Why Don't Foreign Firms Cooperate in U.S. Antidumping Investigations?: An Empirical Analysis

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12 June 2006

Abstract

Foreign firms face punitive antidumping duties if they do not cooperate with the US Department of Commerce (DOC). For example, 37% of all foreign firms involved in antidumping investigations in the US chose faced "facts available" margins for the 1995-2002 period, with average antidumping duties of 31% for cooperating foreign firms, compared to 87% for those who do not. The existing literature has focused on how DOC discretion has led to foreign firm non-cooperation. This paper instead examines individual foreign firm's decisions about whether to cooperate during this same period. We find evidence that non-cooperation is consistent with a model of foreign firms rationally choosing not to cooperate, rather than simply a result of investigating authority bias against imports.

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[a] The views expressed in this paper are the authors' own and do not represent those of the U.S. International Trade Commission.

[b] We would like to thank seminar participants at Tilburg University, George Washington University, the Southern Economics Association meetings in Washington, DC and the Midwest International Economics Group meetings at Michigan State University. Remaining errors are our own.

Introduction

Foreign firms facing allegations of "unfair trade" within the U.S. antidumping system face a dilemma. On the one hand, these firms can decide to cooperate with the complex and time-consuming Department of Commerce (DOC) investigations into whether there is evidence of pricing at "less than fair value." Such cooperation can ensure that the data used to calculate the potential dumping margin are based on the firm's economic and commercial realities. However, this compliance can result in significant legal and administrative costs as firms organize and submit the wide-ranging set of data required by the DOC. On the other hand, firms can avoid all compliance costs by deciding not to cooperate but this choice subjects foreign firms to a DOC procedure under which the U.S. authorities, consistent with WTO rules, can use "facts available," which may include the allegations submitted by the domestic petitioning industry.

The consequences of this decision are not trivial. Firms deemed "non-cooperative" are subject to far higher margins than those that cooperate. For example, in the pre-WTO period between 1980 and 1994, average calculated dumping margins were 22 percent for foreign firms that cooperated with U.S. antidumping authorities compared to 70 percent for those facing "facts-available" (FA) procedures.[2] These higher duties for individual firms are even more problematic if other foreign competitors cooperate in the antidumping investigation. Foreign firms consequently faced the real possibility that non-cooperation would lead almost surely to prohibitive antidumping duties based on information from domestic petitioners, who had clear incentives to overstate the degree of actual dumping. Moreover, the frequency of non-cooperation has been anything but

[2] Moore (2004). Prior to 1995, the United States deemed these procedures "best-information-available." Subsequent to reform associated with the Uruguay Round of multilateral trade negotiations, U.S. administrators changed the designation to "facts-available."

rare----from 1980 to 1994, the DOC used facts-available methods in 279 of 960 investigations of alleged foreign firm dumping, i.e., just over 29 percent of all investigations. Canadian firms were involved in 55 separate antidumping cases during this same time period. In contrast to the broader sample, there were only seven instances when these Canadian firms were found to be uncooperative by U.S. authorities and therefore subject to facts-available procedures.[3]

This pattern begs the question----why would some foreign firms choose to cooperate while so many others apparently are willing to face such higher margins, especially given that past DOC behavior suggests that the resulting dumping margin might be as much as triple those they would face if they cooperate? This research will offer some tentative suggests about what factors might help explain these decisions. In particular, we will use Probit analysis to examine the behavior of 492 individual foreign firm decisions about whether or not to cooperate in dumping allegations in the United States between 1995 and 2002.

A theoretical framework presented later suggests that rational foreign firms will choose whether or not to cooperate based on the net expected benefits of cooperation. The empirics are broadly consistent with the theoretical expectations. The results suggest that respondent firms are indeed sensitive to petitioners' dumping allegations when considering whether or not to cooperate with the DOC investigation. A 1 percent increase in the alleged margin leads to a 0.27-0.40 percent lower probability that a respondent firm will find itself subject to adverse facts-available. We also find evidence that foreign firms are more likely not to cooperate with the DOC if they believe that they will escape final antidumping duties as a result of "material injury" decisions at the U.S.

[3] Moore (op cit.)

International Trade Commission. Foreign firms are also more likely to cooperate if doing so will lower their expected dumping margins. In short, we find evidence that, far from ignoring credible threats of DOC "punishment," foreign firms' decisions are rationally weighing the relative benefits of cooperation versus non-cooperation.

I. Institutional Context

A short review of the relevant parts of the U.S. and WTO antidumping systems will be helpful in understanding the empirical work below.

The agreements that have formed the basis of the GATT and the WTO system allow industries to petition government agencies to impose temporary duties on products that are being sold at "less than fair value" and cause "material injury" to the domestic industry producing a like product. An antidumping order on foreign firms' exports is imposed only if agencies rule affirmatively that there is dumping and material injury. Each antidumping case involves a specific product from a particular country but dumping allegations are investigated on an individual bases for specific firms from the country in question. It is important to note that the dumping and injury determinations are separate investigative decisions----the level of dumping does not necessarily indicate whether or not injury has occurred.

In the U.S., the International Trade Commission (ITC) makes a determination whether the dumped imports cause or threaten "material injury" to a domestic industry making a like product. The Department of Commerce investigates the degree of dumping. Final antidumping duties are only imposed if both agencies rule affirmatively in final decisions. About 65 percent of ITC investigations have resulted in affirmative injury decisions for the 1980-2002 period. In sharp contrast to the ITC stage, essentially

all cases (approximately 98 percent) investigated by the Department of Commerce have ended in a non-*de minimis* (i.e., higher than 2 percent) dumping margin. This means that a foreign firm's decision whether or not to cooperate in the dumping investigation may affect the level of the dumping margin but rarely would result in the antidumping process ending at the DOC stage.[4]

The Department of Commerce (DOC) independently determines whether individual foreign firms are "dumping," i.e., pricing below the foreign firm home market price, below total average production cost, or, if a "non-market-economy" such as China is involved, below the imputed costs based on prices in a surrogate country. The resulting comparison between "normal value" and the US export price of individual foreign firms is used to calculate the "dumping margin"; if antidumping duties are finally implemented, this calculated dumping margin is the basis for duties collected on the foreign firms' exports. Thus, antidumping duties are based on individual foreign firm's decisions.[5]

The DOC needs information on costs and sales provided by each foreign firm in order to make these assessments. The DOC collects such information through questionnaires sent to foreign firms; this data is consequently verified by DOC investigators. If foreign firms do not provide adequate information to DOC or the DOC determines that respondents are being uncooperative, administrators may use information from other sources to conduct the investigation. Such third-party information is currently known as "facts-available" or FA (and was know in the U.S. as "best-information-available" (BIA) in the pre-WTO period). The WTO agreements, and the GATT before

[4] Moore (2004).
[5] Foreign firms not investigated individually are subject to an "all others rate," which is a weighted average of dumping margins for producers in the particular country under investigation.

it, allow administrators to use domestic petitioners' allegations (so-called "adverse facts-available") if the authorities determine that the foreign firms are deliberately uncooperative, a sanction that supporters argue is absolutely critical to encourage respondents to cooperate with authorities.[6] In particular, the Antidumping Agreement concluded in the Uruguay Round of trade negotiations states that:

> "In cases in which an interested party refuses access to, or otherwise does not provides, necessary information within a reasonable time or significantly impedes the investigation, [decisions] may be made on the basis of facts available."[7]

An annex to the agreement adds that the authorities will be free to make determinations based on the allegations of domestic petitioners. Specifically,

> if information is not supplied within a reasonable time, the authorities will be free to make determinations on the basis of the facts available, including those contained in the application for the initiation of the investigation by the domestic industry.[8]

Instances in which the foreign firm is determined to be deliberately non-cooperative in all information requests or does not provide any information at all, the DOC invokes "adverse inferences" and uses domestic petitioners allegations.

