is a first attempt to empirically investigate determinants of WTO members' decisions of whether to challenge an imposed trade remedy through a formal WTO dispute. The fact that not all imposed trade remedies are challenged at the WTO suggests that governments undertake a calculus and pursue only those actions in which the expected benefit to a WTO dispute outweighs the expected cost. The expected benefit would be jointly determined by the size of restored import market access should the importing country remove the remedy,[5] combined with the probability of restoration of market access. The probability of restored market access is determined by the likelihood that the respondent would comply with panel and/or Appellate Body decisions upholding a successful challenge, where compliance may also be a function of a credible threat of the complainant retaliating through the DSU-sanctioned withdrawal of concessions. On the other hand, the expected costs of pursuing a case could include both the resource costs associated with litigation and the political economic costs associated with challenging the remedy-imposing country through formal international dispute settlement. Finally, there may also be a procedural cost if the litigation were to establish a precedent that would also require the complainant to change the way in which it pursues trade remedies in its own import markets.

I propose and empirically test whether there are political economic motives to explain the pattern of challenges to trade remedies through formal WTO dispute settlement activity when compared with those rem-

too many U.S. remedies have been challenged at the WTO and that WTO rulings on U.S.-imposed remedies (and the concern for the Appellate Body's "judicial activism") in particular may have long-term implications for U.S. willingness to participate in the system. For commentary along these lines, see Tarullo (2003) or Greenwald (2003).

5. For a basic economic discussion of the WTO as a forum for countries to exchange market-access concessions based on the principle of reciprocity, see Bagwell and Staiger (2002, chap. 4). Unlike many other disputed policies that may be applied on a most-favored-nation (MFN) basis, the expected benefit to a complainant has minimal trade-associated "externalities," given that the vast majority of trade remedies are applied on a discriminatory (that is, country-specific) basis, which should thus serve to reduce the free-rider problem affecting the optimal amount of litigation. For a discussion of some of the economic implications of the WTO's nondiscriminatory MFN principle, see Bagwell and Staiger (2002, chap. 5). In dispute settlement cases over trade remedies, there may be procedural externalities, however, if the legal decisions made in a case establish precedent that discourages future trade remedies (as they would also be inconsistent with GATT/WTO standards) against other countries.

edies that are not challenged. As a first pass at this question, I construct a sample of all U.S. trade remedy actions against WTO members falling under its antidumping and countervailing duty laws between 1992 and 2003.[6] There are a number of reasons that motivate this as a useful initial investigation.[7] First, as I illustrate in Tables 2 and 3, there is a substantial amount of variation in trade remedy actions imposed by the United States over this time period—remedies target many different WTO members and were challenged by a reasonable cross section of those affected countries.[8] Second, unlike for the WTO membership at large, I have very detailed data on the full set of U.S. trade remedy actions and their WTO challenges—including data on the policies and detailed data on the products and industries affected. Third, by focusing initially on one country that imposed trade remedies (the United States), I am able to implicitly control for the characteristics of the remedy-imposing country. Fourth, and as previously mentioned, while the focus on one remedy-imposing country obviously imposes a limit on the extent to which one can extrapolate from the results to lessons for other remedy-imposing countries, nevertheless, the U.S. trade remedy laws and procedures in particular serve as a model that many other WTO members emulate as they construct their own provisions. Thus, lessons learned from the U.S. experience and interaction with WTO dispute settlement

6. I will not empirically investigate U.S. safeguard actions (neither Section 201 nor "transitional" safeguard actions for textiles, agriculture, or China) that have also been called into question at the WTO, although this is also clearly an area of research interest. One reason for not examining Section 201 cases here is that they are applied on a (quasi-) MFN basis, so I would also have to address the free-rider problem. There is also an empirical problem owing to a lack of variation in the data, given that all U.S. safeguard measures implemented under Section 201 since 1995 have been challenged at the WTO (though the 1996 U.S. safeguard on broom-corn brooms brought by Colombia did make it only as far as the consultations stage). I leave for future research the question of WTO challenges to U.S.-imposed safeguard measures.

7. To clarify, in this paper, I focus only on the foreign decision of whether to challenge an imposed U.S. trade remedy at the GATT/WTO. There are other potential areas in the litigative process in which parties could also challenge the imposition of a remedy, including during the actual U.S. investigation, after an affirmative ruling at the U.S. Court of International Trade, and at North American Free Trade Agreement (NAFTA) panels for remedy investigations involving Canada or Mexico. While all of these areas of the litigative process are of research interest, I focus exclusively on potential challenges at the GATT/WTO here.

8. In the discussion that follows, I will use the terms "GATT/WTO" and "WTO" interchangeably. Although as Table 2 clearly illustrates, while some of the trade remedy investigations may have taken place at the very end of the GATT period, virtually all dispute settlement challenges in the data set have taken place during the WTO period under the Dispute Settlement Understanding (DSU).

**Table 2.** GATT/WTO Dispute Settlement Proceedings against U.S. Antidumping, Countervailing Duty, and Safeguard Trade Remedy Actions, 1992–2003

| Product (U.S. International Trade Commission Case No.) | GATT/WTO Dispute |
|---|---|
| U.S. antidumping actions ($N = 30$): | |
| DRAMS (731-TA-556) | DS099 (South Korea) |
| Steel plate (731-TA-578) | DS262 (Germany) |
| Steel sheet (731-TA-615) | DS262 (France) |
| Steel sheet (731-TA-617) | DS244 (Japan) |
| Seamless pipe (731-TA-710) | DS225 (Italy) |
| OCTG (731-TA-711) | DS268 (Argentina) |
| OCTG (731-TA-716) | DS282 (Mexico) |
| Pasta (731-TA-734) | DS294 (Italy) |
| Tomatoes (731-TA-747) | DS049 (Mexico) |
| Steel wire rod (731-TA-770) | DS294 (Italy) |
| Steel wire rod (731-TA-773) | DS294 (Spain) |
| Steel wire rod (731-TA-774) | DS294 (Sweden) |
| Steel plate (731-TA-788) | DS294 (Belgium) |
| Steel plate (731-TA-791) | DS179 (South Korea) |
| Steel sheet and strip (731-TA-797) | DS294 (France) |
| Steel sheet and strip (731-TA-798) | DS294 (Germany) |
| Steel sheet and strip (731-TA-799) | DS294 (Italy) |
| Steel sheet and strip (731-TA-801) | DS179 (South Korea) |
| Steel sheet and strip (731-TA-804) | DS294 (U.K.) |
| Hot rolled steel (731-TA-807) | DS184 (Japan) |
| Carbon steel plate (731-TA-816) | DS294 (France) |
| Carbon steel plate (731-TA-817) | DS206 (India) |
| Carbon steel plate (731-TA-819) | DS294 (Italy) |
| Hot rolled steel (731-TA-903) | DS294 (Netherlands) |
| Stainless steel bar (731-TA-913) | DS294 (France) |
| Stainless steel bar (731-TA-914) | DS294 (Germany) |
| Stainless steel bar (731-TA-915) | DS294 (Italy) |
| Stainless steel bar (731-TA-918) | DS294 (U.K.) |
| Softwood lumber (731-TA-928) | DS247, DS264, DS277 (Canada) |
| Wheat (731-TA-1019) | DS310 (Canada) |
| U.S. countervailing duty actions ($N = 26$): | |
| Lead and bismuth steel (701-TA-315) | MTN-22 (France) |
| Lead and bismuth steel (701-TA-316) | MTN-22 (Germany) |
| Lead and bismuth steel (701-TA-317) | MTN-22, DS138 (U.K.) |
| Carbon steel plate (701-TA-320) | DS218 (Brazil) |
| Carbon steel plate (701-TA-321) | DS212, DS262 (France) |
| Carbon steel flat products (701-TA-322) | DS212, DS262 (Germany) |
| Carbon steel flat products (701-TA-325) | DS280 (Mexico) |
| Carbon steel flat products (701-TA-326) | DS212 (Spain) |
| Carbon steel flat products (701-TA-327) | DS212 (Sweden) |
| Carbon steel flat products (701-TA-328) | DS212 (U.K.) |
| Hot rolled steel (701-TA-330) | DS218 (Brazil) |
| Corrosion-resistant steel (701-TA-349) | DS213 (Germany) |
| Grain-oriented electric steel (701-TA-355) | DS212 (Italy) |
| Certain pasta (701-TA-365) | DS212 (Italy) |
| Fresh Atlantic salmon (701-TA-372) | DS097 (Chile) |
| Steel wire rod (701-TA-373) | DS212 (Italy) |
| Steel plate (701-TA-377) | DS212 (Italy) |
| Steel sheet and strip (701-TA-380) | DS212 (France) |
| Steel sheet and strip (701-TA-381) | DS212 (Italy) |
| Live cattle (701-TA-386) | DS167 (Canada) |

**Table 2.** *continued*

| Product (U.S. International Trade Commission Case No.) | GATT/WTO Dispute |
|---|---|
| Carbon steel plate (701-TA-387) | DS212 (France) |
| Carbon steel plate (701-TA-388) | DS206 (India) |
| Carbon steel plate (701-TA-390) | DS212 (Italy) |
| Softwood lumber (701-TA-414) | DS236, DS257, DS277, DS311 (Canada) |
| Wheat (701-TA-430) | DS310 (Canada) |
| DRAMS (701-TA-431) | DS296 (South Korea) |
| U.S. safeguard actions (6 total): | |
| Broom-corn brooms (TA-201-65) | DS078 (Colombia) |
| Wheat gluten (TA-201-67) | DS166 (EU) |
| Lamb meat (TA-201-68) | DS177 (Australia), DS178 (New Zealand) |
| Steel wire rod (TA-201-69) | DS214 (EU) |
| Circular welded pipe (TA-201-70) | DS202 (South Korea), DS214 (EU) |
| Certain steel products (TA-201-73) | DS248 (EU), DS249 (Japan), DS251 (South Korea), DS252 (China), DS253 (Switzerland), DS254 (Norway), DS258 (New Zealand), DS259 (Brazil), DS274 (Taiwan) |

**Note.** The U.S. use of special safeguard actions on apparel, textiles and clothing, China, or agriculture are not included. GATT/WTO = General Agreement on Tariffs and Trade/World Trade Organization.

may arguably have implications for other international users of trade remedies.

