



ELSEVIER

Journal of International Economics 60 (2003) 249–273

Journal of
INTERNATIONAL
ECONOMICS

www.elsevier.com/locate/econbase

Antidumping and retaliation threats

Bruce A. Blonigen^{a,1}, Chad P. Bown^{b,*}

^a*Department of Economics, University of Oregon, Eugene, OR 97403-1285, USA*

^b*Department of Economics, MS 021, Brandeis University, PO Box 549110, Waltham, MA 02454-9110, USA*

Received 10 October 2001; received in revised form 5 April 2002; accepted 2 June 2002

Abstract

We propose and test two ways in which retaliation threats may dampen the antidumping (AD) activity we observe. First, the threat of retaliatory AD actions may make a domestic industry less likely to name a foreign import source in an AD petition. Second, the prospect of a GATT/WTO trade dispute may make government agencies less likely to rule positive in their AD decision. Using a nested logit framework, we find evidence that both retaliation threats substantially affect US AD activity from 1980 through 1998.

© 2002 Elsevier Science B.V. All rights reserved.

Keywords: Antidumping Protection; Tariff Retaliation; GATT/WTO; Trade Disputes

JEL classification: F13; L13

1. Introduction

In the past decade, there has been a proliferation of countries adopting antidumping (AD) policies. As documented by Prusa (2001), 29 countries filed over 2000 AD cases from 1987 to 1997. These figures represent triple the number of filing countries and five times the AD petitions compared to the 1980s, when the primary users of AD laws were Australia, Canada, the European Community,

*Corresponding author. Tel.: +1-781-736-4823; fax: +1-781-736-2269.

E-mail addresses: bruceb@oregon.uoregon.edu (B.A. Blonigen), cbown@brandeis.edu (C.P. Bown).

¹Tel.: +1-541-346-4680; fax: +1-541-346-1243.

and the United States. Proliferation of countries with AD laws also means an increased chance of seeing AD wars and retaliatory AD duties breaking out between countries. Anecdotal evidence of this certainly abounds. One important example is the filing of Canadian AD cases against US steel products in the fall of 1992 and 1993, ostensibly in response to the initiation and subsequent US antidumping duties levied against Canadian steel products from investigations begun in June 1992. More formally, Prusa and Skeath (2001) examine worldwide patterns of AD use from 1980 to 1998 and find evidence consistent with ‘tit-for-tat’ retaliatory AD actions. These apparent examples of retaliation and the rising use of AD laws have raised substantial concern that AD activity may ultimately reverse many of the free trade gains of the GATT rounds.²

On the other hand, the rising threat of retaliatory AD actions may have an eventual dampening effect on AD activity, leading to some sort of ‘cold war’ equilibrium. In other words, once other countries have the ability to retaliate in kind, a country (or petitioning industry) may find it no longer to their benefit to file AD cases. It may even ultimately mean that traditional users of AD laws may not wish to enforce these laws as stringently as before. For example, Lindsey and Ikenson (2001) document the rising incidence of worldwide AD activity against US exporters and recommend that US policymakers consider the effects of defending and promoting AD activity within the context of the WTO when one considers the interests of all domestic producers, not just those in import-competing sectors.

Retaliation as a mechanism toward free trade is not a new idea. For example, a common perception is that the trade wars stemming from the US implementation of the Smoot–Hawley tariffs may have laid the foundation for the GATT. Additionally, the literature on trade negotiations has highlighted that the potential for countries to revert back to higher tariffs (i.e., retaliation) serves as an important enforcement mechanism for achieving trade protection reductions.³

The purpose of this paper is to examine whether threats of retaliation have had any measurable dampening effect on US AD activity from 1980 through 1998. At first glance, this may seem to be a poor place to look for such dampening effects from retaliation threats. Law changes in the late 1970s led to a blossoming of US AD activity during this time period and the latter half of this period (the 1990s) saw increased worldwide AD activity and evidence consistent with retaliation against US exporters, as noted above. There are two important responses to this concern. First, as noted by Blonigen and Prusa (forthcoming), an important

²Gallaway et al. (1999) report that the collective US welfare cost of US antidumping and countervailing duties are substantial enough to rank second only to the effects of the Multifiber Arrangement in terms of most costly US trade protection programs.

³Important papers in this literature include Maggi (1999), Bagwell and Staiger (1999), Grossman and Helpman (1995) and Riezman (1991).

research question is why there are not more AD petitions, given the relative ease with which domestic industries can obtain AD protection and the possibilities for collusive outcomes even if petitions do not bring formal AD protection. US AD petitions often involve very specific and narrowly defined products and annual activity often involves a very small portion (less than 5%) of even manufacturing activity. The threat of retaliation may be one important answer to this research question. Second, although there is evidence consistent with specific, nontrivial AD retaliation across countries, this in no way rules out the possibility of substantial reduced activity in general, due to threats of retaliation. Finally, we note that while there were only a few users of AD laws in the first half of our sample besides the US, two of its main trading partners, Canada and the EC, were in this group of AD users, providing ample opportunities for AD retaliation against US AD actions.

We examine two main channels through which the threat of retaliation may dampen AD activity in the US. The first channel is through domestic industries which decide whether to initiate an AD investigation. A straightforward model of reciprocal dumping across countries in a repeated game setting (presented in Blonigen (2000), and summarized in Section 2) shows that an industry is more likely to file an AD petition the greater the import penetration and the lower its 'exposure' to retaliation. The industry is more 'exposed' to retaliation when the industry has significant exports to the same country it is petitioning against and when that country has AD policies in place. Everything else equal, we should observe a lower probability of an AD filing against a country in our data when the domestic industry has such exposure to retaliation. The AD process affords a unique opportunity to examine this in that the domestic industry, not the government agencies, decides which countries are targeted (or named) in a petition.

The second channel through which the threat of retaliation may operate is at the level of the government agencies that decide the AD cases. In the US, the US Department of Commerce (USDOC) determines whether dumping has occurred, and the US International Trade Commission (USITC) determines whether the domestic industry has been materially injured due to the import sources that have been named in the AD petition. The decision to grant AD protection by these agencies may be influenced by the possibility that such an affirmative AD ruling leads to retaliation by the foreign countries through the GATT/WTO trade dispute settlement mechanism.⁴ Since 1989, over 30 such cases involving AD actions have

⁴This rationale for retaliation threats requires that these agencies' decisions are not completely determined by the economic facts of the case, but that they also involve agency discretion. This assumption seems quite reasonable given the work by Hansen (1990), Moore (1992), and Hansen and Prusa (1997) that clearly shows that political considerations are important for understanding the pattern of US AD decisions.

been filed under the GATT/WTO dispute settlement mechanism, with 11 of these involving the US as the defendant country.⁵ Just as with well-known cases, such as the US–EU cases in bananas and beef, adverse judgments by the WTO can lead to compensation to the foreign country by allowing it to retaliate through the withdrawal of tariff concessions. Bown (2001) presents a theoretical model that considers the misuse of AD procedures under such a situation where recourse is available to the foreign country under the GATT/WTO dispute settlement process.