III. Relevant Literature and a Theoretical Approach

The empirical economics literature on antidumping is vast and cannot be reviewed here.[9] In sharp contrast, the literature examining the use of facts-available procedures by U.S. authorities is very limited, belying the critical importance of this process on the antidumping duties facing foreign firms.

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[6] See Stewart (1991) and Mastel (1998) for arguments in favor of these sanctions.
[7] Antidumping Agreement (1994), p 154.
[8] Paragraph 1 of Annex II of ADA (1994)
[9] See Blonigen and Prusa (2003) and Nelson (forthcoming) for excellent reviews of theoretical and empirical work on antidumping.

Nonetheless, some authors have long noted the marked difference in dumping margins depending on the decisions of foreign firms whether or not to cooperate. Baldwin and Moore (1991), Murray (1991) and Palmeter (1991) focus on the use of facts available in the pre-WTO system, then known as "best-information-available" or BIA. Baldwin and Moore estimate that, after controlling for characteristics such as country and industry, cases involving BIA had dumping margins 38 percentage points higher than those that relied only on respondents' data for the 1980 to 1990 period.

Non-cooperation by foreign firms in antidumping has begun to receive more attention in more recent studies. Blonigen (forthcoming) examines the impact of various DOC discretionary methods on the final antidumping margins for the 1980 through 2000 period. He interprets the use of BIA and FA as one of these discretionary procedures and finds the increased incidence of non-cooperation FA has been an important contributor to those higher dumping margins. In particular, his econometric results suggest that discretionary use of BIA and FA may have increased antidumping margins by as much as 63 percentage points.

Moore (forthcoming) examines whether there is evidence that the DOC has systematically changed its FA procedures in the wake of Uruguay Round reform commitments. He finds little evidence that FA use has "improved" (at least from the standpoint of foreign firms) after 1994. Average dumping margins recently calculated by the DOC in cases involving facts-available have increased over the years prior to the "reform." In addition, the percentage of antidumping cases subject to facts-available procedures has risen in the post-Uruguay Round period.

One common aspect of Blonigen's and Moore's forthcoming works is the implicit presumption that the use of BIA/FA is primarily a consequence of the Department of Commerce's decisions. However, the use of these procedures can be a result purely of the decision of foreign firms not to cooperate; the DOC does not make the decision to use facts-available methods in a vacuum since it depends on foreign firms' own choices about what information to provide, if any. Moore (2005) uses a game theoretic model to analyze when a foreign firm might find it in its own interest not to cooperate. He finds that this decision will depend on the expected profitability of non-cooperation versus cooperation, taking into account the compliance costs of cooperation. Our current research mirrors this theoretical approach.

We consider a (representative) foreign firm that chooses between two alternatives during a DOC investigation into the dumping margin. The foreign firm knows the probability of successfully defending against the imposition of antidumping duties in a second stage of the game (not modeled here) where the ITC makes the material injury determination. This probability is taken as given when the making the first stage decision about cooperation with the DOC.

If the foreign firm cooperates with the investigation, it must incur (constant) compliance costs equal to K. These compliance costs are those associated with providing information to the DOC about dumping margins, hiring legal advisors, etc. If the foreign firm loses the case and ultimately faces an antidumping order subsequent to cooperating, it faces a profit level denoted by $\pi^C(t_{AD}, t^*)$, where t_{AD} is the antidumping duty imposed based on foreign firm information and where t^* is the tariffs imposed on the foreign firm's other international competitors. The antidumping duties will be dependent on the

individual firm characteristics as embodied in the information provided to the DOC. If the foreign firm wins its case after cooperating (i.e., faces an antidumping duty of zero), it faces a profit level denoted by $\pi^C(0, t^*)$. Finally, we denote the subjective probability of the foreign firm losing its case after cooperating by γ.

We can write the expected foreign profits under cooperation as

$$E[\pi^C] = \gamma\pi^C(t_{AD}, t^*) + (1 - \gamma)\pi^C(0, t^*) - K \qquad (1)$$

Expression (1) can be either positive or negative, depending on the size of compliance costs.

If the foreign firm has been deemed by the DOC to be deliberately uncooperative, this U.S. agency can use the information most detrimental to any particular foreign firm's interests. Such "adverse inferences" typically will be the highest dumping margin alleged by the domestic petitioners for *any* firm in the particular antidumping investigation. These allegations are published in the initial announcement of the antidumping case investigation so that the foreign firm knows these allegations (and implicitly the resulting "worst case scenario" dumping margins) before it makes its decision about cooperation.

We denote the resulting "facts-available" antidumping tariff under non-cooperation as t_{FA} .

The foreign firm will not bear any compliance costs if it does not cooperate but it does face sales determined by the dumping margin alleged by the domestic firm.[10]

Expected foreign profits with no cooperation with the DOC therefore will be:

$$E[\pi^{nc}] = \gamma\pi^{nc}(t_{FA}, t^*) + (1-\gamma)\pi^{nc}(0, t^*) \qquad (2)$$

where $\pi^{nc}(t_{FA}, t^*)$ denotes foreign firm profitability when it does not cooperate and faces the facts-available antidumping duties. Note that for simplicity we assume that the probability that the foreign firm will lose the case if it does not cooperate with the DOC is the same as under cooperation.[11] Once again, other foreign competitors' antidumping duties also enter into the profit function.

The foreign firm will choose not to cooperate if the expected profits of non-cooperation exceed those of cooperating, i.e., if:

$$\gamma\pi^{nc}(t_{FA},t^*) + (1-\gamma)\pi^{nc}(0,t^*) > \gamma\pi^{c}(t_{AD},t^*) + (1-\gamma)\pi^{c}(0,t^*)) - K \qquad (3)$$

We make a further assumption that foreign profits (net of compliance costs) will be the same under cooperation or non-cooperation if the foreign firm faces no tariffs after winning the antidumping petition, that is, $\pi^{nc}(0,t^*) = \pi^{c}(0,t^*)$. This means that expression (3) can be rewritten as:

[10] Firms will face further legal costs at the latter "material injury" determination stage, regardless of whether they cooperate or not. Since these costs are likely invariant to the choice to cooperate or not, they are ignored in this analysis.