Table 4 uses the U.S. data on trade remedies to illustrate a number of comparative results that the formal econometric investigation formally seeks to confirm. First, and perhaps not surprising, a U.S. trade remedy that leads to the loss of a large value of imports in the U.S. market is more likely to result in a measure being challenged than one resulting in the loss of a small value of imports. This is consistent with the first row of Table 4, which shows that the mean value of lost imports owing to WTO-challenged measures is $49.9 million, relative to $3.2 million for nonchallenged U.S. remedies. Second, I also find that the capacity for the foreign country to retaliate against U.S. exports should it "win" the case is associated with a higher probability that it brings forward a dispute in the first place. This is illustrated by a simple comparison made in Table 4, where the mean share of U.S. exports sent to countries that challenge trade remedies is 16.9 percent, whereas the United States is less reliant on the average country that does not formally challenge a U.S. remedy at the WTO, as those countries receive only 6.5 percent of U.S. exports.

I also investigate and provide evidence of a second avenue through which the capacity for retaliation threats matters, and I speculate that

**Table 3.** U.S. Trade Remedy Investigations, Actions, and GATT/WTO Challenges, by Member, 1992–2003

| | Antidumping | | | Countervailing Duties | | |
|---|---|---|---|---|---|---|
| **Country** | Investigations | Resulting in Remedies | Challenged at WTO | Investigations | Resulting in Remedies | Challenged at WTO |
| Japan | 42 | 24 | 2 | 0 | 0 | 0 |
| South Korea | 35 | 17 | 3 | 10 | 6 | 1 |
| China | 24 | 15 | 0 | 0 | 0 | 0 |
| India | 22 | 10 | 1 | 10 | 5 | 1 |
| Mexico | 22 | 9 | 2 | 4 | 1 | 1 |
| Germany | 22 | 8 | 3 | 9 | 5 | 3 |
| Canada | 21 | 5 | 1 | 11 | 3 | 2 |
| Brazil | 20 | 10 | 0 | 10 | 4 | 1 |
| Italy | 18 | 10 | 6 | 12 | 9 | 6 |
| France | 16 | 8 | 4 | 9 | 5 | 3 |
| South Africa | 16 | 6 | 0 | 2 | 2 | 0 |
| Venezuela | 14 | 4 | 0 | 4 | 0 | 0 |
| United Kingdom | 13 | 4 | 2 | 4 | 3 | 2 |
| Indonesia | 12 | 6 | 0 | 4 | 2 | 0 |
| Thailand | 12 | 5 | 0 | 2 | 1 | 0 |
| Spain | 11 | 4 | 1 | 2 | 1 | 1 |
| Argentina | 8 | 4 | 1 | 3 | 2 | 0 |
| Belgium | 8 | 2 | 1 | 4 | 2 | 0 |
| Netherlands | 7 | 4 | 1 | 1 | 1 | 0 |
| Malaysia | 7 | 2 | 0 | 0 | 0 | 0 |
| Romania | 6 | 3 | 0 | 0 | 0 | 0 |
| Turkey | 6 | 2 | 0 | 2 | 1 | 0 |
| Australia | 6 | 1 | 0 | 0 | 0 | 0 |
| Austria | 5 | 0 | 0 | 3 | 0 | 0 |
| Chile | 4 | 3 | 0 | 2 | 0 | 0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Portugal | 4 | 1 | 0 | 0 | 0 | 0 |
| Israel | 4 | 0 | 0 | 2 | 0 | 0 |
| Sweden | 3 | 2 | 1 | 2 | 1 | 1 |
| Trinidad and Tobago | 3 | 1 | 0 | 2 | 0 | 0 |
| Costa Rica | 3 | 0 | 0 | 0 | 0 | 0 |
| Poland | 2 | 2 | 0 | 0 | 0 | 0 |
| Hungary | 2 | 1 | 0 | 1 | 1 | 0 |
| Czech Republic | 2 | 1 | 0 | 0 | 0 | 0 |
| New Zealand | 2 | 0 | 0 | 3 | 0 | 0 |
| Colombia | 2 | 0 | 0 | 0 | 0 | 0 |
| Egypt | 2 | 0 | 0 | 0 | 0 | 0 |
| Finland | 1 | 1 | 0 | 0 | 0 | 0 |
| Latvia | 1 | 1 | 0 | 0 | 0 | 0 |
| Moldova | 1 | 1 | 0 | 0 | 0 | 0 |
| Philippines | 1 | 1 | 0 | 0 | 0 | 0 |
| Denmark | 1 | 0 | 0 | 1 | 0 | 0 |
| Greece | 1 | 0 | 0 | 0 | 0 | 0 |
| Hong Kong | 1 | 0 | 0 | 0 | 0 | 0 |
| Ireland | 1 | 0 | 0 | 0 | 0 | 0 |
| Lithuania | 1 | 0 | 0 | 0 | 0 | 0 |
| Singapore | 1 | 0 | 0 | 0 | 0 | 0 |
| Slovak Republic | 1 | 0 | 0 | 0 | 0 | 0 |
| Total | 417 | 178 | 29 | 119 | 55 | 22 |

**Note.** There are 51 WTO challenges in this data set instead of the 56 antidumping and countervailing duty challenges listed in Table 2 because five WTO challenges listed in Table 2 were to investigations that did not result in the imposition of remedies. Data are since the country's year of GATT/WTO membership. GATT/WTO = General Agreement on Tariffs and Trade/World Trade Organization.

**Table 4.** Characteristics of U.S. Trade Remedies That Are Challenged with Trade Disputes versus Those That Are Not, 1992–2003

| Variable | Challenged with a GATT/WTO Dispute | Not Challenged with a GATT/WTO Dispute |
|---|---|---|
| Value[a] of lost exports (mean difference between targeted exports in $t + 1$ and $t - 1$) ($ millions) | −49.9 | −3.2 |
| Foreign retaliation capacity through GATT/WTO (mean share of total U.S. exports to the world sent to targeted country) (%) | 16.9 | 6.5 |
| Level of U.S.-imposed trade remedy (mean duty) (%) | 14.7 | 45.1 |
| Foreign retaliation capacity through reciprocal antidumping (mean share of remedy-protected U.S. industry-level production exported to targeted country) (%) | .7 | .9 |
| Diversity of foreign exports of targeted product (mean share of foreign total exports of remedy-targeted products sent to rest of the world) (%) | 63.0 | 45.0 |

**Note.** Time $t$ is the year of the initiation of the trade remedy investigation.
[a] Constant year 2000 dollars.

this avenue could be serving as a substitute to formal WTO dispute settlement proceedings. The data suggest a strong negative relationship between a WTO dispute filing and the foreign industry's capacity to directly retaliate against the U.S. industry through a reciprocal antidumping investigation and measure of its own. Consider the production destination for the U.S. industry that receives the protection from the initial U.S. trade remedy. Table 4 illustrates that the share of the value of that production exported to the affected foreign country is higher (.9 versus .7 percent) in the average case in which the foreign country does not file a WTO complaint. This evidence is consistent with the hypothesis that WTO dispute settlement procedures and the foreign country's own antidumping law can serve as substitute policy instruments. Thus, some exporting countries that are affected by U.S. trade remedies may be choosing "vigilante justice" and directly targeting their U.S. competitors with antidumping actions, in lieu of convincing their governments to confront the United States with a formal WTO dispute. Finally, I also note the relationship between this phenomenon and the idea first pro-

posed by Prusa (1992) that antidumping law may inadvertently serve as a device that facilitates collusion between foreign and domestic firms. The nature of the collusion noted by Prusa (1992) stemmed from the empirical regularity with which domestic firms frequently withdrew from U.S. antidumping investigations shortly after their initiation, and the argument was that some firms had merely initiated investigations in order to communicate economic information to foreign competitors without risk of prosecution under a U.S. antitrust exception called the Noerr-Pennington doctrine. Here the collusive behavior of domestic and foreign firms could be facilitated by the reciprocated use of antidumping laws across countries, if the laws serve as a way for one country's industry (1) to discipline foreign competitors that have deviated from a collusive outcome or (2) to urge them to observe a collusive outcome.[9]

I also document a number of other interesting results in the data. First, countries that are less diversified (that is, more reliant on the United States for their export market) in their remedy-affected exports are also less likely to challenge the U.S. trade remedy. This is also illustrated in Table 4, where, on average, 63.0 percent of pre-remedy exports are sent to non-U.S. markets in challenged cases, whereas only 45.0 percent of pre-remedy exports are sent to third markets in the average nonchallenged case. This is of potential concern given that nondiversified exporters may be the least likely to "deflect" lost exports to third markets, perhaps because they lack the prior experience of overcoming any fixed cost associated with exporting to alternative markets. In the context of global welfare, this could make the impact of a U.S. trade remedy especially burdensome. Finally, unlike the results of related research, I find no evidence that, holding other things constant, the measure of a foreign country's limited "legal capacity" negatively affects the decision to participate in a dispute against a potentially WTO-inconsistent policy.