Of course, a plaintiff foreign country needs to have the capacity to retaliate should it win a dispute settlement over a US AD action, which would involve sufficient consumption of US goods exported to their country. In an empirical study of formal GATT trade disputes, Bown (2000) has found evidence to suggest that countries tend to implement various forms of ‘GATT-illegal’ protection against trading partners that are unable to credibly threaten substantial retaliation, as measured by the consumption of the policy-implementing country’s exports by the affected trading partner. This observation on capacity to retaliate allows us to identify this second potential channel of retaliation threat effects in our sample. In particular, we expect that smaller US export volumes to a foreign country means a limited capacity to retaliate by that foreign country, and makes it more likely US agencies will rule affirmatively on AD cases against such a country. Even more directly, if a foreign country is not a member of the WTO, this channel of retaliation is obviously closed to that country, making adverse US AD decisions more likely.

To test our hypotheses concerning these two channels of retaliation we sample all US AD cases from 1980 through 1998 and use a nested logit framework that models the US industries’ decisions of which countries to name in the first stage, and the US government agencies’ AD decision in the second stage. We find substantial evidence of dampening effects on AD activity from both channels of retaliation threats. Our estimates suggest that US petitioning industries are less likely to name foreign countries in an AD petition for which there is higher exposure (in terms of US exports to countries with AD laws) to retaliation.

⁵Eleven independent examples of formal GATT/WTO trade disputes since 1989 in which the US was a defendant country in such an AD ‘trade dispute’ are *Sweden vs. US* over ‘Imposition of Anti-Dumping Duties on Imports of Seamless Steel Hollow Products from Sweden,’ *Mexico vs. US* over ‘Anti-Dumping Duties on Gray Portland Cement and Cement Clinker from Mexico,’ *Norway vs. US* over ‘Anti-Dumping Duties on Imports of Fresh and Chilled Atlantic Salmon,’ *Korea vs. US* ‘Anti-Dumping Duty on Dynamic Random Access Memory Semiconductors (DRAMs) of One Megabit or Above from Korea,’ *Korea vs. US* over ‘Anti-Dumping Measures on Stainless Steel Plate in Coils and Stainless Steel Sheet and Strip from Korea,’ *Japan vs. US* over ‘Anti-Dumping Measures on Certain Hot-Rolled Steel Products from Japan,’ *EC vs. US* over ‘US–Anti-dumping duties on Seamless pipe from Italy,’ *India vs. US* ‘Anti-Dumping and Countervailing Measures on Steel Plate From India,’ *EC vs. US* over ‘Anti-Dumping Measures on Imports of Solid Urea from the Former German Democratic Republic,’ *Korea vs. US* over ‘Anti-Dumping Duties on Imports of Colour Television Receivers from Korea,’ and *Mexico vs. US* over ‘Anti-Dumping Investigation Regarding Imports of Fresh or Chilled Tomatoes from Mexico’ (WTO 1995a, 2001).

Additionally, we find that the US government agencies are more likely to rule affirmatively when the named foreign country has a lower capacity to retaliate through the GATT/WTO dispute settlement process.

In terms of economic implications, our results can thus be interpreted along two dimensions. First, it appears that retaliation threats do lower AD activity when examining US AD activity over the past two decades. This suggests that proliferation of AD laws across countries may not necessarily lead to more (and could lead to less) worldwide AD activity in the future. On the other hand, the results point to a shortcoming in the rules of dispute settlement of the GATT/WTO system. Even increased participation in the system is hampered by the fact that the ‘retaliation-as-compensation’ mechanism of dispute settlement is inherently biased against bilaterally ‘powerless’ countries who may not be equipped with the capacity to retaliate against a particular trading partner.

The rest of the paper proceeds as follows. Section 2 briefly reviews the theory underlying our hypotheses. Section 3 introduces our empirical specification and data. Section 4 presents our empirical results and provides some sensitivity analysis, and Section 5 concludes.

2. Theoretical motivation

Blonigen (2000) and Bown (2001) independently develop theoretical models to illustrate potential channels of retaliation involved in AD cases. In this section we will briefly describe these models and their empirical implications. Readers interested in greater detail on these models are referred to the respective papers.

Blonigen (2000) focuses on the domestic industry’s decision to file an AD case and the potential for the named foreign countries to file retaliatory AD cases. Blonigen (2000) begins with a reciprocal dumping model, as in Brander and Krugman (1983), with two firms from two separate countries competing in quantities in both markets. This model is then modified in a number of important ways to analyze the incentives for AD filings and retaliation. A second stage is added in which each firm is given the possibility of filing an AD investigation after quantity competition occurs. Second, this two-stage game is assumed to be infinitely repeated, so that AD actions affect future outcomes, with the probability of a successful AD case and resulting AD duties on the rival assumed to be a function of the rival’s market share in the previous period.

Such a model allows the analysis of a variety of scenarios that generate predictions for the empirical estimation. In particular, it is clear that a credible threat of a retaliatory action by a rival requires that the rival has AD laws that allow retaliation, as well as a sufficient market share by the other firm in their market to make the probability of AD duties high enough to cover the costs of filing an AD case. In a symmetric case, where both firms have access to AD laws and high enough market shares in each other’s markets, firms may be able to

obtain a cooperative outcome of not filing against each other in this infinitely repeated game via trigger strategies. However, if the foreign firm does not have access to AD laws or the domestic firm's market share in the foreign market is small enough, the domestic firm has greater incentives to defect and file an AD case because retaliation exposure is so low. We test this theoretical implication in our econometric work below through the use of an interaction term between a variable proxying for export exposure to a foreign market source and a dummy variable indicating whether that foreign market source has AD laws. Our hypothesis is that the greater this variable, the less likely a domestic firm/industry will file an AD case against a foreign market source, everything else equal.

Once an AD case is filed government agencies need to decide whether to rule affirmative on the AD case or not. Bown (2001) presents a model that examines another possible channel of retaliation at this level of the AD process: the possibility that the named foreign country files a dispute settlement investigation of an affirmative AD decision which, if successful, would allow WTO-sanctioned retaliation. Bown sets up the following three-stage game of a three-firm, three-country world. In the first stage, firms compete in quantities in the three markets under free trade conditions. In the second stage, the home-country government (with AD laws) decides whether to impose AD duties on one or both of the other foreign countries and the firms then compete in quantities again. Finally, period three allows for a variety of trade disputes to be resolved by the three countries, including WTO-sanctioned retaliation or withdrawal of the AD duties.

There are a number of parallels between Bown's implications for affirmative AD decisions and Blonigen's results for the industry AD filing decision. A number of equilibria are possible in Bown's model, but it is clear that the home country is less likely to impose AD duties (i.e., rule affirmative) the greater the likelihood that the foreign countries can effectively retaliate. Effective retaliation requires a combination of having access to and experience with the GATT/WTO dispute settlement mechanism and having sufficient trade from the home country to level a strong enough retaliatory response. Our empirical work below will construct an appropriate interaction term to proxy for this combination with the hypothesis that higher effective retaliation through the dispute settlement process decreases the likelihood of an affirmative AD determination by the government.