[11] One might argue that non-cooperation at the DOC stage could result in a higher probability of foreign firm's facing an affirmative decision at the ITC stage. However, our assumption is consistent with Moore (2004), who reports that for the 1995-2002 period, 69 percent of cases involving facts-available techniques resulted in an affirmative ITC decision compared to 71 percent for cases not using FA methods.

$$\gamma\,[\pi^{c}(t_{AD},t^{*}) - \pi^{nc}(t_{FA},t^{*})] < K \qquad (4)$$

This expression is easy to interpret. The left hand side is the expected "benefits" of cooperation over non-cooperation while the right side is the compliance costs of cooperation. The higher the compliance costs, the less likely that the foreign firm will cooperate. The more likely that the firm will lose at the material injury stage (i.e., for larger values of γ), the more likely that the foreign firm will cooperate, assuming that the foreign profits associated with facts-available tariff are lower than those with the cooperative antidumping duty ($\pi^{c}(t_{AD},t^{*}) > \pi^{nc}(t_{FA},t^{*})$).[12]

Ideally, one would prefer to use specific functional forms to estimate a structural version of these profit functions. This naturally would not be possible in general since the whole point of the DOC exercise is to obtain precisely the information needed to estimate the profit function. And even when the foreign firm does cooperate, the information is closely held under a DOC protective order.

Nonetheless, this simple theoretical structure allows us to focus on important factors that can explain foreign firms' decision to cooperate in DOC dumping investigations. The first is some measure of the how the foreign firm assesses the probability of ultimately prevailing in an antidumping case (i.e., γ). The second is a measure of the likely antidumping duty in the event of cooperation (i.e., t_{AD}) and the

[12] If the domestic petitioners' allegations are "too low" so that the foreign firm knows that an investigation using its own data would result in a higher tariff (i.e., $t_{AD} > t_{FA}$), then the foreign firm would never cooperate for positive compliance costs.

third is the dumping allegation that would be used in the event of non-cooperation (i.e., t_{FA}). We also will explore whether the firm considers allegations against other foreign firms when making its own decisions about whether to cooperate.

IV. Empirical Analysis

The data used in this study extends from 1995 through 2002 and includes 492 individual foreign firm dumping margins investigated by the DOC. All data are based on the Department of Commerce antidumping notices published in the Federal Register and include any case initiated after January 1, 1995. The unit of analysis is each individual foreign company that received a DOC-determined firm-specific dumping margin as part of an antidumping investigation.[13] Only cases that went to final ITC material injury decisions are included. The DOC's notice of initiation in the Federal Register includes information on the names of the foreign firms accused of dumping as well as a range of domestic petitioner allegations. In later stages of the investigation, the DOC reports the final dumping margin, as well as how, and whether, "facts-available" information was used.

Table 1 contains some basic information about the use of "adverse inferences" in data. We see that the DOC used domestic allegations in 181 out of 492 cases or 37 percent of all observations. We also see that cases based solely on foreign information ("non-adverse margins") resulted in an average final dumping margin of 31.1 percent compared to 86.9 percent for those using adverse inferences. We also see that the average adverse inferences margin was no less than 67 percent (in 2000) compared to a

[13] Firms from subject countries not directly investigated in the antidumping case receive the "all others" rate, which is a weighted average of non-de minimis margins imposed on individual firms in the event of a final antidumping order.

low of 9.5 percent for non-adverse cases (in 2002). Information in Table 1 also demonstrates that at least 26 percent of foreign firms were subject to adverse inferences in every year in the data set. These data make clear that: a) foreign firms have consistently been found to be non-cooperative in dumping investigations; and b) those firms that do not cooperate consistently face far higher margins than those that the DOC determines are cooperative.

Figure 1 provides some insight into domestic allegations of dumping margins compared to the DOC's final dumping margins. We see that, not surprisingly, the average allegation was much higher than the final margins. Over the entire period, the average allegation was 104 percent compared to an average final margin of 50 percent. These data make clear once again that the allegations of domestic petitioners provide important incentives for foreigners to cooperate in the investigations. Nonetheless, as we saw in Table 1, many of those foreign firms may have decided that their self-interest lies in non-cooperation.

IV. A. Data

The dichotomous nature of the decision whether or not to cooperate suggests the use of a standard probit model for estimation. Descriptive statistics for the dependent and explanatory variables can be found in Table 2.

The dependent variable for the analysis takes on a value of 1 if the DOC reports in the Federal Register that the foreign firm is subject to "adverse inferences" facts-

available methods in the dumping margin calculation. Otherwise the value of the dependent variable is equal to 0.[14]

The right-hand-side variables include various measures of the factors in expression (4) above. In particular, we control for domestic petitioners allegations and foreign firm characteristics as well as an instrument for the likelihood of foreign firm ultimately winning the case and an instrument for the likely margins if the foreign firm cooperates.

The highest allegation of dumping for any individual firm in each country-specific case is denoted by "Alleged margin." This is the margin that that the foreign firm knows that it might face in the event that it does not cooperate. We expect that this variable will have a negative coefficient in the estimation; the higher the "alleged" dumping the lower is $p^{nc}(t_{FA})$ and the less likely that expression (4) will hold. Non-linear effects are controlled by including "Alleged margin squared."

The data also reflects how much "information" might be contained in the allegations of domestic competitors. In particular, in the 321 observations in which foreign company provided information was used in the final dumping margin calculation, the final dumping duty was 31.2 percent compared to the alleged margins of 98.0 percent. Thus, there seems to be clear overstatement of dumping margins by domestic firms, at least in those cases where the foreign firm decided to cooperate. The difference is naturally less pronounced in those cases where "facts available" was final used: average final dumping duties of 84 percent compared to 114 percent in the allegations.

[14] Bruce Blonigen kindly provided much of this data for the 1980-2000 period. Data about petitioning firm allegations about dumping margins as well as information for subsequent years were collected from the DOC's antidumping website ("http://ia.ita.doc.gov/frn/index.html").

As noted above, we would like to have systematic access to firm-specific characteristics that would help determine the profit functions underlying expression (4). Unfortunately this data is not typically available to the public at the individual foreign firm level. Some information can be assembled that can control for some characteristics.

For example, we control for country- and industry-specific effects through dummy variables. Country dummy variables are created for Canada, Latin American countries (non-Mexican)[15], the 15 members of the European Union (as of 2002), China, Japan, Korea, Taiwan, Asian countries (non-Japanese, -Taiwanese, -Korean, and -Chinese) and countries of the former USSR. Remaining countries such as Africa and Middle Eastern countries are in the excluded category. Industry fixed effects are estimated for chemicals, steel, steel products (such as ball-bearings), manufacturing, and commodities (such as uranium and rubber), with agricultural products as the excluded category. We do not have *a priori* expectations for the value of these estimated fixed effects.