In addition to its relevance for the research literature on trade remedies and the antidumping process in the United States, this paper also

9. I should also note that there are a number of reasons why antidumping retaliation would be preferable to a WTO dispute from the perspective of the negatively affected foreign industry. First, to the extent that an antidumping law is simply a bureaucratic process that is less susceptible to political influences, the industry may find that direct antidumping retaliation provides a more certain outcome than attempts to convince its national government to take up a case against the United States on its behalf at the WTO. Furthermore, antidumping retaliation would be more likely to directly benefit the foreign industry, whereas even DSU-sanctioned retaliation against the United States could be sought after and authorized as the withdrawal of concessions in a completely unrelated industry, thus providing no gains to the foreign industry negatively affected by the initial U.S. remedy.

contributes to the empirical literature on formal dispute settlement in the GATT/WTO system, which has largely focused on other elements of the dispute resolution process.[10] One important and unresolved research question, however, concerns access to dispute settlement activity and whether the use of WTO dispute settlement may be biased against the initiation of cases by smaller, poorer, or developing countries in particular. The standard problem for a researcher seeking to address this question is data—I am unable to observe the full set of WTO-inconsistent activity that WTO members undertake, and thus, I cannot directly test whether there is a bias in which subset of this activity actually gets reported to the WTO through formal dispute settlement channels. Here, I partially address this question by supposing that all U.S. trade remedy actions were WTO inconsistent and, under this scenario, examining whether there is a pattern to the initiation of disputes over imposed measures to search for evidence of any bias against dispute initiation by important country and industry characteristics.

The rest of this paper proceeds as follows. In Section 2, I describe some of the basic institutional features of WTO-authorized trade remedy laws and include a brief discussion of their economic motivation. In Section 3, I present the basic expected cost-benefit framework used to guide the empirical approach that investigates determinants of whether a U.S. trade remedy action is challenged at the WTO and a description of the underlying data used for the analysis. Section 4 presents the formal econometric model, including the selection equation approach used to address the potential concern for sample selection bias. Finally, Section 5 presents the econometric results, and Section 6 concludes with a discussion of additional caveats and areas for further research.

10. Bown (2004b), for example, provides an empirical investigation into determinants of the economic outcomes of the GATT/WTO dispute resolution process for 1973–98. See Busch and Reinhardt (2000) for a political science perspective. With respect to economic investigations of the potential bias in participation in the WTO's dispute settlement process, see Horn, Mavroidis, and Nordström (1999), Holmes, Rollo, and Young (2003), and Bown (forthcoming). For a discussion of capacity constraints affecting developing country participation in the U.S. antidumping process in particular, see Bown, Hoekman, and Ozden (2003).

## 2. INSTITUTIONAL BACKGROUND FOR TRADE REMEDIES: LAW AND ECONOMIC THEORY

### 2.1. Economic Motivation for Trade Remedy Laws

Economists typically decry an implemented trade remedy as import protection that generates welfare inefficiencies and acts as little more than a second-best policy instrument. Nevertheless, economic theorists have rationalized the ex ante inclusion of some form of permissible national trade remedy law into negotiated international trade agreements through at least two reasons. Although trade remedy exceptions have traditionally been motivated as a safeguard clause that allows for the temporary suspension of certain elements of a liberal trade agreement, economists justify these exceptions on the grounds of what Hoekman and Kostecki (2001) refer to as the "insurance" and the "safety valve" motives (see also Sykes 1991, the discussion in Bagwell and Staiger 2002, chap. 6, and Bagwell and Staiger 2005). The insurance motive suggests that without such safeguard provisions, governments may be hesitant to sign trade agreements that lead to substantial liberalization. The safety valve motive suggests that governments may feel pressure to renege on certain negotiated liberalization commitments, and therefore safeguards are necessary to protect the integrity of the rest of the agreement.

World Trade Organization members have infrequently used the formal GATT/WTO safeguard provisions over the agreements' histories, instead appealing to other trade remedies such as antidumping and countervailing duty provisions under the WTO and voluntary export restraints and other "grey-area" measures under the GATT, which have since been banned by the WTO (see Bown 2002). While there are many procedural differences between them, I work from the assumption that there is substitutability between the trade remedy instruments that are used by injured industries and then by policymakers seeking an escape from the constraint of the GATT/WTO agreement that prohibits them from otherwise unilaterally raising trade barriers above negotiated tariff binding levels.

### 2.2. National Trade Remedy Laws and General Agreement on Tariffs and Trade/World Trade Organization Agreements

Under the GATT 1947 regime, antidumping laws and countervailing duties were initially authorized under Article VI, which was somewhat expanded in the Tokyo Round to the plurilateral Antidumping and Subsidies Codes. Under the WTO, the provisions relating to antidumping

and countervailing duties are now part of the Single Undertaking that applies to all WTO members under the Agreement on Antidumping and the Agreement on Subsidies and Countervailing Measures. Safeguards for the temporary protection of imports were originally authorized under the GATT's Article XIX and in 1995 were also more completely developed under the WTO's Agreement on Safeguards.

### 2.3. The History of General Agreement on Tariffs and Trade/World Trade Organization Dispute Settlement over Trade Remedies

The first formal GATT trade dispute over antidumping that resulted in a panel was initiated by Italy against Swedish antidumping duties on nylon stockings in 1954 (*Swedish Antidumping Duties,* Report of the Panel on Complaints, L/328–3S/81 [February 23, 1955]). Nevertheless, until the early 1990s, countries infrequently challenged antidumping measures under the GATT's formal dispute settlement provisions. The first GATT case against a U.S. antidumping action that resulted in a panel report was not filed until 1988, under the dispute settlement provisions of the Tokyo Round's Dumping Code (*United States—Imposition of Anti-dumping Duties on Imports of Seamless Stainless Steel Hollow Products from Sweden*, Report of the Panel, ADP/47 [August 20, 1990]). There were a handful of disputes filed against U.S. imposition of countervailing duties in the 1980s adjudicated under the Tokyo Round's Subsidies Code dispute settlement provisions as well as the GATT's Article XXIII, including the first high-profile disputes over U.S. countervailing duties on imports of Canadian softwood lumber. Nevertheless, the trend of infrequent formal challenges to trade remedies continued through the end of the GATT period in the early 1990s.

With the establishment of the WTO's Single Undertaking in 1995, the full integration of the Agreements on Antidumping, Subsidies and Countervailing Measures, and Safeguards, and the establishment of the Dispute Settlement Understanding, trade remedies have been a frequent and increasing target of dispute settlement activity. Table 3 illustrates the U.S. trade remedy actions undertaken between 1992 and 2003 that have been challenged with an initiated trade dispute at the GATT/WTO.

### 2.4. The Importance of World Trade Organization Dispute Settlement over Trade Remedies

The decisions made by the WTO panels and the Appellate Body have sparked a substantial literature by legal and economic scholars (Sykes 2003; Irwin 2003). One particular area of concern is consistency between

national and WTO standards of review in trade remedy investigations, as well as the concern for whether WTO legal decisions are not just striking down imposed remedies but also providing guidance as to an appropriate methodology for imposing national trade remedies that would pass WTO standards. Even though the ultimate imposition of a remedy leads to the distortion of trade, the misallocation of resources, and national welfare losses, scholars have argued that it may be important to define the characteristics of a WTO-consistent trade remedy that would stand up to a dispute settlement challenge if such remedies are indeed an important feature helping to sustain the overall liberal trade bargain struck between countries in the GATT/WTO system (see Bagwell and Staiger 2002, 2005; Sykes 1991; Hoekman and Kostecki 2001).

## 3. ECONOMIC THEORY: WHEN TO CHALLENGE A U.S. TRADE REMEDY AT THE WORLD TRADE ORGANIZATION?

### 3.1. The Sample of Challengeable U.S. Trade Remedies

Our question of interest is the determinants of a WTO member's decision whether to formally challenge a U.S. trade remedy imposed in year *t,* where the year of the remedy falls in the 1992–2003 period. All of the data on U.S. antidumping and countervailing duty actions have been compiled from the *Federal Register*. This publication documents the country of the firms under investigation, the 10-digit Harmonized Tariff System (HTS) product codes of the products under investigation, the dates of the phases of the investigation, the outcomes of various phases of the investigation, and the level of applied duties in affirmative cases. I include all trade remedy actions that either ended in the U.S. application of duties or through a suspension agreement, implicitly assuming that all such remedies were "challengeable" at the WTO.[11]

My hypothesis is that a country targeted by a U.S. trade remedy initiates a formal WTO trade dispute and contests the measure if the expected benefits to a dispute are greater than its expected costs. I assume that the expected benefits depend on the size of the gains that the foreign country receives from a successfully resolved case and the probability

11. I will be able to use only those cases involving manufacturing products owing to the need to control for injury (requiring industry-level data, which are not comparably available for agricultural products). This does not severely restrict the size of the sample, however.

that the case will be resolved successfully. I allow for the expected costs of dispute initiation to be made up of two separate elements that include both the expected litigation costs and the expected political economic costs of confronting the United States in a formal dispute. As I describe in more detail below, the hypothesis allows for economic interests to affect decisions, but I also include proxies for some of the institutional biases that scholars of the WTO have been concerned might also influence a country's ability to stand up for its market-access interests.

The primary alternative hypothesis to the one pursued here is that imposed trade remedies are not formally challenged under dispute settlement proceedings because of the Agreement on Antidumping's Article 17.6 requirement that WTO panels show deference to national authorities' decision making during antidumping investigations.[12] Any failure to find evidence that the hypothesized political economic determinants affect the decision to challenge would be consistent with the theory that the WTO membership is acting rationally and not challenging cases that would either have high market-access gains and/or could be litigated at relatively low cost, in anticipation that dispute settlement panels would show "deference" to Article 17.6. The implication is that such countries would be placing an extraordinarily low probability on the expectation of a successful legal outcome to the case.