3. The econometric model and data

3.1. The nested-logit framework

The AD process is multi-staged. As implied by the above discussion, our focus is on two primary stages which we call the domestic industry's naming stage and the government authority's AD decision stage. Following a similar approach to Hansen (1990), we can estimate determinants of these decisions in a two-stage

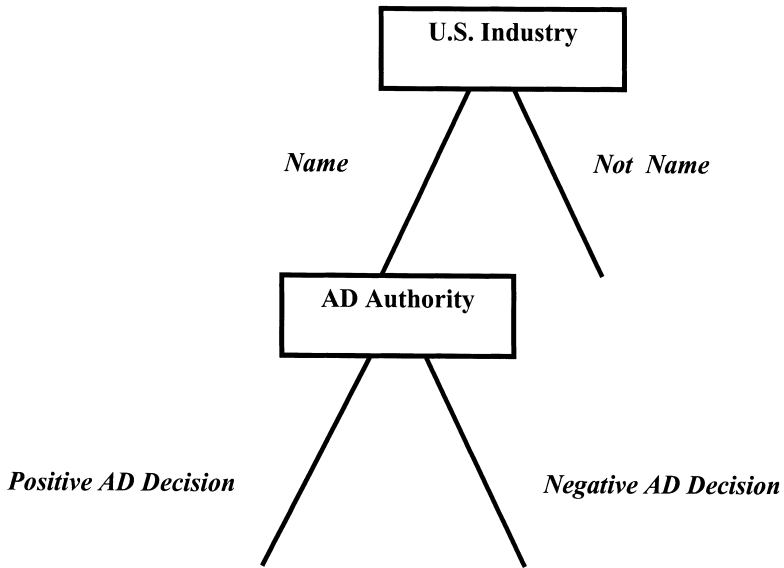


Fig. 1. The decision tree of the US AD process, given that a petition has been filed.

nested logit framework, as shown in Fig. 1.⁶ This structure is consistent for modeling any country’s AD process which conforms to WTO standards, though in the remaining discussion we will now focus on features of the US AD process, some of which may be unique.

The second stage of the model is where countries can differ most in terms of process and outcomes. As mentioned above, in the US, the AD determination is made by two separate agencies on two criteria which are both necessary for an affirmative decision. The USDOC determines whether firms from a named foreign country are dumping; i.e., selling their product below what is considered ‘fair’ value. Concurrently, the USITC determines whether the US domestic industry has been ‘materially injured’ or faces the threat of material injury from the named import sources. Due to standard ‘weak’ practices for defining dumping, the USDOC rules affirmative on dumping almost every time. Thus, the government AD decision in the US is almost solely determined by the USITC injury test.

Empirically, the characterization of the second-stage outcome phase is also complicated by the fact that petitions can be withdrawn or settled at any point during the AD investigation. Prusa (1991) suggests that 80–90% of withdrawn cases involve a settlement or some type of agreement between the domestic and foreign industries, and Prusa (1992) provides empirical evidence to suggest that

⁶Hansen’s first stage is concerned with the industry decision of whether to file a petition or not, whereas our first stage is concerned with which import sources to include in the petition.

the effect of the settlement outcome on trade is at least as restrictive as the impact of the imposition of duties. We assume that withdrawals that occur after one or more preliminary determinations by the US AD authorities (withdraw late) lead to private settlements and, hence, ‘positive’ outcomes for the petitioners. On the other hand, cases which are withdrawn early in the investigation, before either agency even made a preliminary ruling, were mainly cases where the petitioners quickly realized that they would likely lose if the investigation continued and, hence, we classify these as negative outcomes. Thus as our benchmark outcome, we define the USITC’s decision as either Negative = {Reject, Withdraw Early} or Positive = {ADDs, Settle, Withdraw Late}.⁷ We consider alternatives to this specification of the second-stage decision variable in our analysis below.

In estimating the multi-staged decision tree, we employ a nested-logit analysis, as originally proposed by McFadden (1978).⁸ Let $i \in \{\text{Name, Not Name}\}$ index the industry’s first stage decision, and let $j \in \{\text{Positive, Negative}\}$ index the AD authority’s second stage decision. We assume that the probability that the final outcome is alternative ij , P_{ij} , can be written as the product of the conditional probability $P_{j|i}$ and the marginal probability P_i , where, for example, each probability is of the binomial logit form

$$P_{\text{Positive}|\text{Named}} = \frac{e^{\beta X}}{1 + e^{\beta X}} \quad (1)$$

$$P_{\text{Negative}|\text{Named}} = \frac{1}{1 + e^{\beta X}} \quad (2)$$

$$P_{\text{Name}} = \frac{e^{\alpha Z + \theta I_{\text{Name}}}}{1 + e^{\alpha Z + \theta I_{\text{Name}}}}. \quad (3)$$

In (1) and (2) β is the vector of parameters to be estimated that are associated with the second stage, AD authority’s decision, and X is the matrix of second-stage covariates. In (3), α is the vector of parameters to be estimated that are associated with the first stage, US industry’s country ‘naming’ decision, and Z is the matrix of first-stage covariates. Also in (3), I_{Name} is the standard inclusive value that the industry derives from choosing alternative $i = \text{Name}$ which is defined as

$$I_{\text{Name}} = \log(e^{\beta X}), \quad (4)$$

and consequently, θ is the parameter to be estimated on the inclusive value,

⁷This classification is made by referring to the information released by the USITC in the *Federal Register*.

⁸Further details on the econometric theory behind the nested-logit framework can be found in McFadden (1981) or Greene (2000).

measuring the dissimilarity between the alternatives that the industry faces in its ‘naming’ decision.⁹

We estimate this nested-logit model using Full Information Maximum Likelihood (FIML) techniques and data on US AD activity from 1980 through 1998. The subsequent two sections describe our explanatory variables and data before discussing our estimation results.

3.2. Explanatory variables

3.2.1. US industry’s naming decision

In the first stage, a number of factors may affect which import sources a US domestic industry will choose to name in a petition. The main hypothesis we wish to test in this first stage is that the US domestic industry will be less likely to name import sources to which they have significant export exposure and in which foreign rivals have access to AD protection as well. Thus, we include an interaction term between a dummy variable that indicates whether the import source has AD laws and a measure of export exposure. We first measure the degree of export exposure to an import source as the share of US exports in the named *product* to the foreign import country, where *product* refers to a specific eight- or 10-digit HTS code.¹⁰ However, we then consider that AD retaliation may occur beyond the specific subject product and use the relevant US four-digit SIC *industry* export share to the foreign import country. This allows us to account for the idea that multi-product firms may face the threat of reciprocal AD retaliation in products outside of the more narrow product categories that are subject to the AD investigation. Data for the export measures come from Feenstra et al. (1997) and Feenstra (1997, 2000). We use Miranda et al. (1998) to identify countries that have AD laws.

Given the theory and AD statutes it is clear that the US industry has an incentive to name more countries to increase the likelihood of passing the injury test. This is particularly true for the US since 1984 when a legal change allowed the USITC to consider all named import sources (or to ‘cumulate imports’) when determining the injury test for any individual named import source (Hansen and Prusa, 1996). It is also important to show these import sources are growing fast in terms of market share for the injury determination, which should give incentives to include fast growing import sources. Thus, we include the foreign import country’s share of US industry imports in the particular product code and the growth rate in the US imports of the product under investigation from the foreign country from

⁹An estimate of θ which is not statistically different from 1 would indicate no dissimilarity between alternatives, or in other words, the nested logit could be collapsed into a simple multinomial logit framework.

¹⁰For years before 1989, products are defined at the five- or seven-digit TSUSA code.

the previous year as control variables in the first-stage naming decision. Import data is derived from Feenstra (1996) and USITC (2001).