Expression (4) makes clear that an important aspect of the decision whether or not to cooperate is the antidumping duty that would face the firm if it cooperated with the DOC investigation. This is, of course, private information not available to the researcher. We do have the *ex post* margin calculated by the DOC which presumably would be correlated with the firm's private information about its *ex ante* expectation about the margin it would face. There is an obvious endogeneity issue here since the *ex post* margin will be higher if there is non-cooperation. We consequently employ an instrumental variable approach to estimate the expected margin in the event of cooperation. In

[15] We cannot estimate a Mexico specific effect because Mexican firms always cooperated in the data set used in the empirical analysis.

particular, we regress the final dumping margin on the allegations, the entire set of country and industry dummies as well as measures designed to capture the likely dumping margin but which are uncorrelated with the decision whether or not to cooperate. Two such measures were constructed. The first is the percentage change in the unit value for the country and product combination in the year prior to the dumping allegation and the previous year. We expect that a falling unit value would be correlated with an expectation that the foreign firm would likely face higher margins, since the average export prices are falling. The other is the percentage of underselling between the country/product combination and the imports of the product not subject to the dumping investigation. But measures are calculated using data collected from the ITC material injury reports or from the ITC's online import database (http://dataweb.usitc.gov/).

The resulting coefficient estimates from the ordinary least squares estimation for are then used to calculate a predicted cooperative dumping margin (labeled "Expected Cooperative AD Margin) for each case. We expect that this variable will be positive; *ceteris paribus*, the higher the expected AD duty under cooperation the more likely that the foreign firm will find it advantageous to ignore entreaties from the U.S. government to send costly-to-assemble private information about its operations. We also include the square of this predicted cooperative dumping margin to control for non-linearities. Note that some unit values were not available so that the total number of observations used in the study drops from 492 to 407 individual foreign firm cooperation decisions.

We also control for whether an individual firm's previous exposure to the U.S. antidumping process might affect its proclivity to cooperate in an investigation compared to a firm subject to its first "unfair" trade case. The first measure is called "Previous

Experience" and takes on a value of 1 if the foreign firm was subject to an antidumping investigation from 1980 through 1994 and a 0 otherwise. The expected sign for this dummy variable is ambiguous. One might, for example, expect that a foreign firm would be more likely to provide information if it has faced the very high margins associated with facts-available methods. On the other hand, previous experience might make the firm cynical about DOC methods and choose to marshal its financial resources to fight the case at the ITC material injury stage where the chances of foreign firm success are traditionally much higher than at the DOC dumping margin stage.

There is some anecdotal evidence consistent with this possibility. Petroflex, a Brazilian firm facing an antidumping investigation in 1998, stated in an official letter to the U.S. government that the

> "company does not anticipate a significant reduction in the final margin to warrant further participation in the [Department of Commerce's] investigation" and "has therefore decided to focus its efforts on the injury proceedings at the U.S. International Trade Commission."[17]

We also use an alternative measure of the individual foreign firm's past experience with facts-available margins. "Past FA Experience" is the ratio of cases in which the firm faced FA margins divided by the number of cases in which it was involved from 1980 to 1994. The variable takes on a value of zero if the firm has not been involved with the U.S. antidumping process previously. We expect that this variable will have a positive coefficient: the more the firm has tended to not cooperate in the past, the more likely it will continue to do so in the future.

[17] Source: 64 Federal Register, page 14,863, March 29, 1999.

We derive three measures of γ, which is the probability that the foreign firm will actually win the case at the ITC. Recall from the discussion above that we expect that this variable will have a positive coefficient; the more likely that the firm thinks it will lose at a later stage of the antidumping process, the more likely that it will expend resources to reduce the dumping margin.

The first version is "ITC Decision," which takes on a value of 1 if the ITC decides that dumped imports have injured domestic firms and equals 0 if the foreign firm prevails in the antidumping case. In the current context, this outcome is used as an *ex ante* indication of the foreign firm's assessment of its chances of winning; the foreign firm and its legal team likely have some indication of whether the domestic firm's case is strong prior to the final decision. The value of the coefficient is expected to be negative----if the foreign firm expects to lose at the ITC, there is an incentive to cooperate with the DOC investigation.

Two alternative measures of γ are created. The first is "Industry probability" which is the percentage of cases that resulted in final antidumping duties for each industry category in the 1980-1994 period. The foreign firms might look at their industry's success rate in the past as an indicator of success in the future. Similarly, "Country probability" is the analog when computing the success rate for the country/region categories used in the study. The expected sign on these coefficients once again is negative for the foreign firm cooperation decision.

A foreign firm accused of dumping may also view its decision about cooperation in the context of other firms' decisions. As noted above, each individual firm named in an antidumping decision faces its own potential dumping margin. If there are multiple

firms involved in an investigation (across other countries or within the particular country), then a firm that does not cooperate faces the possibility that other firms' exports may take its place. We control for this possibility through two separate variables. The first, called "Highest Competitor Allegation," is the highest dumping allegation for any other firm from other countries involved in the investigation.[18] All things equal, the higher this value, the less onerous will be non-cooperation for the firm making the decision if another country's firms do not cooperate. Therefore, we expect a positive sign on this variable.

We also control for the number of other firms ("Domestic Competitors") subject to the antidumping investigation in the same country of the firm making the cooperation decision. Our presumption is that a firm would be more likely to cooperate if there are many other competitors from its country that could take their place by cooperating. This suggests a negative coefficient for this variable.

Finally, we include a time trend to control for changes in the use of facts-available over time. This is denoted by "Year."

IV.B. Econometric Results

Probit results for four different specifications are reported in Table 3, and marginal effects for the same four specifications are given in Table 4.

Looking across the columns of Table 3 we observe patterns that are quite consistent with our theoretical expectations about foreign firms rationally choosing whether or not to participate in antidumping investigations.

[18] Recall that all firms from a particular country may receive the highest alleged marginal for firms in that country.

We see that higher dumping allegations made by domestic firms are negatively correlated with non-cooperation by foreign firms. We also see that the higher that foreign firms expect the margins to be if they decide to open their books to DOC investigators, the less likely they are to cooperate. There is also very strong evidence that foreign firms take into account their chances of winning the case at the ITC before deciding whether to expend resources complying with DOC requests for information. There is little evidence that respondent firms take into account the actions of other foreign firms.

Column 1 of Table 3 contains results for the basic model, which is labeled "Estimation 1."

As expected, the probability of choosing not to cooperate and hence receiving adverse facts-available; the reported coefficient for "Alleged Margin" is negative and significantly different from zero at a one percent level (in all specifications). We also see strong evidence of non-linearities. In particular, the positive coefficient on "Alleged Margin Squared" means that there is a limit to which the allegations will actually affect the foreign firms' decision whether or not to cooperate.