I classify a U.S.-imposed trade remedy as being challenged if I can find evidence of it being part of a formal dispute that was initiated under the GATT or WTO. I consider all challenges to U.S.-imposed remedies, whether the challenge concerns the investigation of dumping, subsidies, or injury or whether it is an investigation during an administrative or sunset review. Most of the data on which trade remedies were formally challenged by foreign countries through GATT/WTO dispute settlement proceedings are derived from publicly available databases. For example, the WTO's Web site has all of the data on formal disputes since 1995, as well as some antidumping and countervailing disputes that resulted in formal panel reports during the GATT period (World Trade Organization 2004). A handful of antidumping and countervailing duty disputes that took place under the dispute settlement provisions of the Tokyo Round codes were pieced together by examining unpublished GATT documents. The summary of these GATT/WTO challenges to U.S.

12. Formally, Article 17.6(i) states that when a WTO panel reviews the national authority's antidumping investigation and decisions, "[i]f the establishment of the facts was proper and the evaluation was unbiased and objective, even though the panel might have reached a different conclusion, the evaluation shall not be overturned."

trade remedies imposed over the 1992–2003 period is listed in Table 2. In the next two sections, I detail the variables and data used to represent the expected benefits and costs of the empirical investigation.

### 3.2. Expected Benefits to Initiating a Dispute

3.2.1. Exporter Market-Access Benefits from a Successful Dispute. What are the expected benefits of initiating a dispute against a U.S.-imposed trade remedy, and when would they be large? For the purpose of this investigation, I focus on the direct, short-term economic benefits to participating in the dispute, that is, the improved terms of market access that would result if the U.S. removed the trade remedy in question. Thus, I expect that a foreign country is more likely to initiate proceedings when it has lost a substantial amount of trade owing to the U.S. remedy. Given that the imposition of many U.S. remedies has a prohibitive impact on imports (Staiger and Wolak 1994; Prusa 2001; Bown 2004a), I use as the proxy for lost imports the log of the value of 10-digit HTS imports of the targeted product in year $t-1$, that is, the year before the trade remedy was imposed. The 10-digit HTS import data for the United States come from Feenstra, Romalis, and Schott (2002) and updates from the International Trade Commission's DataWeb database.[13]

Second, the removal of the U.S.-imposed trade remedy may not be particularly important to some exporting countries that have substantial access to alternative export markets and can thus deflect trade that is eliminated from the U.S. to other markets (for evidence of exporting countries' ability to deflect U.S. trade-remedy-affected exports to third markets, see Bown and Crowley 2004). Put differently, the removal of a U.S.-imposed remedy may be more beneficial to a less diversified exporter than to a more diversified exporter. To address the possibility that this affects the litigation decision, I include as an additional explanatory variable the share of the exporter's product-level exports to the non-U.S. markets in $t-1$ relative to its total product-level world exports of the goods targeted by the U.S. remedy.[14] I expect this variable to be

13. U.S. International Trade Commission, Interactive Tariff and Trade DataWeb (http://dataweb.usitc.gov).

14. Since I am comparing the foreign exports to the non-U.S. markets with foreign exports to the world (at the product level), I can no longer use the 10-digit HTS import data as the level of aggregation. Thus, for this variable I use the six-digit, product-level Harmonized System (HS) data derived from the United Nation's Comtrade database, as this is the most disaggregated trade data that is readily comparable across countries. See United Nations, UN Commidity Trade Statistics Database (UN Comtrade) (http://unstats.un.org/unsd/comtrade/default.aspx). Nevertheless, these data are consistently avail-

negatively related to the decision of whether to initiate a dispute—a country that is highly diversified (that is, has a large share of remedy-affected exports already being exported to third markets) should be less likely to challenge a U.S.-imposed remedy at the WTO because it can more easily shift those lost U.S. exports to such third markets.

Third, I also include the level of the U.S.-imposed trade remedy in the case, which I define as the trade weighted-average final duty reported in the *Federal Register*. I am admittedly agnostic as to how this variable would affect the likelihood of WTO dispute initiation. While an extremely high duty may also be more likely to indicate an egregious WTO violation (affecting the likelihood of legal success in the dispute, to be discussed in more detail below), there may be a substantial range through which even lowering that duty would still leave it as prohibitive, resulting in a zero market-access benefit to the affected exporter for initiating a WTO challenge. On the other hand, while a lower imposed duty may be less likely to be WTO inconsistent, a marginal reduction could have a substantially positive market-access impact.

3.2.2. The Likelihood of Success in a Dispute. Another element affecting the size of the expected benefits is any factor affecting the probability of a successful economic resolution to a potential WTO dispute. Because of the self-enforcing nature of the WTO's dispute settlement system, exporting countries can enforce their rights only through actual or implicit threats of retaliation against offending trading partners.[15] Therefore, I hypothesize that a U.S. remedy is more likely to be challenged if the affected foreign country is bilaterally powerful (with respect to the United States) because this positively affects the probability of a successful economic outcome. Conditional on a panel and/or Appellate Body ruling of "guilty," the United States may be more likely to bring its WTO-inconsistent policy into conformity with its obligations if there is a credible retaliatory cost for failing to do so. I therefore measure the capacity for the foreign country to credibly threaten a tariff retaliation

able only for 15 of the world's 30 largest importing countries for the 1992–2003 period required for the sample; therefore, in constructing the ratio, the foreign country's exports to the "rest of the world" are proxied for by the imports of the following 14 other countries: Australia, Brazil, Canada, Switzerland, China, Germany, Denmark, Japan, Mexico, Malaysia, Singapore, Sweden, Turkey, and Taiwan.

15. Using a sample of GATT/WTO disputes initiated and completed over the 1973–98 period, Bown (2004b) shows that the more powerful the complainant exporter is with respect to its capacity to engage in tariff retaliation against the respondent, the greater the trade liberalization gains are (as well as the probability of any liberalization) that the respondent yields to the complainant at the conclusion of the dispute.

by using the share of U.S. total exports sent to the exporting country. To construct this measure, I use the U.S. bilateral export data provided by Feenstra, Romalis, and Schott (2002).

Finally, in an additional specification that serves as a robustness check, I use additional explanatory variables designed to capture whether the affected country can contribute economic evidence of the U.S. failure to show injury to the domestic U.S. industry in the initial trade remedy investigation. The failure to find injury would be evidence to support the claim that the U.S.-imposed remedy was WTO inconsistent. Ceteris paribus, this could result in a higher probability of winning the case by having a DSU panel find in the complainants' favor.[16] I discuss details of variables used for these measures in Section 4.2.

### 3.3. Expected Costs to Initiating a Dispute against the United States

In this section, I consider the basic litigation costs to filing a formal complaint against a U.S. trade remedy.[17] When would the expected resource costs to an exporting country of formally initiating a dispute against the United States be high? The litigation costs of merely initiating a case as a complainant are not large, and that is the only indicator necessary for the analysis of whether a U.S. trade remedy is challenged at the WTO. Nevertheless, I do proxy for the foreign country's capacity to incur significant legal costs by using measures of its real gross domestic product per capita, with data derived from the World Bank (2005). I feel that this is a reasonable measure and is likely better than one designed to capture the stock of lawyers in the foreign country, given that legal expertise is an internationally traded service. Nevertheless, I also proxy for a country's legal capacity by using data on the number of delegates the member had sent to the WTO offices in Geneva (World Trade Organization 2002). The larger each of these variables is, the greater the country's capacity to absorb legal costs and the more likely it is to initiate a dispute, ceteris paribus.

### 3.4. Access to Alternative Retaliatory Instruments

The last explanatory variable included in this stage of the estimation is designed to capture the concern that a country may choose not to use

16. As Sykes (2003) and Irwin (2003) point out in related safeguard cases that also have an injury requirement, merely showing evidence of injury is not sufficient. The WTO Appellate Body in particular has been concerned with evidence attributing injury to imports.

17. In the robustness checks described in Section 5.2.4, I also investigate measures of political economic costs that may affect the litigation decision as well.

the WTO's formal dispute settlement process to challenge a U.S.-imposed trade remedy because it has access to an alternative (and perhaps preferable) retaliatory instrument, that is, because it is able to take matters into its own hands and target the protected U.S. industry with a trade remedy of its own. Therefore, I include as another variable the share of the U.S. industry's value of domestic production that is exported to the remedy-affected country, where the industry is the six-digit North American Industry Classification System (NAICS) industry that is receiving the U.S. trade remedy protection.[18] The higher the share is of the value of U.S. industry production exported to the foreign country, the less likely the foreign country is to initiate a formal WTO dispute against the U.S. because it can discipline the U.S. industry directly through its own appeal to a trade remedy investigation. The industry-level production data are those on the value of shipments data taken from the National Bureau of Economic Research's Manufacturing Industry Database for the 1991–96 period (Bartelsman, Becker, and Gray 2000), while for 1997–2002, the data were taken from individual, industry-level reports in the U.S. Census Bureau (2004).[19] The summary statistics for each of these variables used in the estimation are provided in the lower half of Table 5.

## 4. ECONOMETRIC APPROACH

### 4.1. Econometric Model

The ultimate question of interest is why foreign governments choose to challenge some U.S. trade remedies while not challenging other U.S. measures. To address this question, the sample of data consists of the set of U.S. trade remedy actions imposed after antidumping and coun-

18. The U.S. six-digit NAICS export data are also taken from Feenstra, Romalis, and Schott (2002). Blonigen and Bown (2003) find evidence that the capacity for foreign antidumping retaliation threats affects an earlier stage of the antidumping process, that is, the question of which foreign countries are to be named in an antidumping investigation. Their results suggest that, ceteris paribus, a U.S. industry is less likely to name a foreign country whose market it is particularly reliant for its own exports.