3.2.2. US government AD decision

With the second-stage government AD decision our main hypothesis is that exposure to retaliation through the GATT/WTO dispute settlement process will lower the likelihood that US government will rule affirmative. Thus, we include an interaction term between a measure of US export exposure and a dummy variable that indicates whether the import source has access to and/or experience with the GATT/WTO dispute settlement process. Here, our export exposure measure is at the country-level, rather than the product or industry level, as in the stage-one naming decision. Thus, we proxy export exposure as US exports to the foreign import source as a share of total US exports. The main way we proxy for access to and/or experience with the GATT/WTO dispute settlement process is a dummy variable indicating whether the named country source has ever been a plaintiff against the US in a prior GATT/WTO trade dispute. In our analysis below, we also discuss results for alternative measures, such as whether the named country source has ever been a plaintiff in any prior GATT/WTO trade dispute or simply whether the named country source is a GATT/WTO member. The WTO website provides information on country membership in the GATT/WTO over time and information on countries' participation as plaintiffs in WTO dispute settlement.¹¹

In addition to the GATT/WTO retaliation exposure variable, we control for a number of factors that previous literature has found important in explaining US AD decisions.¹² As discussed by Blonigen and Prusa (forthcoming), while these studies differ to some extent in the regressor matrix they use, the vast majority of these studies find that US affirmative AD decisions are more likely the larger the import penetration and the worse the domestic industry has fared prior to the case. The results are consistent with the main economic factors the WTO Antidumping Code suggests should be used to determine injury. Thus, as in many of the previous studies, we include measures of import penetration and import growth, as well as the US employment rate, changes in domestic industry employment, and changes in domestic industry capacity utilization to proxy for recent performance trends in the domestic industry. Greater import penetration or growth should make an affirmative decision more likely, whereas better recent performance by the domestic industry should make an affirmative decision less likely. US unemploy-

¹¹See <http://www.wto.org> for the WTO website, and for countries' participation as plaintiffs in GATT dispute settlement, see WTO (1995c).

¹²Previous papers examining this issue empirically include Finger et al. (1982), Moore (1992), Baldwin and Steagall (1994), and Hansen and Prusa (1996, 1997). These studies focus almost exclusively on the USITC injury decision because, as mentioned above, the USDOC almost always rules affirmative on the dumping decision. This makes the USITC decision, which is much less certain, the real hurdle.

ment rate data come from the *Economic Report of the President*. Annual changes in domestic employment for the associated four-digit SIC industry are taken from the NBER Manufacturing Industry Productivity Database (Bartelsman et al., 2000). Finally, the annual change in the capacity utilization rate for the associated four-digit SIC industries are found in the US Bureau of the Census' *Current Industrial Reports, Survey of Plant Capacity*. Also typically included as an explanatory variable is the pre-petition US industry tariff, suggesting that AD authority may be more willing to provide AD protection to industries that have already undertaken substantial liberalization. These tariff rates can be obtained from the USITC.

Moore (1992) and Hansen and Prusa (1996, 1997) find substantial evidence that political factors also affect USITC AD decisions and we include a number of such controls suggested by these studies. First, large and visible industries are hypothesized to be more likely to garner affirmative decisions. Thus, we include the size of US domestic industry as measured by industry employment. We also include a measure of industry concentration at the four-digit level, since it is typically hypothesized that more concentrated industries can more easily overcome free-rider problems and coordinate efforts to obtain trade protection. These data come from the US Bureau of the Census publication, *US Census of Manufactures, Concentration Ratios in Manufacturing*. Steel represents a substantial portion of US AD activity, and Hansen and Prusa (1996) find that the steel industry is much more likely to get affirmative decisions, everything else equal. Thus, we include a dummy variable for whether the observation is a steel product (SIC 3312) or not. Finally, as a statutory control, we include a dummy variable for cases which have been 'cumulated', which are related cases involving the same domestic industry filed against firms from different foreign countries.¹³ Hansen and Prusa (1996) have shown that there is a significantly increased probability that such cases will be accepted when they are considered jointly. Information on cumulated AD cases were obtained from Thomas Prusa. Table 1 provides descriptive statistics for explanatory variables used in our estimation.

3.3. *Sample data and descriptive analysis*

We test our hypotheses using data connected with US AD activity from 1980 through 1998. In the first stage we classify import sources into 'named' and 'non-named' import sources. To determine all possible import sources for all AD petitions in our sample, we first collected the disaggregated, tariff line codes for the products that the US domestic industry alleged were dumped in each petition. These can be found in the US AD petitions and are published in the *Federal*

¹³In 1984 the antidumping law in the US was amended by Congress to require that the USITC cumulate imports from countries involved in related petitions when making its injury determination.

Table 1
Descriptive statistics for variables in the estimation

Variables	Mean	Standard Deviation	Minimum	Maximum
<i>Stage 1: Industry naming decision</i>				
<i>AD retaliation variables</i>				
Product export share to import country x Import country has AD laws	0.0618	0.1399	0	0.7964
Industry export share to import country x Import country has AD laws	0.0686	0.1241	0	0.9382
<i>Other explanatory variables:</i>				
US import share of import country	0.1507	0.1696	0	0.9999
Growth rate of import country's imports	0.7404	6.5581	-35.5254	38.0337
<i>Stage 2: AD authority decision</i>				
<i>GATT/WTO Retaliation variables:</i>				
US export share to import country x Import country has been GATT/WTO plaintiff against US	0.0501	0.0886	0	0.2536
US export share to import country x Import country has been GATT/WTO plaintiff against someone	0.0654	0.0870	0	0.2536
US export share to import country x Import country is GATT/WTO member	0.0679	0.0862	0	0.2536
<i>Other explanatory variables:</i>				
US import penetration of named country	0.0236	0.0471	0	0.4688
Growth rate of named country's import share	0.3359	3.4011	-19.5426	22.6502
Tariff rate	0.0439	0.0355	0	0.1868
Cumulation dummy variable	0.5642	0.4962	0	1
Steel dummy variable	0.5439	0.4985	0	1
US industry concentration	36.6740	15.4841	5	98
US industry employment	117.3447	108.6020	1.2	541.2
Change in US industry employment	-0.0322	0.0800	-0.4095	0.2950
Change in US industry capacity utilization	0.0024	0.1369	-0.0118	0.0034
US unemployment rate	6.9147	1.2853	6	7

*Register.*¹⁴ Not all of the import sources are eligible to be named in AD petitions, however, as many of them have exports to the US that are too small to satisfy the AD statute's 'non-negligibility' requirements, which we take as having a share of

¹⁴For the period 1980–88, product codes subject to the AD investigation were generally reported as the five- or seven-digit TSUSA import category, whereas from 1989 to 1998 they were reported as the eight- or 10-digit HTS import category.

at least 3% of the tariff line imports of the product.¹⁵ This approach leaves us with a sample of 2015 import country sources, 638 of which were named, and 1377 which were not named.

In the second-stage concerning the government's AD decision, we have specified a binary choice indicating either that the case outcome was positive or negative. As described above, we have categorized early withdrawals as negative outcomes and late withdrawals as positive outcomes. These US AD decisions are a matter of public record, which can be found in the *Federal Register*.¹⁶ In our sample of years, 638 decisions were made by the US AD authority, with 364 petitions ending in positive outcomes and 274 petitions ending in negative outcomes.¹⁷

Before discussing results from our formal econometric analysis, Table 2 provides some key comparisons of subsamples in our data that provide initial evidence for our retaliation hypotheses. The upper half of Table 2 shows relevant comparisons for named and non-named countries in our sample of US AD petitions. First, a greater share (49.6 vs. 44.4%) of non-named countries have active AD laws than the named countries, suggesting that the US domestic industry is less likely to petition against countries with AD laws. Second, regardless of whether we measure export shares to the foreign country at the product or industry level, mean and median export shares of the US domestic industry are smaller for the countries that are named in AD petitions.