The estimation yields the expected sign (positive) for "Expected Cooperative AD Margin," that is statistically significant from zero at the 1 percent level. This result is consistent with our theoretical model that suggests that the expected profit of cooperation will be lower (and hence the probability of non-cooperation higher), the higher is the margin that the firm would face if the DOC used the firm-provided information to calculate a dumping margin. Once again, we see that the square of the expected cooperative margin is significant at the 1 percent level but negative for this variable; the

marginal (positive) effect on foreign firms' decisions to cooperate diminish with higher and higher margins.

"ITC Decision" is negative and significantly different from zero at a 1 percent level. This is consistent with foreign firms deciding to cooperate at the earlier dumping investigation stage if they anticipate that they will lose at the later material injury phase. Foreign firms seem to be weighing whether to expend resources trying to lower their antidumping duties through cooperation with the Department of Commerce investigators based on how they expect the ITC to rule.

We see a positive and significant coefficient on "Year" which suggests that the firms were less likely to cooperate over time with the DOC, all other things equal. The coefficient on "Previous Experience" also is positive but not significant from zero at a ten percent level. This suggests that foreign firms are not less (or more) likely to cooperate with the DOC if they have direct knowledge of how the US antidumping process operates.

Estimations 2 and 3 (in columns 3 and 4 of Table 3) include alternative measures of foreign firms' assessment of success in the antidumping process. Column 3 replaces "ITC Decision" with the historical success rate for foreign firms based on the industry for the period spanning 1980 through 1994. Consequently, the industry dummy variables are dropped. Similarly, column 4 reports results when the historical foreign antidumping success rate based on country is used; the country dummies are not included in this specification. We see that "Industry Probability" does not provide statistically significant explanatory power. We take this to mean that case-specific information is far more important than broad industry experience when foreign respondents decide whether or

not to cooperate. The coefficient estimate for "Country Probability" is negative and significant at a 5 percent level. This means the more times that firms in a particular country historically have lost antidumping cases, the less likely they are to behave in an uncooperative way in the dumping investigation.

The final specification (Estimation 4) examines how firms might take into consideration other competitors' reactions to dumping accusations. We find that there is little explanatory power using highest allegation made about any other competitor from another country ("Highest Competitor Allegation"). There is also no evidence that the number of exporters of the product in the country subject to an antidumping investigation is correlated with the individual foreign firm decision. These two results together show that we have no evidence that firms accused of dumping are taking into account the potential reactions of other competitors when deciding whether or not to cooperate. Similarly, we see no evidence that the firm's own decisions in the past ("Past FA Experience") about whether to cooperate carry over into later antidumping investigations.

The results discussed so far do not give a sense of the economic importance of the point estimates. We turn now to an examination of the marginal probability effects of the small changes in the explanatory variables. Table 4 contains the results of these calculations.

The non-linear effects for ("Alleged Margin" and "Expected Cooperative AD Margin") require special consideration since when the level changes so does its square. Table 4 includes the combined impact of the linear and the squared term at the mean. At the regression mean, a 1 percent increase in the average allegation of 106 percent implies a 0.27 (for Estimation 2) to 0.40 percent (for Estimation 3) decline in the probability that

a firm chooses not to cooperate. As an indication of the nonlinearity of the impact of the allegation, for Estimation 1 an allegation 20 percent higher than the mean (126 percent) shrinks the marginal impact to -0.22 percent, while at 20 percent below the mean (at 86 percent), the marginal impact grows to -0.39 percent. The role of the nonlinear specification can similarly be seen in the "Expected Cooperative Margin." A 1 percent increase from the mean expected cooperative margin of 55 percent implies a 1.12 percent rise in the probability not to cooperate in Estimation 1, while an expected cooperative margin of 20 percent below the mean (35 percent) reduces the impact to 0.53 percent, and an expected cooperative margin 20 percent above the mean (55 percent) increases the marginal impact to 1.23 percent.

The difference in magnitude between the allegation's -0.27 to -0.40 percent coefficient and the expected cooperative margin's 0.98 to 1.3 percent range may reflect the fact that a small increase in typically very high allegations may result in a small change in the marginal profit for the foreign firm. In contrast, the margin calculated by the DOC using firm-provided information are far lower so that a small increase in that rate might have a large change in the sales and hence profits of the firm.

Figures 2 and 3 display a version of these effects graphically. For each figure, we calculated the marginal probability changes when the likelihood function was evaluated at the mean for other variables. Figure 2 shows the results for the predicted cooperative margin and Figure 3 the alleged dumping margin. A histogram is included in each which shows the frequency of a ten percentage point interval for the margins, with the numerical frequency indicated on the left-hand vertical axis. The right-hand vertical axis

indicates the marginal effect, while the dashed lines indicate the 95 percent confidence interval for the marginal effect in each figure.

Finally, we briefly discuss the country and industry fixed effects from the various estimations all of which are displayed in Table 5. There is evidence for the specification of Estimation 1 that the industry and country fixed effects jointly provide explanatory power for the foreign firm's cooperation decision. In particular, the joint hypothesis that all country/region dummies are jointly zero yields a chi-squared statistic of 56.6 and a marginal significance level below 1 percent. The analogous hypotheses for product indicator variables are jointly zero yields a chi-squared statistics of 11.5 and a marginal significance level of 7.5 percent.

The individual fixed effects provide less explanatory power. We do see that the dummy variable for "Steel products" consistently has positive and significant (at a one percent level) coefficients. "Steel" is the only other industry fixed effect with a significant coefficient in any of the specifications (in Estimation 3). For those familiar with U.S. antidumping patterns, these results are perhaps not surprising as these two industries are the two most frequent users of this type of import relief. These results are certainly consistent with a world in which foreign firms in these two industries are cynical about the U.S. antidumping process.

The only consistent result among country dummies is for China. We see that see that Chinese firms are *more* likely than the excluded group to cooperate. One likely explanation is that they have had "non-market economy" status. As noted above, the DOC must pick a surrogate country and input prices from that country when calculating non-market-economy margins; a cooperative non-market-economy firm would provide

quantities of inputs that would be used in imputing production costs. If Chinese firms do not participate in this process at all, it is likely that the DOC could come up with even higher margins than those alleged by domestic competitors. The evidence provided here indicates that these concerns may translate into consistent decisions of Chinese firms to provide information about their operations to the Department of Commerce.

It is possible that these different motivations for China may be driving the results, especially given that the large number of cases involving Chinese firms. In results not reported here, but available upon request, we find that the broad results of Table 3 are qualitatively identical when Chinese firms are excluded from the estimation.