19. I have also interacted this variable with an indicator for whether the WTO member has an antidumping law, but this makes little difference, as virtually all WTO members in the sample of countries targeted by a U.S. remedy had an antidumping law in place. In order to use the National Bureau of Economic Research's Manufacturing Industry Productivity Database for the 1991–96 period, I match the six-digit NAICS with the appropriate four-digit Standard Industrial Classification (SIC) system industry code using the concordance in Feenstra, Romalis, and Schott (2002).

tervailing duty investigations initiated between 1992 and 2003. I focus only on those applied against GATT contracting parties or WTO members, as formal participation in the GATT/WTO system is an obvious requirement for the foreign country's use of GATT/WTO dispute settlement procedures. My empirical investigation examines determinants of a dichotomous dependent variable that takes a value of one if a U.S. trade remedy was challenged by a WTO trade dispute and zero if it was not. In the absence of any additional econometric concerns, I would simply estimate the probability that a U.S. trade remedy was challenged by assuming that the decision was a function of a number of covariates with a normally distributed error term, and I would thus employ the standard probit model.

However, one concern with examining in isolation the foreign country's decision of whether to file a GATT/WTO dispute over a U.S.-imposed trade remedy is selection bias (for a further discussion of the selection bias problem in econometrics, see Greene 2000, pp. 926–50). In this case, selection bias results from the incidental data truncation problem associated with the fact that I observe only those formal trade disputes over U.S. trade remedy investigations that would ultimately result in the trade remedy's being applied. For example, one key testable hypothesis is that a foreign country is more likely to file a WTO dispute against the United States if it has a sufficient retaliation capacity, and thus, I presume that this may have a direct effect on the underlying dependent variable of interest. However, given the evidence provided by Blonigen and Bown (2003), I would also expect that the same retaliation capacity may affect the likelihood that the United States imposes a trade remedy against that particular foreign country in the first place, and thus, it also has an indirect effect on the probability that this country is in the sample of countries facing a U.S. trade remedy. Thus, failing to allow for the indirect effect of this variable could lead to biased estimates of the direct effect.[20]

To address the concern of selection bias resulting from the idea that the set of U.S. trade remedies over which a foreign country has faced a tariff is not random, I use a correction procedure in the style of Heckman (1979) and introduce a selection equation accounting for the U.S. gov-

20. This may also be the case if evidence of injury to the domestic industry makes it more likely that a petitioning industry will receive trade remedy protection and thus increases the probability of its being in the sample, and yet the evidence of injury makes it less likely that the measure will be challenged with a formal trade dispute. I will investigate this potential outcome and discuss this further in Section 5.2.3.

**Table 5.** Summary Statistics for Variables Used in the Baseline Econometric Investigation

| Variables | Predicted Sign | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| Selection equation, dependent variable: indicator equal to one if the GATT/WTO member under investigation faced an affirmative U.S. trade remedy ruling | | .399 | .490 | 0 | 1 |
| Explanatory variables: | | | | | |
| Import penetration ratio in $t-1$ | + | .019 | .038 | 0 | .361 |
| % change in product-level imports between $t-2$ and $t-1$ | + | .271 | .686 | −1.998 | 1.998 |
| Level[a] of industry employment in $t-1$ | + | 1.000 | .696 | .027 | 5.009 |
| % change in industry employment between $t-2$ and $t-1$ | − | −.026 | .054 | −.409 | .265 |
| % change in capacity utilization rate between $t-2$ and $t-1$ | − | −.016 | .106 | −.346 | .223 |
| Concentration ratio[a] in $t-1$ | + | .351 | .125 | .05 | .807 |
| Share of U.S. total exports sent to the foreign country in $t-1$ | − | .092 | .094 | .000 | .256 |
| Indicator that the investigation involved the U.S. steel industry | + | .580 | .494 | 0 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Regression equation, dependent variable: indicator equal to one if U.S. trade remedy faced a GATT/WTO trade dispute | | .174 | .381 | 0 | 1 |
| Explanatory variables: | | | | | |
| Log of value of targeted product imports in $t-1$ | + | 16.857 | 1.747 | 9.431 | 23.141 |
| Share of foreign total exports of remedy-targeted products sent to rest of the world in $t-1$ | − | .496 | .254 | .005 | .967 |
| Level[a] of U.S.-imposed trade remedy | ? | .456 | .521 | 0 | 3.290 |
| Share of value of U.S. total exports sent to the foreign country in $t-1$ | + | .080 | .084 | 0 | .240 |
| Share of value of U.S. industry-level production exported to the foreign country in $t-1$ | − | .008 | .016 | 0 | .095 |
| Delegates at the WTO | + | 12.962 | 6.209 | 0 | 23 |
| Log of level of per capita GDP of foreign country | − | 8.801 | 1.497 | 5.833 | 1.715 |

**Note.** Time $t$ is the year of the initiation of the trade remedy investigation. GATT/WTO = General Agreement on Tariffs and Trade/World Trade Organization; GDP = gross domestic product.

[a] Indicates that the underlying variable was scaled by 100.

ernment's decision of whether or not to impose a trade remedy on a GATT/WTO member country after an industry-initiated investigation. For the present purposes, the standard Heckman procedure needs to be modified to address the fact that both the selection equation (the United States does or does not protect an industry petitioning under the trade remedy laws) and the regression equation of interest (the foreign country does or does not challenge the U.S. remedy with a formal WTO dispute) have dichotomous (as opposed to continuous) dependent variables. Therefore, I use the Van de Ven and Van Praag (1981) probit application of the Heckman (1979) selection bias correction procedure.

### 4.2. Additional Variables and Data for the Selection Equation

Finally, in order to estimate the selection equation, I require additional explanatory variables that are not necessarily of interest to the question of the determinants of the foreign country's decision of whether it will challenge any imposed measures with formal dispute settlement proceedings. Nevertheless, I have collected industry- and country-level data on the standard political economic variables that others (for example, Hansen and Prusa 1996, 1997) in the literature have shown to be determinants of the U.S. authority's decision-making process. These include variables for the change in industry employment, level of industry employment, import penetration ratio, growth rate of investigated imports in the period prior to the investigation, concentration ratio of the domestic industry, change in the industry's capacity utilization rate, and retaliation capacity (Blonigen and Bown 2003).[21] I expect there to be a negative relationship between the change in industry employment and the change in the capacity utilization rate (standard injury determinants) with the probability that the United States authorizes trade remedy protection to a petitioning industry. On the other hand, I expect a positive relationship between the U.S. protection decision and explanatory variables such as the import penetration ratio, the level of industry employment, and the four-firm concentration ratio of the industry. These last two variables are commonly used to proxy for the political importance of the industry and its ability to overcome the free-rider problem to organize and successfully petition for protection.

21. Capacity utilization rate for the associated six-digit NAICS (four-digit SIC) industries are found in U.S. Census Bureau (1993–2004). Four-firm concentration ratios are available from U.S. Census Bureau (1996, 2001).

## 5. ESTIMATION RESULTS

In this section, I discuss the results from maximum likelihood estimation of the probit model with selection. Even though the two equations are estimated simultaneously, for ease of exposition, I split the discussion of the separate stages into two separate parts. In the first section, I briefly describe the results from the selection equation (reported in Table 6), before turning to the results of the question of interest in Section 5.2—determinants of the foreign country's decision of whether to challenge a U.S.-imposed trade remedy at the WTO (reported in Table 7). Specification (1) in each table uses the baseline sample of U.S. antidumping investigations and measures imposed on GATT/WTO members over the 1992–2003 period, specification (2) adds the sample of countervailing duty investigations and measures imposed, and specification (3) is a robustness check that allows for industry injury determinants to also affect the decision to challenge through the WTO.

### 5.1. Selection Equation: Determinants of Which U.S. Investigations against General Agreement on Tariffs and Trade/World Trade Organization Members End in Trade Remedies

Table 6 illustrates the results for determinants of the selection equation decision of whether the U.S. investigation of a GATT/WTO member under its antidumping or countervailing duty laws results in affirmative findings (injury and dumping and/or subsidies) and thus a trade remedy. While most of the estimates for the explanatory variables have the sign that is predicted by theory, only three of the estimates are statistically significant at conventional levels. In the sample of investigations of products deriving from WTO members shown in specification (1), the higher the import penetration ratio (2.729), the more likely the United States is to impose an antidumping measure and the less reliant the United States is on the targeted foreign country for its own exports (−.720). In specification (2), the larger the recent surge in product-level imports under investigation (.107), the more likely U.S. authorities are to impose a trade remedy. The only estimates that run counter to the theory are the variables designed to capture the injury to the domestic industry (change in employment, change in capacity utilization), although these estimates are not statistically different from zero.[22] Since the estimates

22. A potential contributing explanation for the result that the determinants of injury are not particularly successful in predicting antidumping decision making is the sample of U.S. trade remedy investigations used in the estimation here—that is, I examine only those

**Table 6.** Estimated Marginal Effects of the U.S. Decision of Whether to Impose a Trade Remedy against an Investigated GATT/WTO Member, 1992–2003 (First Stage of Probit Model with Selection)

| Explanatory Variables | Baseline of AD Cases Only (1) | AD and CVD Cases (2) | Include Injury in Second Stage (3) |
|---|---|---|---|
| Import penetration ratio in $t-1$ | 2.729** | 2.365** | 2.716** |
| | (.770) | (.803) | (.774) |
| % change in product-level imports between $t-2$ and $t-1$ | .069 | .107** | .070 |
| | (.051) | (.040) | (.048) |
| Level of industry employment in $t-1$ | .001 | −.041 | .004 |
| | (.064) | (.065) | (.065) |
| % change in industry employment between $t-2$ and $t-1$ | .098 | .425 | .072 |
| | (.756) | (.721) | (.776) |
| % change in capacity utilization rate between $t-2$ and $t-1$ | .018 | .017 | .043 |
| | (.582) | (.460) | (.569) |
| Concentration ratio in $t-1$ | .118 | .114 | .115 |
| | (.338) | (.293) | (.335) |
| Share of U.S. total exports sent to the foreign country in $t-1$ | −.720* | −.496 | −.732* |
| | (.344) | (.305) | (.349) |
| Indicator that the investigation involved the U.S. steel industry | .077 | .074 | .084 |
| | (.122) | (.103) | (.126) |
| Observations in probit selection equation | 331 | 413 | 331 |
| Log likelihood | −241.25 | −303.78 | −240.24 |

**Note.** The results of a probit selection equation are presented, where the dependent variable is equal to one if the investigated GATT/WTO member faced U.S. remedy. In parentheses are White's heteroskedasticity-consistent standard errors corrected for clustering on related antidumping (AD)/countervailing duty (CVD) cases. Time $t$ is the year of the initiation of the trade remedy investigation. Each stage is also estimated with a constant term whose estimates are suppressed. GATT/WTO = General Agreement on Tariffs and Trade/World Trade Organization.