The bottom half of Table 2 shows relevant comparisons for countries receiving positive and negative US AD decisions for our sample of US AD outcomes. Consistent with our retaliation hypotheses, foreign country sources are less likely to receive positive AD decisions if they have access and experience with the GATT/WTO dispute settlement process. For example, 62.1% of the US AD decisions involve countries who have been a plaintiff in any formal GATT/WTO dispute settlement, yet these countries account for only 57.7% of the positive US AD decisions. The bottom two rows also illustrate that positive AD decisions are made, on average, against countries that receive a smaller share of US exports.

¹⁵Section 5.8 of the WTO's Antidumping Code states, "[t]he volume of dumped imports shall normally be regarded as negligible if the volume of dumped imports from a particular country is found to account for less than 3% of imports of the like product in the importing Member . . ." (WTO, 1995b). In unreported results we have varied the criterion by which we determine a country as being eligible to ensure our results are robust to reasonable changes to the eligibility requirements.

¹⁶Case- and firm-specific data on US AD cases for 1980–1995 can be obtained from a webpage created by Bruce Blonigen, <http://darkwing.uoregon.edu/bruceb/adpage.html>, which can also be accessed through the NBER data webpage, <http://www.nber.org/antidump/>.

¹⁷Underlying this we have 244 formal USITC rejections, 286 cases resulting in the imposition of ADDs and 108 cases which were settled or withdrawn. Based on data limitations, we are also only able to include AD cases in the manufacturing sector. However, the vast majority of US AD cases are manufacturing with only 6.2% of all cases filed from 1980 through 1998 involving non-manufacturing products.

Table 2
Comparison of key retaliation statistics

Stage 1: Industry naming decision	Overall	Named countries	Not-named countries
Observations	2015	638	1377
Foreign countries with an active AD statute (share)	966 (47.9%)	283 (44.4%)	683 (49.6%)
Mean product export share to import countries with an active AD statute (median)	12.9% (4.7%)	10.0% (2.1%)	14.1% (6.4%)
Mean industry export share to import countries with an active AD statute (median)	14.3% (10.4%)	10.9% (6.1%)	15.7% (11.5%)
Mean product export share to import countries (median)	7.1% (0.8%)	5.2% (0.5%)	9.3% (1.1%)
Mean industry export share to import countries (median)	8.2% (2.1%)	6.0% (1.4%)	9.0% (2.5%)
Stage 2: AD authority decision	Overall	Positive decision	Negative decision
Observations	638	364	274
Countries who have been a plaintiff in a formal GATT/WTO dispute against the US (share)	234 (36.7%)	118 (32.4%)	116 (42.3%)
Countries who have been a plaintiff in a formal GATT/WTO dispute against someone (share)	396 (62.1%)	210 (57.7%)	186 (67.9%)
Countries who were a GATT/WTO member at the time of the petition initiation (share)	495 (77.6%)	273 (75.0%)	222 (81.0%)
Mean US export share to countries who have been a plaintiff in a GATT/WTO trade dispute against the US (median)	13.7% (19.3%)	13.5% (19.2%)	13.8% (19.4%)
Mean US export share to named countries (median)	7.2% (2.4%)	6.9% (2.1%)	7.7% (2.7%)

Thus, Table 2 provides suggestive evidence for modest effects on AD naming and outcome decisions due to the threat of retaliation. In the next section we show that these are statistically significant effects when controlling for other factors that may affect AD naming and outcome decisions.

4. Estimation results

Table 3 presents FIML estimates from a nested logit specification of the domestic industry's naming decision in their AD petition and the US government's AD decision. A Hausman test of the independence of irrelevant alternatives is easily satisfied, which would allow us to run a simple multinomial logit regression instead of the nested logit specification we present here. However, we felt it was

Table 3
Maximum likelihood parameter estimates for the two-stage nested-logit model

Explanatory variables	Base specifi- cation (1)	Alternative formulation for AD outcome (2)	Reconstruct AD threat with industry export share (3)	Reclassifying Japan as non-AD country (4)
<i>Stage 1: Industry naming decision</i>				
Product export share to import country	-1.274 ^b	-1.281 ^b	-	-
<i>x</i> Import country had AD laws	(0.559)	(0.559)		
Industry export share to import country	-	-	-2.720 ^a	-2.490 ^a
<i>x</i> Import country had AD laws			(0.777)	(0.768)
US import share of named country	3.534 ^a	3.535 ^a	3.527 ^a	3.517 ^a
	(0.339)	(0.340)	(0.341)	(0.340)
Growth rate of named country's imports	-0.020	-0.018	-0.020	-0.021
	(0.030)	(0.030)	(0.030)	(0.030)
<i>Stage 2: AD authority decision</i>				
US export share to import country <i>x</i>	-2.191 ^b	-2.364 ^b	-2.165 ^b	-2.153 ^b
Import country has been GATT/WTO	(1.003)	(1.009)	(1.007)	(1.008)
US import penetration ratio of named	3.559 ^c	2.884	3.654 ^c	3.646 ^c
country	(1.989)	(1.869)	(2.000)	(2.014)
Growth rate of named country's import	0.058 ^b	0.063 ^b	0.057 ^c	0.056
share	(0.032)	(0.025)	(0.033)	(0.035)
Tariff rate	3.646	3.877	3.647	3.646
	(2.584)	(2.514)	(2.592)	(2.597)
Cumulation dummy variable	0.246	0.455 ^b	0.243	0.243
	(0.197)	(0.194)	(0.198)	(0.198)
Steel dummy variable	0.302	0.203	0.306	0.309
	(0.212)	(0.209)	(0.213)	(0.215)
US industry concentration	-0.002	0.000	-0.002	-0.002
	(0.007)	(0.006)	(0.007)	(0.007)
US industry employment	0.003 ^a	0.002 ^b	0.003 ^a	0.003 ^a
	(0.001)	(0.001)	(0.001)	(0.001)
Change in US industry employment	0.384	0.460	0.382	0.380
	(1.196)	(1.195)	(1.193)	(1.191)
Change in US industry capacity	-1.774 ^a	-1.668 ^b	-1.783 ^a	-1.781 ^b
utilization	(0.680)	(0.667)	(0.683)	(0.683)
US unemployment rate	0.010	0.026	0.008	0.008
	(0.076)	(0.075)	(0.076)	(0.077)
Constant	-0.440	-0.780	-0.427	-0.422
	(0.630)	(0.617)	(0.634)	(0.638)
Number of observations	2015	2015	2015	2015

Standard errors are in parentheses, with a, b, and c, denoting statistical significance (two-tailed test) at the 1, 5 and 10% levels, respectively. Inclusive values for all specifications fixed at one.

easier to follow results from a nested logit specification that delineates estimates from the two very distinct steps of the real-life AD process we model.¹⁸

Model (1) in Table 3 displays coefficient estimates from our base model specification. We discuss the performance of the explanatory variables we use as controls before examining the evidence for our hypotheses concerning retaliation threats and AD activity.

First, we note that our control variables in each stage are broadly consistent with the results reported elsewhere in the literature.¹⁹ In the first stage, a higher import share is strongly correlated with a greater likelihood of being named in the AD petition, as expected. The growth rate of a named country's imports, however, is statistically insignificant in explaining which import sources are named.