V. Conclusion

In this paper, we have investigated seemingly curious behavior by many foreign firms during U.S. antidumping investigations. Almost one-third of foreign enterprises facing antidumping duties seemingly choose either to ignore requests by the Department of Commerce to provide firm-specific information or provide the data in ways that U.S. investigators deem to be deliberately uncooperative. The consequences for firms doing so are stark—antidumping duties for non-cooperative firms are almost three times as high as those for firms that do comply with Department of Commerce requests. Such duties represent serious, and perhaps insurmountable, barriers to continued presence in the American market.

The small existing literature on "facts-available" duties has focused on the Department of Commerce's discretion to "impose" such margins. This view suggests

that the frequency of this procedure's use has little to do with foreign firm behavior and everything to do with decisions made by U.S. administering agencies.

This paper starts instead from the premise that foreign firms play an important role in this process. The simple theoretical framework developed suggests that foreign may be rational to choose non-cooperation. Providing data to U.S. authorities will only make sense if the expected benefits of doing so exceed the guaranteed costs of providing the extensive data associated with the investigation. These net advantages of cooperation will depend on the perceived probability of ultimately winning the antidumping case, the domestic petitioners' allegations about the foreign firm's dumping margin, and the likely margin resulting from a full investigation of the firm's pricing practices in the U.S.

The results are consistent with this theoretical view of foreign firm behavior. For example, the more likely that the firm will prevail in a subsequent material injury stage, the less likely it will "waste" resources by providing information to the Department of Commerce in the earlier dumping investigation. The lower the dumping allegations lodged by the domestic petitioners (and hence the lower the threat of non-cooperation), the more likely that the foreign firm will decide to ignore requests for detailed sales and cost information by those investigating the dumping margin. Foreign firms will also be more likely to not cooperate the higher the margin they expect to face if they do provide requested information. We also find strong evidence of non-linearities. In particular, domestic firm's allegations of dumping margins have a diminishing impact on foreign firm behavior. In a similar way, the incentives to cooperate based on the expected margin if the Department of Commerce conducts a dumping margin investigation declines the higher that margin might be. Finally, we see little evidence that foreign

firms consider the potential behavior of other exporting firms when making their decisions about cooperation.

We should also mention aspects of these decisions that we have not been able to investigate. We have not been able to find reliable information about the compliance costs of dumping investigations. We also have not had access to firm-specific information that might help explain a particular entrepreneur's decision to forgo compliance with data requests. And we have not modeled Department of Commerce officials' own decision about what constitutes "cooperation." Nonetheless, we have found evidence that foreign firms, far from illogically accepting prohibitive antidumping duties, seem to weigh the alternatives in a rational and profit-maximizing fashion.

References

ADA , 1994. Agreement on implementation of article VI of the General Agreement on Tariffs and Trade 1994. http://www.wto.org/english/docs_e/legal_e/final_e.htm, Accessed 20 May 2004.

Baldwin, R. E., Moore, M. O., 1991. Administration of the unfair trade laws by the Department of Commerce: A political economy analysis. In: Boltuck, R., Litan R. (Eds.), 'Down in the Dumps'- Administration of U.S. Trade Remedy Law, Brookings Institution, Washington D.C., pp. 253-280.

Blonigen, B., 2006. Evolving discretionary practices of US antidumping activity, Canadian Journal of Economics, forthcoming.

Blonigen, B. and Tom Prusa (2003), "Antidumping,"in Handbook of International Trade, E. Kwan Choi and James Harrigan (Eds.), Blackwell Publishing, 2003.

Mastel, G., 1998. Antidumping Laws and the US Economy. M.E. Sharpe, Armonk, New York.

Moore, M. O., 2005. 'Facts available' dumping allegations: When will foreign firms cooperate in antidumping petitions?, *European Journal of Political Economy* 21, 185-204.

Moore, M. O. (forthcoming), "U.S. "facts available" antidumping decisions: An empirical analysis. *European Journal of Political Economy*.

Murray, T., 1991. Administration of the unfair trade laws by the Department of Commerce. In: Boltuck, R., Litan R. (Eds.), 'Down in the Dumps'- Administration of U.S. Trade Remedy Law, Brookings Institution, Washington D.C., pp. 23-56.

Nelson, Douglas, "The Political Economy of Antidumping: A Survey," forthcoming in *European Journal of Political Economy*.

Palmeter, D. T., 1991. The antidumping law: A legal and administrative nontariff barrier. In: Boltuck, R., Litan R. (Eds.), 'Down in the Dumps'- Administration of U.S. Trade Remedy Law, Brookings Institution, Washington D.C., pp. 288–230.

Stewart, T., 1991. Administration of the antidumping law: a different perspective. In: Boltuck, R., Litan R. (Eds.), 'Down in the Dumps'- Administration of U.S. Trade Remedy Law, Brookings Institution, Washington D.C., pp. 288–230.

Table 1: Average Firm-specific Dumping Margins

Year	Adverse Inferences Margins	Number of cases	Non-Adverse Margins	Number of Cases	Percentage of cases using Adverse Inferences
1995	82.5	2	50.0	3	40%
1996	149.3	19	27.8	53	26%
1997	82.3	13	16.2	25	34%
1998	71.2	21	45.0	52	29%
1999	78.3	34	32.7	48	41%
2000	66.7	38	50.9	42	48%
2001	72.4	29	17.1	80	27%
2002	92.6	25	9.5	8	76%
Overall	86.9	181	31.1	311	37%

Source: Federal Register; Cases initiated after January 1, 1995

"Adverse Inferences": Department of Commerce normally uses domestic petitioner allegations

Table 2: Descriptive Statistics of Dependent and Explanatory Variables

Variable	Description	Mean	Standard Deviation
Adverse Facts Available (FA)	1=foreign firm deemed uncooperative by DOC; 0 otherwise		
Alleged margin	Highest alleged margin of any firm in the investigated country	103.8	89.0
Alleged margin squared	Alleged margin squared	18677.68	37028.06
Previous experience	1=foreign firm involved in antidumping case during 1980-1994; 0 otherwise	0.28	0.45
Cooperative AD margin	Margin imposed in the final antidumping order	49.8	60.1
Past FA Experience	Percentage of cases in which foreign firms subject to facts-available (1980-94)	0.81	0.24
ITC decision	1=ITC final affirmative antidumping decision; 0 otherwise	0.70	0.46
Industry probability	Percentage of cases lost by foreign firms in particular industry (1980-1994)	0.66	0.17
Domestic competitors	Number of other firms accused of dumping for the particular country	4.58	3.69
Country probability	Percentage of cases lost by foreign firms in particular country (1980-1994)	0.65	0.079
Highest competitor allegation	Highest alleged margin for other firms in another country accused of dumping	77.6	78.4
Year	Year antidumping investigation initiated	1999	1.89
Chemicals	Dummy variable for chemicals industry	0.08	0.26
Manufacturing	Dummy variable for manufacturing	0.12	0.33
Steel	Dummy variable for primary steel industry	0.44	0.50
Steel products	Dummy variable for steel products industry	0.09	0.28
Electronics	Dummy variable for electronics industry	0.03	0.18
Commodities	Dummy variable for primary (non-agricultural) industry	0.05	0.22
Canada	Dummy variable for cases involving Canada	0.06	0.23
Mexico	Dummy variable for cases involving Mexico	0.01	0.10
Other Latin America	Dummy variable for cases involving non-Mexican Latin American countries	0.05	0.21
European Union	Dummy variable for cases involving for EU-15 countries	0.11	0.32
Japan	Dummy variable for cases involving Japan	0.11	0.31
South Korea	Dummy variable for cases involving South Korea	0.06	0.23
Taiwan	Dummy variable for cases involving Taiwan	0.09	0.28
Other Asia	Dummy variable for cases involving other Asian countries not otherwise noted	0.10	0.35
China	Dummy variable for cases involving China	0.30	0.46
Former Soviet Union	Dummy variable for cases involving countries of the former Soviet Union	0.04	0.20

Number of observations: 492 Probit estimation based on smaller data set, which is dependent on availability of data for the unit values collected for the instrumental variable procedure.