* Statistically different from zero at the 5% level.

** Statistically different from zero at the 1% level.

presented in Table 6 are not of particular concern to the ultimate question of interest regarding the question of whether to formally challenge a U.S.-imposed remedy at the GATT/WTO, I do not discuss them further here.

### 5.2. Regression Equation: Determinants of Foreign-Country Decisions to Formally Challenge a U.S. Remedy with a Dispute

5.2.1. Expected Benefits and Costs to Dispute Initiation. Table 7 provides results from the estimation of the decision of a foreign country to challenge a U.S.-imposed trade remedy at the WTO. Consider initially the first three rows of Table 7, which describe whether the size of the market-access benefits from the United States' removing the imposed trade remedy is associated with the WTO member's decision to formally challenge the measure with a dispute. First, the size of lost imports matters. The larger the dollar value of the investigated product in the U.S. import market in $t-1$ (the year before the trade remedy investigation), the more likely the affected foreign country is to challenge the measure (.056). Since the import data are converted to logs, the size of the effect is not particularly easy to interpret. Nevertheless, the effect of an increase from the mean value of the explanatory variable of 16.857 (the log of roughly $21 million in targeted imports) to 17.857 (the log of roughly $57 million in targeted imports, an increase of less than 1 standard deviation) increased the likelihood of dispute initiation by 5.6 percentage points. Keeping in mind that the model's predicted probability of WTO dispute initiation, when calculated at the means of the data, is roughly 10 percent, I see that this is a sizable effect.

On the other hand, there is an unexpected positive relationship (.397) between how diversified the targeted foreign exporters are and their likelihood of filing a GATT/WTO trade dispute. We would expect a negative relationship: the smaller the share of the non-U.S. markets in the exporter's portfolio of export markets, the more likely the exporter is to spend the resources to challenge the U.S. trade remedy because it is less readily equipped to deflect trade lost from the United States to third markets. Here the result is just the opposite (less diversified exporters are less likely to challenge U.S. trade remedies), which is potentially worrisome if it is indicative of a disproportionately large negative

---

investigations against GATT/WTO members. For example, this means omitting antidumping and countervailing duty investigations against China occurring before its WTO accession in 2001.

**Table 7.** Estimated Marginal Effects of an Affected Exporting Country's Decision to File a GATT/WTO Dispute against a U.S.-Imposed Trade Remedy, 1992–2003 (Second Stage of Probit Model with Selection)

| Explanatory Variables | Baseline of AD Cases Only (1) | AD and CVD Cases (2) | Include Injury in Second Stage (3) | No Selection Equation (4) |
|---|---|---|---|---|
| Size of market-access benefits: | | | | |
| Log of value of targeted product imports in $t-1$ | .056** | .070** | .052** | .059** |
| | (.017) | (.016) | (.018) | (.016) |
| Share of foreign total exports of remedy-targeted products sent to rest of the world in $t-1$ | .397* | .239$^{+}$ | .431* | .392* |
| | (.172) | (.142) | (.190) | (.171) |
| Level of U.S.-imposed trade remedy | −.508$^{+}$ | −.337 | −.516$^{+}$ | −.507$^{+}$ |
| | (.294) | (.217) | (.293) | (.299) |
| Probability of realizing benefits: | | | | |
| Share of value of U.S. total exports sent to the foreign country in $t-1$ | 1.676* | 1.140* | 1.743* | 1.689* |
| | (.706) | (.574) | (.690) | (.717) |
| % change in product-level imports between $t-2$ and $t-1$ | . . . | . . . | −.028 | . . . |
| | | | (.077) | |
| % change in capacity utilization rate between $t-2$ and $t-1$ | . . . | . . . | −.477 | . . . |
| | | | (.288) | |

| | | | | |
|---|---|---|---|---|
| Alternative retaliation instrument: share of value of U.S. industry-level production exported to the foreign country in *t−1* | −7.129** | −5.566** | −6.989** | −7.033** |
| | (2.104) | (1.838) | (2.087) | (2.094) |
| Capacity to absorb litigation costs: | | | | |
| Delegates at the WTO | −.009 | −.007 | −.009 | −.009 |
| | (.006) | (.005) | (.007) | (.006) |
| Log of level of per capita GDP of foreign country | −.050 | −.024 | −.056 | −.050 |
| | (.040) | (.028) | (.040) | (.040) |
| Observations in probit regression equation | 132 | 164 | 132 | 132 |
| Log likelihood | −241.25 | −303.78 | −240.24 | −28.97 |

**Note.** The results of a probit regression equation are presented, where the dependent variable is equal to one if the U.S.-imposed remedy faced the initiation of a GATT/WTO dispute. In parentheses are White's heteroskedasticity-consistent standard errors corrected for clustering on related anti-dumping (AD)/countervailing duty (CVD) cases. Time *t* is the year of the initiation of the trade remedy investigation. Each stage also estimated with a constant term whose estimates are suppressed. GATT/WTO = General Agreement on Tariffs and Trade/World Trade Organization; GDP = gross domestic product; EU = European Union.

+ Statistically different from zero at the 10% level.

* Statistically different from zero at the 5% level.

** Statistically different from zero at the 1% level.

impact of U.S. trade remedies on such exporters. The size of the effect is also large: an exporter that is more diversified by 1 percentage point is .397 percentage points more likely to initiate a dispute. Thus, a 1-standard-deviation increase in this variable increases the probability of dispute initiation to 24 percent relative to the 10 percent probability when the model is evaluated at the means of the data.

The third row illustrates a negative relationship (−.508) between the size of the imposed U.S. trade remedy and the likelihood of the remedy's being challenged. This indicates that lower duties are more likely to be challenged, ceteris paribus, perhaps because they are nonprohibitive—each 1-percentage-point reduction in the imposed duty increases the likelihood of dispute initiation by .508 percentage points.

Consider next the foreign country's capacity to retaliate, which is the proxy for the likelihood of the United States's complying with any panel and/or Appellate Body rulings that require it to provide additional market access to the exporting country. The higher the share of U.S. total exports that are sent to the affected country, the more likely the affected country is to bring a dispute against the United States (1.676). This is consistent with evidence from other research that retaliation capacity affects decisions made in the U.S. antidumping process (Blonigen and Bown 2003) and the likelihood of the successful economic resolution to a GATT/WTO trade dispute (Bown 2004b). Here, the size of the estimate indicates that, relative to the average trade-remedy-affected foreign country, if the U.S. is 1 percentage point more reliant on the foreign country's markets for its total exports, the foreign country is 1.676 percentage points more likely to initiate a WTO dispute over a U.S. remedy.

Finally, there is little evidence from this sample of data and the proxies for "legal capacity" that any such limitations on legal resources negatively and systematically affect the decision to challenge an imposed U.S. trade remedy, once I control for other factors. If anything, the results are consistent with a negative relationship between the number of delegates at the WTO, gross domestic product per capita, and the question of whether to file a dispute at the WTO, although the impact is not statistically different from zero.

5.2.2. Vigilante Justice through Reciprocal Antidumping instead of Dispute Settlement? One intriguing and robust result from Table 7 is evidence for the alternative retaliation instrument that is consistent with the theory that when a foreign country is faced with dealing with a U.S.-

imposed trade remedy, there is substitutability between WTO dispute settlement and the foreign country's retaliating through an antidumping measures of its own. That is, there is a negative relationship (−7.129) between the foreign country's ability to retaliate through imposing an antidumping measure on the U.S. industry's exports (because the U.S. industry is reliant on the foreign country as a destination for its own exports) and that country filing a trade dispute at the WTO. The direct economic implication of the estimate is that for a 1-percentage-point increase in the share of the value of U.S. industry production (in the six-digit NAICS industry protected with the U.S. remedy) sent to the targeted foreign country, there is a 7.129 percentage point decrease in the likelihood of the foreign country responding through initiation of a formal WTO dispute settlement challenge. This is a substantial effect, as the mean (standard deviation) of this variable in the underlying data is .8 percent (1.6 percent), which means that a 1-standard-deviation increase in this variable alone decreases the probability of the action being confronted with a trade dispute from roughly 10 percent to almost zero.

One explanation for this result is that the foreign industry's first choice after being targeted by a U.S. trade remedy is to respond by initiating a trade remedy investigation of its own against its U.S. competitors. Then, if that is not possible, the industry resorts to the next-best instrument, convincing its government to engage in formal, government-to-government litigation through a WTO trade dispute. The results here are obviously an indirect test, measuring the foreign country's capacity to retaliate via antidumping against the petitioning U.S. industry. Furthermore, to the extent that senescent industries in the United States frequently engage in antidumping actions, such industries may not be sufficiently competitive in world markets so as to have substantial exports, which thus limits the scope of reciprocal antidumping as a potential retaliatory instrument for foreign competitors. Nevertheless, for some capital intensive and cyclical U.S. industries that are globally competitive, the ability of the foreign industry to engage in reciprocal antidumping may be an alternative to attempts to convince its government to engage in formal WTO litigation. However, a direct test of this hypothesis would examine whether the foreign country actually retaliates with an antidumping action of its own. I do not pursue this direct test here for lack of currently available data on product-level foreign antidumping actions against U.S. producers and whether this is, indeed, a substitute policy instrument for filing a WTO trade dispute. I leave this important question for future research.