In the second stage, the import variables are statistically significant in explaining the government's AD decision. Import sources with greater import penetration and growth rates are significantly more likely to receive affirmative AD decisions, consistent with the economic criteria used for AD decisions. With respect to other economic criteria, decreases in domestic industry capacity utilization also increase the likelihood of affirmative decisions, as expected, while changes in the industry employment or the overall US unemployment rate are not estimated to significantly affect the AD decision. The evidence for political and statutory effects on AD decisions is more mixed. Larger industries in terms of employment are significantly more likely to garner affirmative AD decisions, everything else equal. However, we do not find statistically significant effects for industry concentration, the culmination rule, the steel dummy, or the tariff rate, though many of these are of correct sign. These general results are broadly robust to alternative specifications we discuss below.

Consider next the estimates on the threat of foreign retaliation variables. In both stages we find statistically significant effects of retaliation threats, confirming this paper's main hypotheses. In the first stage, the higher the product export share to a foreign import source with AD laws, the lower the probability that the foreign import source will be named in the AD petition, everything else equal. In the second stage, a greater US export share to a country that has been a plaintiff against the US in a GATT/WTO dispute settlement process means a statistically significant lower likelihood of receiving an affirmative AD decision. Both retaliation threat effects are statistically significant at the 5% level. Before discussing the economic magnitude of these retaliation threats on naming and AD

¹⁸Consistent with the Hausman test, we can never reject the hypothesis that the inclusive value coefficient from the second-stage of the nested logit is one. However, it was often estimated imprecisely, inflating the standard errors on our calculated marginal effects for first-stage regressors. Thus, we estimate the nested logit specification with an inclusive value fixed at one.

¹⁹For a comparison of the sign and statistical significance of the industry control variables, see for example Hansen and Prusa (1996, 1997).

decisions, we consider some alternative specifications to examine the robustness of our results.

4.1. Sensitivity analysis

4.1.1. Alternative formulations for AD outcomes

Recall again, that the second stage dependent variable in our base specification is characterized as ‘Negative’ = {Reject, Withdraw Early} and ‘Positive’ = {ADDs, Settle, Withdraw Late}. In model (2) in Table 3 we recategorize the second-stage dependent variable to be ‘Negative’ = {Reject, Withdraw (either late or early)} and ‘Positive’ = {ADDs, Settle}. Under this characterization, 638 second-stage decisions were made by the US AD authority, with 342 petitions ‘positive’ and 296 petitions classified as ‘negative’. This alternative formulation of our second stage outcome variable leads to almost an identical set of results as in our base specification.²⁰

4.1.2. Alternative formulations for retaliation threat variables

Our measures of retaliation in both stages are clearly proxy variables and subject to various concerns. Thus, we next explore some alternatives, beginning with our measure of AD retaliation threat in the first stage. Domestic firms often produce a range of products that could be subject to foreign AD actions by named import sources, thus defining our measure of retaliation threat in terms of the named *product* export share may understate the relevant range of retaliation threat for the domestic industry. For example, the product in question may be hot-rolled carbon steel sheet, but the US steel firms petitioning the case may be concerned about retaliation across a variety of steel products they produce and export. As an alternative, model (3) in Table 3 presents estimates when we define the stage-one retaliation threat variable using *four-digit SIC industry* export shares, rather than product shares. The coefficient on the retaliation threat variable in stage one more than doubles when defined this way and is now statistically significant at the 1% level. This suggests that domestic firms consider retaliation across related products to the one named in the AD petition and ignoring this leads to an underestimate of the retaliation threat effect. Given these results, we use the stage-one retaliation variable constructed with industry export shares in the remaining results we report.

Another concern with the AD retaliation threat variable in the first stage is over

²⁰In unreported results available upon request from the authors, we have also considered specifications of the model in which we characterize the second stage dependent variable as ‘Negative’ = {Reject} and ‘Positive’ = {ADDs, Settle, Withdraw}. The results are consistent, in terms of the statistical significance, with those reported in Table 3. In a related vein, we experimented with alternative cutoffs to the 3% import share we use to determine which import sources were eligible to be named in an AD petition in the first stage. These alternative cutoffs had negligible effect on our coefficient estimates.

how active various countries are with their AD laws. The most obvious example is Japan, which we measure as having an AD law, but which has only rarely used such laws. This is a particular concern, since Japan is a major trading partner with the US and has been subject to a significant amount of US AD actions. Model (4) in Table 3 presents estimates when we define Japan as a *non-AD* country for our first-stage AD retaliation threat measure.

We next turn to alternative specifications with respect to our threat of GATT/WTO dispute settlement retaliation threat measure in stage two. Our results in Table 3 specify an indicator variable if the foreign source country has previously been a plaintiff against the US in a GATT/WTO dispute. Weaker criteria are whether the foreign source country has been a plaintiff in any GATT/WTO dispute (not just against the US) or is simply only a member of the GATT/WTO, but has never been a plaintiff in a GATT/WTO dispute. Models (5) and (6) in Table 4 present estimates when we specify our GATT/WTO retaliation threat measure with these two alternative indicators of foreign source country ability to retaliate through GATT/WTO channels. The coefficient on the GATT/WTO retaliation threat is slightly smaller than the base specification, though it is still statistically significant. This suggests that even GATT/WTO membership alone is sufficient to lower the likelihood of a US AD affirmative decision, everything else equal.

One of the largest US trading partners that was not a GATT/WTO member during this time period was China. To examine whether our result with respect to the GATT/WTO retaliation threat is not purely a ‘China effect’, we estimate a specification in model (7) of Table 4 where we simply drop all observations involving China as the foreign country. The coefficient falls some, but is still statistically significant.

A final sensitivity check is our use of export shares, rather than export levels, to proxy for the US’s exposure to foreign retaliation. However, a high export share may not mean much exposure if export levels are generally low. Thus, an alternative is to use export levels. The potential problem with this is that there is no implicit normalization across products/industries as with export shares (which necessarily add up to 100%). A certain dollar value of trade may be high for one industry, but low for another, depending on average size of firms in the industry. When we run our model using export levels to construct our retaliation threat variables we get qualitatively similar results to those when we use export shares, but with larger standard errors.²¹

4.2. Economic significance

To this point, we have presented evidence that retaliation threats are statistically dampening the likelihood that a foreign import source will be named and become

²¹Results available upon request from authors.

Table 4
Maximum likelihood parameter estimates for the two-stage nested-logit model

Explanatory variables	Reconstruct GATT/WTO threat with plaintiff indicator (5)	Reconstruct GATT/WTO threat with GATT/WTO member indicator (6)	Drop China (7)
<i>Stage 1: Industry naming decision</i>			
Industry export share to import country	-2.698 ^a	-2.699 ^a	-2.602 ^a
<i>x</i> Import country has AD laws	(0.775)	(0.775)	(0.772)
US import share of named country	3.522 ^a	3.523 ^a	3.262 ^a
	(0.342)	(0.342)	(0.352)
Growth rate of named country's imports	-0.022	-0.022	-0.028
	(0.029)	(0.029)	(0.032)
<i>Stage 2: AD authority decision</i>			
US export share to import country <i>x</i> Import country has been GATT/WTO plaintiff against US	-	-	-1.995 ^c (1.021)
US export share to import country <i>x</i> Import country has been GATT/WTO plaintiff against someone	-1.821 ^c (0.941)	-	-
US export share to import country <i>x</i> Import country is GATT/WTO member	-	-1.823 ^c (0.941)	-
US import penetration ratio of named country	3.810 ^c (2.201)	3.816 ^c (2.201)	5.341 ^b (2.251)
Growth rate of named country's import share	0.027 (0.024)	0.027 (0.024)	0.052 (0.034)
Tariff rate	3.223 (2.693)	3.220 (2.693)	5.694 ^b (2.824)
Cumulation dummy variable	0.182 (0.186)	0.182 (0.186)	0.435 ^b (0.215)
Steel dummy variable	0.410 ^b (0.182)	0.409 ^b (0.182)	0.244 (0.240)
US industry concentration	-0.006 (0.006)	-0.006 (0.006)	0.002 (0.007)
US industry employment	0.003 ^a (0.001)	0.003 ^a (0.001)	0.004 ^a (0.001)
Change in US industry employment	0.401 (1.073)	0.402 (1.074)	0.755 (1.280)
Change in US industry capacity utilization	-1.604 ^a (0.616)	-1.606 ^a (0.617)	-1.419 ^b (0.721)
US unemployment rate	-0.038 (0.078)	-0.037 (0.078)	0.045 (0.081)
Constant	0.004 (0.662)	-0.002 (0.661)	-1.200 ^c (0.699)
Number of observations	2015	2015	1928