Table 3: Probit Estimation Results
(Facts Available used = 1; 0 otherwise)

Variable (expected sign)	**Estimation 1**	**Estimation 2**	**Estimation 3**	**Estimation 4**
Alleged margin (-)	-1.734*** (0.628)	-1.432*** (0.486)	-1.958*** (0.484)	-1.870*** (0.645)
Alleged margin squared (?)	0.346*** (0.108)	0.282*** (0.093)	0.396*** (0.112)	0.318*** (0.108)
Expected Cooperative AD margin (+)	5.307*** (1.664)	4.443*** (1.258)	6.332*** (1.410)	5.447*** (1.675)
Expected Cooperative AD margin squared (?)	-1.479*** (0.613)	-1.338*** (0.538)	-2.443*** (0.726)	-1.342*** (0.603)
Year (?)	0.142*** (0.054)	0.130*** (0.049)	0.163*** (0.047)	0.142*** (0.056)
ITC Decision (-)	-0.646*** (0.189)			-0.660*** (0.199)
Industry Probability (-)		-0.260 (0.627)		
Country Probability (-)			-2.952** (1.487)	
Previous Experience (?)	-0.215 (0.214)	-0.093 (0.201)	0.047 (0.183)	
Past FA Experience (?)				0.284 (0.344)
Domestic Competitors (-)				0.052 (0.046)
Highest competitor allegation (-)				-0.009 (0.137)
Constant	-286.543*** (107.698)	-261.481*** (97.689)	-325.582*** (93.098)	-286.264*** (111.390)
Industry/Country Fixed Effects	Y / Y	N / Y	Y / N	Y / Y
Observations	403	403	407	403
Log likelihood ratio Pseudo R-squared	169.9 0.32	146.6 0.28	96.75 0.18	170.77 0.33

***, **, * Significantly different from zero at 1, 5 and 10 percent, respectively.

Table 4: Probit Marginal Effects, Evaluated at Mean
(Facts Available used = 1; 0 otherwise)

Variable (expected sign)	**Estimation 1**	**Estimation 2**	**Estimation 3**	**Estimation 4**
Alleged margin + (alleged margin)^2 (-)	-0.303* (0.166)	-0.273** (0.123)	-0.396*** (0.106)	-0.368** (0.180)
Expected cooperative AD margin + (expected cooperative AD margin)^2 (+)	1.120** (0.443)	0.979*** (0.315)	1.298*** (0.287)	1.229*** (0.466)
Year (?)	0.043*** (0.016)	0.043*** (0.016)	0.058*** (0.016)	0.044*** (0.017)
ITC decision† (+)	0.212*** (0.070)			0.219*** (0.071)
Industry probability (+)		-0.089 (0.205)		
Country probability (+)			-1.044** (0.532)	
Previous experience† (?)	-0.065 (0.065)	-0.031 (0.066)	0.017 (0.065)	
Past FA experience (?)				0.088 (0.107)
Number of domestic competitors (-)				0.016 (0.014)
Highest competitor allegation (-)				-0.003 (0.042)

***, **, * Significantly different from zero at 1, 5 and 10 percent, respectively
† Discrete change from 0 to 1

Table 5: Industry and Country Fixed Effects				
	Estimation 1	**Estimation 2**	**Estimation 3**	**Estimation 4**
Chemicals	-0.807 (0.566)		-0.138 (0.331)	0.274 (0.596)
Manufacturing	0.808 (0.792)		-0.0159 (0.555)	0.133 (0.794)
Steel	0.296 (0.367)		0.619 (0.226)***	0.338 (0.391)
Steel products	1.05 (0.409)***		0.936 (0.297) ***	1.16 (0.441)***
Electronics	-0.708 (0.837)		0.442 (0.712)	-0.630 (0.863)
Commodities	0.320 (0.367)		0.289 (0.400)	0.436 (0.536)
Canada	-0.112 (0.528)	-0.472 (0.466)		-0.082 (0.554)
Latin America	-0.0633 (0.494)	-0.338 (0.406)		-0.0986 (0.498)
European Union	-0.011 (0.331)	0.0001 (0.311)		-0.0462 (0.336)
Japan	0.292 (0.493)	0.257 (0.422)		-0.0176 (0.518)
South Korea	0.201 (0.402)	-0.102 (0.382)		0.205 (0.402)
Taiwan	0.261 (0.340)	0.295 (0.422)		0.484 (0.379)
Other Asia	0.631 (0.344) **	0.364 (0.328)		0.650 (0.347) **
China	-1.49 (0.0.374)***	-1.46 (0.340)***		-1.60 (0.389)***
Former Soviet Union	-1.71 (1.06)	-1.35 (0.796)**		-1.87 (1.09)**