Nevertheless, this result is consistent with related research investigating the global proliferation of antidumping. First, the United States is not only one of the largest users of trade remedies worldwide. Zanaradi (2004) notes that between 1991 and 2002, exporting firms from the United States were the third-most investigated producers worldwide in foreign antidumping investigations and ranked third in number of instances of being targeted by trade remedy measures (antidumping duties and price undertakings) worldwide, behind only China and South Korea. Finally, Prusa and Skeath (2005) examine the pattern of antidumping filings across the world and find evidence at the bilateral level of retaliation activity that is consistent with the indirect evidence described here, while Feinberg and Olson (2004) use the worldwide antidumping filing data to find evidence of such a relationship across two-digit industries as well.[23]

5.2.3. Estimates for Inclusion of Countervailing Duties, the Injury Determinants, and Omitting the Control for Selection Bias. The rest of Table 7 presents a number of initial robustness checks to the analysis. First, specification (2) adds the additional observations for U.S. countervailing duty measures and their WTO challenges. Even after including these trade remedy observations, the basic pattern of qualitative results is unchanged.

In specification (3) of Table 7, I assess the importance of determinants expected to affect the injury decision in the U.S. trade remedy investigation (as described in Table 6) to check the robustness of the results. Inclusion of these variables in the second stage does not affect the qualitative pattern of results, and these variables are not of the expected sign and are not statistically significant. Part of the explanation for their poor performance is likely due to the fact that some countries do not challenge the injury investigation that took place in year $t$ but instead may challenge a sunset or administrative review or a dumping or subsidy determination.

Finally, in specification (4) of Table 7, I reestimate the probit regression equation of specification (1) alone, that is, without the selection equation. The sign and size of the estimates are virtually unchanged from the earlier specification, which suggests that selection bias does not likely affect the estimation in this particular application.

23. Martin and Vergote (2004) develop a game-theoretic model with private information between governments and industries in which reciprocal antidumping and the sort of vigilante justice described here occur on the equilibrium path.

5.2.4. Final Robustness Checks. Table 8 provides a final set of additional robustness checks to further investigate the potential sensitivity of the results to alternative specifications. In particular, specification (5) uses an alternative variable in lieu of the measure of diversification of the foreign exporters targeted by the U.S. remedy. Instead, the variable is defined as the growth in (six-digit Harmonized System) exports of the targeted country to the rest of the world after the U.S. remedy has been imposed, that is, its growth between $t$ and $t + 1$. The a priori expectation is for the parameter estimate on this variable to be negative—the more the targeted exporters increase exports of the disputed product to third markets (proxying for whether they actually do deflect trade), the less likely the foreign country would be to litigate the issue of the U.S. remedy at the WTO. Nevertheless, the estimate is once again positive (although it is marginally insignificant), which provides some confirmation of the earlier result of concern that less diversified exporters are less likely to challenge measures at the WTO.

Next, in specification (6), I further investigate whether there is a link between political economic relationships between countries and GATT/WTO dispute settlement filing behavior in this sample of data. In theory, a second potentially important expected cost to exporters in developing countries that may affect their decision of whether to challenge the United States at the WTO does not relate to the cost of litigation but to the political economic costs of publicizing a grievance through a formal international confrontation with the United States. One reason why the United States might be important is that the country affected by the trade remedy could be particularly reliant on the United States for bilateral assistance. Therefore, I expect that the larger the share of total aid received by the foreign country that comes from the United States, the less likely that country is to initiate a dispute against the United States. (The bilateral aid data are derived from Organisation for Economic Co-operation and Development 2001). In order to implement this, in specification (6) I also drop the foreign exporter's diversification variable, in case this is highly collinear with either the aid relationship or legal capacity variables, so as to confound their estimated impact. While the results do indicate a negative relationship between the foreign country's reliance on the United States for bilateral aid and its decision to file for dispute settlement, the size of the estimate is not statistically significant at conventional levels. Furthermore, the parameter estimates for the variables on legal capacity in specification (6) are virtually un-

**Table 8.** Robustness Checks for Estimated Marginal Effects (Second Stage of Probit Model with Selection)

| Explanatory Variables | Alternative export deflection/diversity variable (5) | Substitute foreign reliance on U.S. for aid (6) | With EU Dummy (7) | With dummy for one of multiple AD/CVD remedies (8) |
|---|---|---|---|---|
| Size of market-access benefits: | | | | |
| Log of value of targeted product imports in $t-1$ | .046$^{+}$ | .040 | .054** | .057* |
| | (.028) | (.026) | (.023) | (.023) |
| Share of foreign total exports of remedy-targeted products sent to rest of the world in $t-1$ | . . . | . . . | .430* | .334* |
| | | | (.199) | (.159) |
| Growth rate of foreign total exports of remedy-targeted products to rest of the world between $t-1$ and $t+1$ | .100 | . . . | . . . | . . . |
| | (.064) | | | |
| Level of U.S.-imposed trade remedy | −.662* | −.514$^{+}$ | −.525$^{+}$ | −.376 |
| | (.331) | (.247) | (.304) | (.259) |
| Probability of realizing benefits: share of U.S. total exports sent to the foreign country | 1.353* | .961* | 2.353$^{+}$ | 1.411* |
| | (.579) | (.485) | (1.260) | (.624) |

| | | | | |
|---|---|---|---|---|
| Alternative retaliation instrument: share of U.S. industry-level production exported to the foreign country | −8.739** | −6.766** | −7.724** | −5.465** |
| | (2.654) | (2.236) | (2.458) | (2.083) |
| Capacity to absorb litigation costs: | | | | |
| Delegates at the WTO | −.008 | −.009 | −.011 | −.007 |
| | (.007) | (.006) | (.008) | (.005) |
| Log of level of per capita GDP of foreign country | .007 | .011 | −.053 | −.050 |
| | (.047) | (.036) | (.042) | (.034) |
| Political costs: share of total foreign aid deriving from the U.S. | . . . | −.361 | . . . | . . . |
| | | (.256) | | |
| Other variables: | | | | |
| Indicator that targeted country was a member of the EU | . . . | . . . | −.110 | . . . |
| | | | (.144) | |
| Indicator that AD/CVD was one of multiple trade remedies imposed on the same product | . . . | . . . | . . . | .087* |
| | | | | (.035) |
| Observations in probit regression equation | 149 | 132 | 132 | 132 |
| Log likelihood | −272.44 | −288.13 | −241.06 | −239.33 |

**Note.** The results of a probit regression equation are presented, where the dependent variable is equal to one if the U.S.-imposed remedy faced the initiation of a GATT/WTO dispute. In parentheses are White's heteroskedasticity-consistent standard errors corrected for clustering on related antidumping (AD)/countervailing duty (CVD) cases. Time *t* is the year of the initiation of the trade remedy investigation. Each stage also estimated with a constant term whose estimates are suppressed. Estimates of the Heckman selection equation are omitted but are available from the author on request. WTO = World Trade Organization; GDP = gross domestic product; EU = European Union.

+ Statistically different from zero at the 10% level.

* Statistically different from zero at the 5% level.

** Statistically different from zero at the 1% level.

changed, and the log likelihood is substantially higher than in the other specifications when the diversity variable is included. Thus, the lack of empirical importance of the proxies for the litigation costs and the political economy relationship stands in contrast to the evidence presented in the related research of Bown (forthcoming), which investigates the participation decisions of exporting countries adversely affected by nondiscriminatory but WTO-inconsistent trade policies under formal DSU litigation. That investigation found some evidence consistent with the hypothesis that legal capacity and political economic relationships negatively affect the willingness of countries to engage in the formal WTO dispute resolution process. That sample of data under investigation was much different, however, in that it analyzed WTO disputes initiated against a variety of countries (not solely the United States) that were disputing policies applied on a quasi-MFN basis, thus negatively affecting many exporting countries.

Specifications (7) and (8) are crude attempts to address an econometric issue of the nonindependence of some of the observations in the estimation, given the pooling of the trade remedy data over time.[24] The concern addressed in specification (7) is that the disputes involving a European Union (EU) member country as a complainant are somehow driving the results. This could be the case given that there are a number of instances in which multiple EU member countries are involved in related trade remedy investigations over the same product, which may make it more likely for those related cases to be jointly challenged at the WTO. For example, common elements (WTO inconsistencies) across remedies imposed on different EU members could make it cost effective to spread the litigation burden across the member states and thus make it more likely that such remedies are formally challenged at the WTO. Nevertheless, when I include an indicator for the affected foreign country being an EU member, the qualitative pattern of results is virtually unchanged, and the EU indicator itself is negative, although it is not statistically significant.[25]

Next, in specification (8), I attempt another approach, which is to

24. In future research, as more data become available, it would also be useful to estimate models with country fixed effects and that investigate dynamic questions such as when (for example, how long after imposition) trade remedies are challenged.

25. On the other hand, to the extent that a U.S. trade remedy investigation leads to differential duties imposed on firms from different European Union (EU) member states (implicitly providing firms from some EU states preferential access to the U.S. market relative to other EU competitors), this could make it more difficult for the EU to act jointly.

include an indicator for the instances in which an imposed trade remedy is one of multiple U.S. actions against the same set of products from a set of different countries. In this specification, there is evidence that such a remedy is more likely to be challenged at the WTO. This could indicate that the foreign country is seeking to increase market access while its primary competitors would still be constrained by other U.S.-imposed remedies on competing products. If the outcome to the dispute were successful, the country would essentially receive preferential access to the U.S. market. Nevertheless, despite its positive sign and statistical significance, I also note that inclusion of this variable does not substantively affect the qualitative pattern of results regarding the other variables of interest to the estimation.