Standard errors are in parentheses, with a, b, and c, denoting statistical significance (two-tailed test) at the 1, 5 and 10% levels, respectively. Inclusive values for all specifications fixed at one.

subject to a US AD action in a significant manner. However, an important question is the magnitude of these effects. In Table 5 we report the results of an exercise in which we consider the marginal effects of retaliation threat variables on the probability of the US industry's naming decision and on the probability of a positive AD decision by the US AD authority. The initial probabilities were determined from the mean values of the data, and we consider changes determined by one standard deviation increases in the underlying data on the variables of interest.

The first row reports the change in the probability of a foreign import source being named in an AD petition falls 10.7% when the named product-level export share to the same foreign country rises from 6.2 to 20.2% (a standard deviation increase).²² This magnitude of the dampening effect of retaliation threat on the naming decision becomes even more substantial when using estimates that consider export shares at the four-digit SIC level. The next two rows in Table 5 give the high and low estimates for this effect, with the low estimate suggesting a decrease of 19.7% in the naming probability, and the high estimate suggesting a 27.9% decrease.

Consider next the magnitude of our estimated effects on the US government's AD decision reported in the next rows of Table 5. For a one standard deviation increase in the size of the share of US exports (from 5.0 to 13.9%) to a country which has been a plaintiff in a GATT/WTO trade dispute against the US, the foreign country will face an 8–10% lower probability that the AD authority will make a positive AD decision.

4.3. Growing retaliation threat effects?

The potential for retaliation has likely been growing over the past decade. As documented by Miranda et al. (1998), Prusa (2001), and Lindsey and Ikenson (2001), the number of countries adopting and using AD laws began to rise substantially in the early 1990s with a concomitant increase in the frequency of AD cases against US exporters. In addition, the GATT/WTO dispute settlement process only explicitly began to be used for AD matters in 1990, with the first panel report resulting from a formal AD-related dispute between the US and Sweden over a US steel AD duty (WTO, 1995a).

The bottom half of Table 5 reports marginal effects from regressions where we interact our retaliation threat variables with dummy variables to allow for structural breaks with respect to both the naming and the AD decisions. We allow for a structural break with respect to the GATT/WTO channel in 1990 and with

²²For example, in model (1) the probability that a foreign country will be 'named' when evaluated at the means of the data was 42.3%. *Ceteris paribus*, a one standard deviation increase in the product export share from the mean of 6.2–20.2% causes the probability that a foreign country will be named to fall to 38.1%.

Table 5
 Estimated probability changes due to changes in the ‘retaliatory threat’ variables

<i>Stage 1: Industry naming decision</i>		Percentage change (in decimal form) of the probability of being named
One standard deviation increase from the mean in the share of product exports to an import country with AD laws [from 0.0618 to 0.2017]		
Model (1)	–0.107 ^b (0.050)	
One standard deviation increase from the mean in the share of industry exports to an import country with AD laws [from 0.0686 to 0.1927]		
High estimate—model (5)	–0.279 ^a (0.085)	
Low estimate—model (4)	–0.197 ^a (0.068)	
<i>Stage 2: AD authority decision</i>		Percentage change (in decimal form) in the conditional probability of a positive AD decision, given that a country has been named
One standard deviation increase from the mean in the share of US exports to an import country who has been GATT/WTO plaintiff against the US [from 0.0501 to 0.1387]		
High estimate—model (2)	–0.102 ^b (0.046)	
Low estimate—model (7)	–0.083 ^c (0.045)	
<i>Stage 1: Industry naming decision</i>		Percentage change (in decimal form) of the probability of being named
One standard deviation increase from the mean in the share of product exports to an import country with AD laws [from 0.0618 to 0.2017]		
Pre 1993 cases only	–0.098 ^c (0.055)	
Post 1992 cases only	–0.175 (0.110)	
One standard deviation increase from the mean in the share of industry exports to an import country with AD laws [from 0.0686 to 0.1927]		
Pre 1993 cases only	–0.217 ^a (0.079)	
Post 1992 cases only	–0.263 ^b (0.120)	
<i>Stage 2: AD authority decision</i>		Percentage change (in decimal form) in the conditional probability of a positive AD decision, given that a country has been named
One standard deviation increase from the mean in the share of US exports to an import country who has been GATT/WTO plaintiff against the US [from 0.0501 to 0.1387]		
Pre 1990 cases only	–0.065 (0.057)	
Post 1989 cases only	–0.126 ^c (0.068)	

Standard errors are in parentheses, with a, b, and c, denoting statistical significance (two-tailed test) at the 1, 5 and 10% levels, respectively.

respect to the AD channel at 1993.²³ There is only weak evidence that retaliation threats are having a growing impact on naming decisions since the early 1990s. This may be due to the fact that many new users of AD laws are relatively small in economic size to the more traditional AD users the US has faced in the EU and Canada. Alternatively, it may be taking some time before US domestic industries incorporate information on new user AD activity into their naming decisions.

There is stronger evidence that the effect of GATT/WTO retaliation threats on US AD decisions grows more important (and, in fact, is only important) in the 1990s. This is consistent with the beginning of the formal GATT/WTO dispute settlement process, which offered its first ruling under the Tokyo Round's Antidumping Code in 1990. Before 1990 there is no statistically significant effect, whereas after 1990 a one-standard deviation change in export exposure means a 12.6% reduction in the US AD authorities' likelihood of deciding positive in an AD case, everything else equal.

5. Conclusion

This paper investigates how foreign retaliation threats affected filings and outcomes of US AD cases from 1980 through 1998. We identify and investigate two different channels through which the threat of retaliation can affect different critical stages of the AD process, the industry naming decision and the government's AD decision.

We find evidence to suggest that US industries are influenced by the threat of retaliation through the AD channel. In particular, US industry is less likely to initiate petitions against firms from countries which have active AD provisions and to which the US petitioning industry sends sizable exports. This is consistent with the theory that the industry is concerned with the capacity of the foreign firms to initiate AD investigations and retaliate with reciprocal AD duties.

We also find evidence to suggest that the US AD authority is influenced by the threat of retaliation through the GATT/WTO channel. The US AD authority tends to reject petitions against firms from countries that have experience as a plaintiff in GATT/WTO trade disputes against the US and to whom the US sends sizable exports. This is consistent with the theory that the AD authority is using discretion when it is concerned with the capacity of GATT/WTO-sanctioned foreign retaliation in a potential formal trade dispute.