## 6. CONCLUSION

Regardless of whether the WTO's dispute settlement process and institutional framework were designed to handle substantial litigation over nationally imposed trade remedies, the WTO currently finds disputes over trade remedies to be a central topic of concern. Without substantial institutional reform or changes in government attitudes, one implication of the current global trend in increased use of contingent trade policy protection is that how the DSU resolves conflicts over antidumping, countervailing duties, and safeguards will be an important factor in determining at least the perception of the WTO's broader record of success in the multilateral trading system. A large and increasing share of the recent dispute settlement caseload involves challenges to nationally imposed trade remedies over imports and, in particular, the U.S. imposition of trade remedies.

This paper investigates determinants of members' decisions of whether to challenge a U.S.-imposed trade remedy through formal GATT/WTO litigation. I provide evidence that some standard economic determinants affect the decision to file a dispute against U.S.-imposed remedies: the size of imports lost to the trade remedy, the foreign country's capacity to retaliate, and the size of the trade remedy that was imposed. Nevertheless, I document two additional results in particular that are a source of potential concern. First, the evidence implies that an adversely affected foreign industry may resort to a reciprocal (and retaliatory) antidumping measure against the protected U.S. industry if it has the capacity to do so, in lieu of working to convince its government

to file a dispute at the WTO on its behalf that would seek the removal of the U.S. trade remedy measure. Second, there is also evidence that less diversified foreign exporters are less likely to challenge U.S. trade remedies, which is a concern if these exporters are systematically less likely to be able to deflect their lost exports to third markets when a trade remedy shuts them out of the United States.

I do note that there are a number of caveats to this approach and a number of unanswered questions that could be an area of future research. First, the analysis focuses on U.S. trade remedies only. While this a logical place to commence an empirical investigation into the questions raised, it would be useful to know if the lessons learned from the experience of challenging U.S. remedies applies to other remedy-imposing countries as well. Second, this approach also does not allow investigation of a second important question: why does the United States challenge so few of the foreign-imposed trade remedies targeting U.S. exporters, especially given the evidence that its exporters are the third most targeted set of producers in worldwide antidumping? Third, while I have sought to carefully characterize important elements of the data, the econometric results are based on a relatively small number of pooled observations whose lack of independence may generate additional statistical concerns. Nevertheless, this approach is merely a starting point, and the results do illustrate some interesting patterns to the underlying data that should be the focus of additional future research.

## REFERENCES

Bagwell, Kyle, and Robert W. Staiger. 2002. *The Economics of the World Trading System.* Cambridge, Mass: MIT Press.

———. 2005. Enforcement, Private Political Pressure and the General Agreement on Tariffs and Trade/World Trade Organization Escape Clause. *Journal of Legal Studies* 34:471–513.

Bartelsman, Eric J., Randy A. Becker, and Wayne B. Gray. 2000. NBER-CES Manufacturing Industry Database. http://www.nber.org/nberces/nbprod96.htm.

Blonigen, Bruce A., and Chad P. Bown. 2003. Antidumping and Retaliation Threats. *Journal of International Economics* 60:249–73.

Blonigen, Bruce A., and Thomas J. Prusa. 2003. Antidumping. Pp. 251–84 in *Handbook of International Trade,* edited by E. Kwan Choi and James Harrigan. Oxford: Blackwell Publishers.

Bown, Chad P. 2002. Why Are Safeguards under the WTO So Unpopular? *World Trade Review* 1:47–62.

———. 2004a. How Different Are Safeguards from Antidumping: Evidence from U.S. Trade Policies Toward Steel. Unpublished manuscript. Brandeis University, July.

———. 2004b. On the Economic Success of GATT/WTO Dispute Settlement. *Review of Economics and Statistics* 86:811–23.

———. Forthcoming. Participation in WTO Dispute Settlement: Complainants, Interested Parties and Free Riders. *World Bank Economic Review.*

Bown, Chad P., and Meredith A. Crowley. 2004. Trade Deflection and Trade Depression. Working Paper No. 2003-26. Federal Reserve Bank of Chicago, Chicago.

Bown, Chad P., Bernard Hoekman, and Çaglar Ozden. 2003. The Pattern of U.S. Antidumping: The Path from Initial Filing to WTO Dispute Settlement. *World Trade Review* 2:349–71.

Busch, Marc L., and Eric Reinhardt. 2000. Bargaining in the Shadow of the Law: Early Settlement in GATT/WTO Disputes. *Fordham International Law Journal* 24:158–72.

Cunningham, Richard O., and Troy H. Crib. 2003. Dispute Settlement through the Lens of "Free Flow of Trade"—a Review of WTO Dispute Settlement of U.S. Anti-dumping and Countervailing Duty Measures. *Journal of International Economic Law* 6:155–70.

Durling, James P. 2003. Deference, but Only When Due: WTO Review of Antidumping Measures. *Journal of International Economic Law* 6:125–53.

Feenstra, Robert C., John Romalis, and Peter K. Schott. 2002. U.S. Imports, Exports and Tariff Data, 1989 to 2001. Working Paper No. 9387. National Bureau of Economic Research, Cambridge, Mass.

Feinberg, Robert M., and Kara M. Olson. 2004. The Spread of Antidumping Regimes and the Role of Retaliation in Filings. Unpublished manuscript. American University, November.

Greene, William H. 2000. *Econometric Analysis*. 4th ed. Upper Saddle River, N.J.: Prentice Hall.

Greenwald, John. 2003. WTO Dispute Settlement: An Exercise in Trade Law Legislation? *Journal of International Economic Law* 6:113–24.

Hansen, Wendy, and Thomas J. Prusa. 1996. Cumulation and ITC Decision-Making: The Sum of the Parts Is Greater than the Whole. *Economic Inquiry* 34: 746–69.

———. 1997. The Economics and Politics of Trade Policy: An Empirical Analysis of ITC Decision Making. *Review of International Economics* 5:230–45.

Heckman, James J. 1979. Sample Selection Bias as a Specification Error. *Econometrica* 47:153–61.

Hoekman, Bernard M., and Michael M. Kostecki. 2001. *The Political Economy of the World Trading System: The WTO and Beyond*. 2d ed. New York: Oxford University Press.

Holmes, Peter, Jim Rollo, and Alasdair Young. 2003. Emerging Trends in WTO

Dispute Settlement: Back to GATT? Unpublished manuscript. University of Sussex.

Horn, Henrik, Petros C. Mavroidis, and Håkan Nordström. 1999. Is the Use of the WTO Dispute Settlement System Biased? Discussion Paper No. 2340. Centre for Economic Policy Research, London.

Irwin, Douglas A. 2003. Causing Problems? The WTO Review of Causation and Injury Attribution in U.S. Section 201 Cases. *World Trade Review* 2:297–325.

Martin, Alberto, and Wouter Vergote. 2004. Antidumping: Welfare Enhancing Retaliation? Unpublished manuscript. Columbia University, October.

Organisation for Economic Co-operation and Development. 2001. *International Development Statistics* (CD-ROM). Paris: OECD, Development and Assistance Committee.

Prusa, Thomas J. 1992. Why Are So Many Antidumping Petitions Withdrawn? *Journal of International Economics* 33:1–20.

———. 2001. On the Spread and Impact of Antidumping. *Canadian Journal of Economics* 34:591–611.

Prusa, Thomas J., and Susan Skeath. 2005. Modern Commercial Policy: Managed Trade or Retaliation? Pp. 358–82 in *Economic and Legal Analyses of Trade Policy and Institutions,* vol. 2 of *Handbook of International Trade,* edited by E. Kwan Choi and James Hartigan. Malden, Mass.: Blackwell Publishing.

Staiger, Robert W., and Frank A. Wolak. 1994. Measuring Industry-Specific Protection: Antidumping in the United States. *Brookings Papers on Economic Activity: Microeconomics,* pp. 51–118.

Sykes, Alan O. 1991. Protectionism as a "Safeguard": A Positive Analysis of the GATT "Escape Clause" with Normative Speculations. *University of Chicago Law Review* 58:255–305.

———. 2003. The Safeguards Mess: A Critique of WTO Jurisprudence. *World Trade Review* 2:261–95.

Tarullo, Daniel K. 2003. Paved with Good Intentions: The Dynamic Effects of WTO Review of Anti-dumping Action. *World Trade Review* 2:373–93.

U.S. Census Bureau. 1996. *1992 Economic Census: Concentration Ratios in Manufacturing.* http://www.census.gov/epcd/www/concentration.html.

U.S. Census Bureau. 1993–2004. *Current Industrial Reports, Survey of Plant Capacity.* http://www.census.gov/cir/www/mqc1pag2.html.

U.S. Census Bureau. 2001. *U.S. Census of Manufactures, Concentration Ratios in Manufacturing.* http://www.census.gov/prod/ec97/m31-cr.pdf.

U.S. Census Bureau. 2004. *2002 Economic Census, Manufacturing Industry Series.* http://www.census.gov/econ.census02/guide/INDRPT31.HTM.

Van de Ven, Wynand, and Bernard Van Praag. 1981. The Demand for Deductibles in Private Health Insurance: A Probit Model with Sample Selection. *Journal of Econometrics* 17:229–52.

World Bank. 2005. *World Development Indicators.* Washington, D.C.: World Bank.

World Trade Organization. 2002. Liaison Officers and Representatives to WTO. Unpublished manuscript. World Trade Organization, Geneva.

———. 2004. WTO Dispute Settlement: Status in Brief of the Disputes. http://www.wto.org/english/tratop_e/dispu_e/dispu_status_e.htm.

Zanaradi, Maurizio. 2004. Antidumping: What Are the Numbers to Discuss at Doha? *World Economy* 27:403–33.