As noted in Section 1, these dampening effects are important and, perhaps counterintuitive with respect to recent literature concerned that more countries are adopting and using AD laws in the past decade. The dampening effects we estimate are economically significant, though obviously not large enough to

²³Alternative, nearby break years give qualitatively similar but less precise estimates than those reported here.

eliminate worldwide AD activity. However, there is some evidence that these dampening effects grow in magnitude in the latter half of our sample, particularly with respect to the use of the GATT/WTO dispute settlement process. Thus, increased AD ability across countries and familiarity with the GATT/WTO dispute settlement process may ultimately help put the brakes on AD use by traditional users, leading to more of a ‘cold war’ equilibrium rather than a larger conflagration of AD protectionism.

It is important to note that the magnitude of these dampening effects depends on how balanced retaliation threats are distributed across countries. Poorer, less-developed countries likely have more limited abilities to retaliate because other countries have relatively little exports to these countries. Such asymmetries may limit how much retaliation threats can dampen activity. However, if trade flows are symmetric enough, the possibility exists that a proliferation of AD activity across many countries may push countries to significantly limit or eliminate such AD laws within the WTO—the ultimate dampening mechanism.

On a final note, there certainly may be other channels of retaliation threats that our estimates are not capturing. For example, retaliation may be through some form of trade protection other than AD duties. This alternative may not be that significant in that many other forms of protection can require more political and economic costs to obtain and are likely not WTO-legal. Retaliation threats could also affect the decision by the US firms to petition against any import source in the first place. Not modeling these effects may be creating sample selection bias that would imply our results underestimate these effects in our current analysis. To gather data on all possible import product line codes to estimate the likelihood of a US AD petition by these product codes and the effect of retaliation threats on that decision is a daunting task that we leave for future research efforts.

Acknowledgements

Thanks to Tom Prusa for access to some of the industry data used in this paper and also Robert Feinberg, Rachel McCulloch, Nina Pavcnik, Susan Skeath, James Harrigan, two anonymous referees, and seminar participants at Boston College and the Spring 2001 Midwest International Economics Group at the University of Wisconsin for helpful comments.

References

- Bagwell, K., Staiger, R.W., 1999. An economic theory of GATT. *American Economic Review* 89, 215–248.
- Baldwin, R.E., Steagall, J.W., 1994. An analysis of ITC decisions in antidumping, countervailing duty and safeguard cases. *Weltwirtschaftliches Archiv* 130, 290–308.

- Bartelsman, E.J., Becker, R.A., Gray, W.B., 2000. NBER-CES Manufacturing industry database available at <http://www.nber.org/nberces/nbprod96.htm>.
- Blonigen, B.A., 2000. US antidumping filings and the threat of retaliation, manuscript, University of Oregon.
- Blonigen, B.A., Prusa, T.J., forthcoming. Antidumping In: Harrigan, J. (Ed.), *Handbook of International Trade*. Blackwell Publishers, Oxford, UK and Cambridge, MA.
- Bown, C.P., 2000. Trade disputes and the implementation of protection under the GATT: an empirical assessment, manuscript, Brandeis University.
- Bown, C.P., 2001. Antidumping against the backdrop of disputes in the GATT/WTO system, manuscript, Brandeis University.
- Brander, J., Krugman, P., 1983. A 'reciprocal dumping' model of international trade. *Journal of International Economics* 15, 313–321.
- Feenstra, R., 1996. US imports, 1972–1994: data and concordances. NBER, Working Paper no. 5515 (and accompanying CD-Rom).
- Feenstra, R., 1997. US exports, 1972–1994: with state exports and other US data. NBER, Working Paper no. 5990 (and accompanying CD-Rom).
- Feenstra, R., 2000. World trade flows, 1980–1997, with production and tariff data. UC-Davis, Mimeo (and accompanying CD-Rom).
- Feenstra, R., Lipsey, R., Bowen, H., 1997. World trade flows, 1970–1992, with production and tariff data. NBER, Working Paper no. 5910 (and accompanying CD-Rom).
- Finger, J.M., Hall, H.K., Nelson, D.R., 1982. The political economy of administered protection. *American Economic Review* 72, 452–466.
- Gallaway, M.P., Blonigen, B.A., Flynn, J.E., 1999. Welfare costs of US unfair trade laws. *Journal of International Economics* 49, 211–244.
- W.H. Greene, 2000. *Econometric Analysis*, 4th Edition. Prentice Hall, Englewood Cliffs, NJ.
- Grossman, G.M., Helpman, E., 1995. Trade wars and trade talks. *Journal of Political Economy* 103, 675–708.
- Hansen, W., 1990. The international trade commission and the politics of protectionism. *American Political Science Review* 84, 21–246.
- Hansen, W., Prusa, T.J., 1996. Cumulation and ITC decision-making: the sum of the parts is greater than the whole. *Economic Inquiry* 34, 746–769.
- Hansen, W., Prusa, T.J., 1997. The economics and politics of trade policy: an empirical analysis of ITC decision making. *Review of International Economics* 5, 230–245.
- B. Lindsey, D. Ikenson, 2001. *Coming Home to Roost: Proliferating Antidumping Laws and the Growing Threat to US Exports*. Cato Institute, Washington, DC.
- Maggi, G., 1999. The role of multilateral institutions in international trade cooperation. *American Economic Review* 89, 190–214.
- McFadden, D., 1978. Modelling the choice of residential location. In: Karlquist, A. (Ed.), *Spatial Interaction Theory and Residential Location*. North Holland, Amsterdam, pp. 75–96.
- McFadden, D., 1981. Econometric models of probabilistic choice. In: Manski, C., McFadden, D. (Eds.), *Structural Analysis of Discrete Data and Econometric Applications*. MIT Press, Cambridge, MA, pp. 198–272.
- Miranda, J., Torres, R.A., Ruiz, M., 1998. The international use of antidumping: 1987–1997. *Journal of World Trade* 32, 5–71.
- Moore, M.O., 1992. Rules or politics?: an empirical analysis of ITC antidumping decisions. *Economic Inquiry* 30, 449–466.
- Prusa, T.J., 1991. The selection of antidumping cases for ITC determination. In: Baldwin, R.E. (Ed.), *Empirical Studies of Commercial Policy*. University of Chicago Press, Chicago, IL.
- Prusa, T.J., 1992. Why are so many antidumping petitions withdrawn? *Journal of International Economics* 33, 1–20.
- Prusa, T.J., 2001. On the spread and impact of antidumping. *Canadian Journal of Economics* 34, 591–611.

- Prusa, T.J., Skeath, S., 2001. The economic and strategic motives for antidumping filings, NBER, Working Paper no. 8424.
- Riezman, R.G., 1991. Dynamic tariffs with asymmetric information. *Journal of International Economics* 30, 267–283.
- USITC, 2001. US International Trade Commission Interactive Tariff and Trade DataWeb available at <http://dataweb.usitc.gov/>.
- WTO, 1995a. Panel Reports under the MTN Agreements and Arrangements (Tokyo Round Codes. of 1979), unpublished document.
- WTO, 1995b. Agreement on Implementation of Article VI of the General Agreement on Tariffs and Trade 1994, Antidumping Code. WTO, Geneva.
- WTO, 1995c. Analytical Index: Guide to GATT Law and Practice, WTO, Geneva.
- WTO, 2001. Overview of the State-of-Play of WTO Disputes, available at <http://www.wto.org/>.