***, **, * Significantly different from zero at 1, 5 and 10 percent, respectively.

Figure1

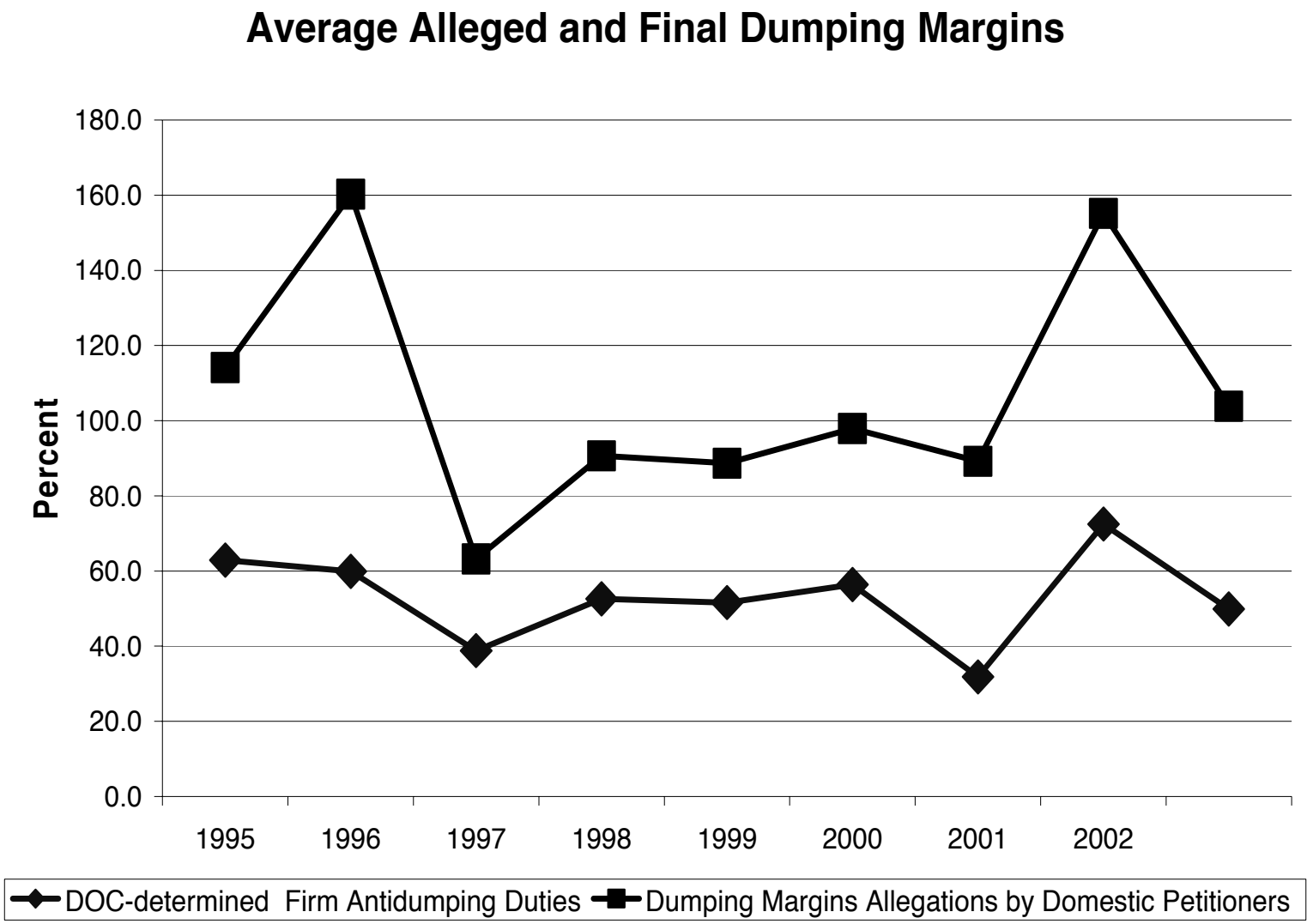

Average Alleged and Final Dumping Margins
Percent
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
1995
1996
1997
1998
1999
2000
2001
2002
DOC-determined Firm Antidumping Duties
Dumping Margins Allegations by Domestic Petitioners

Figure 2

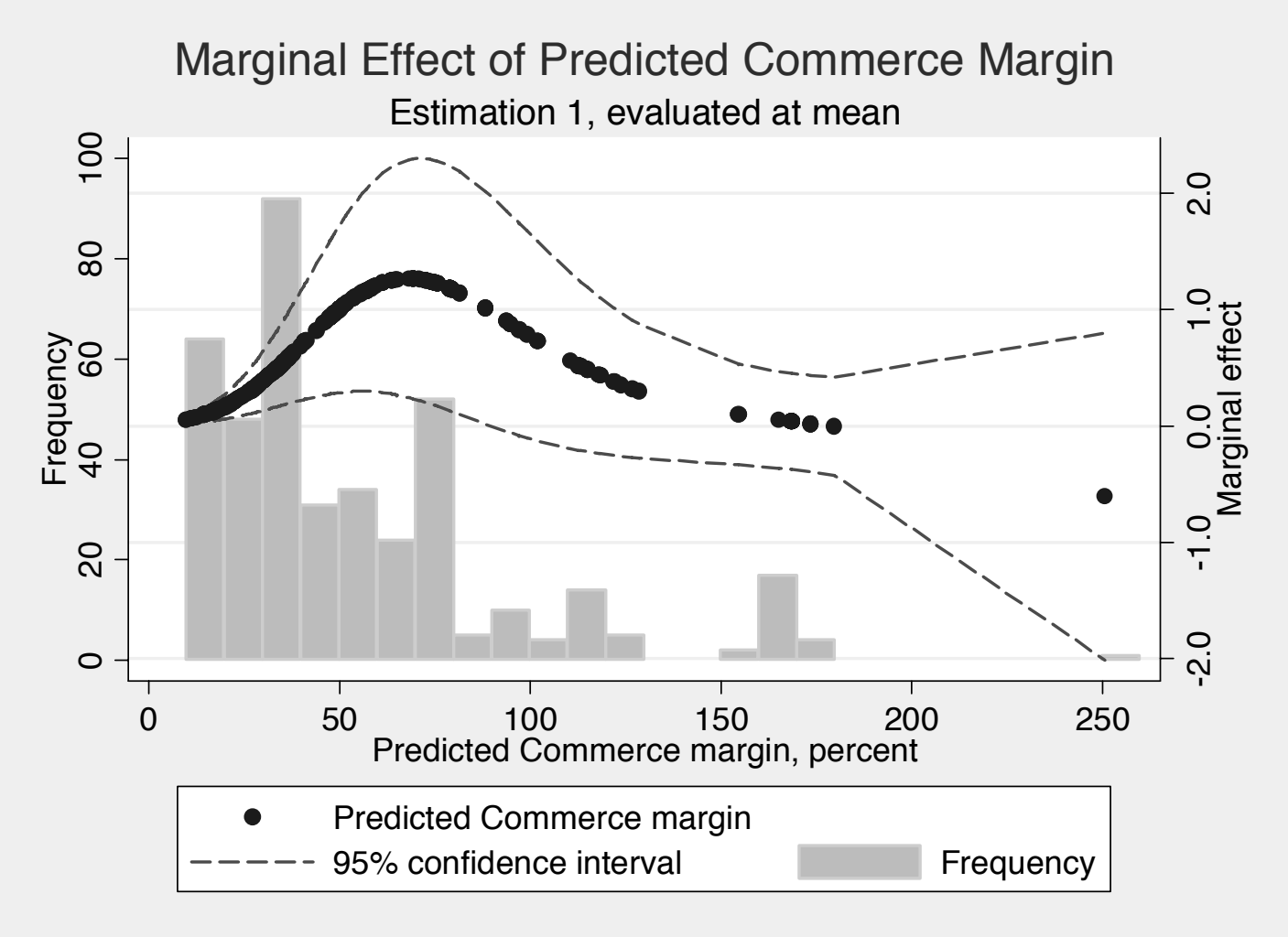
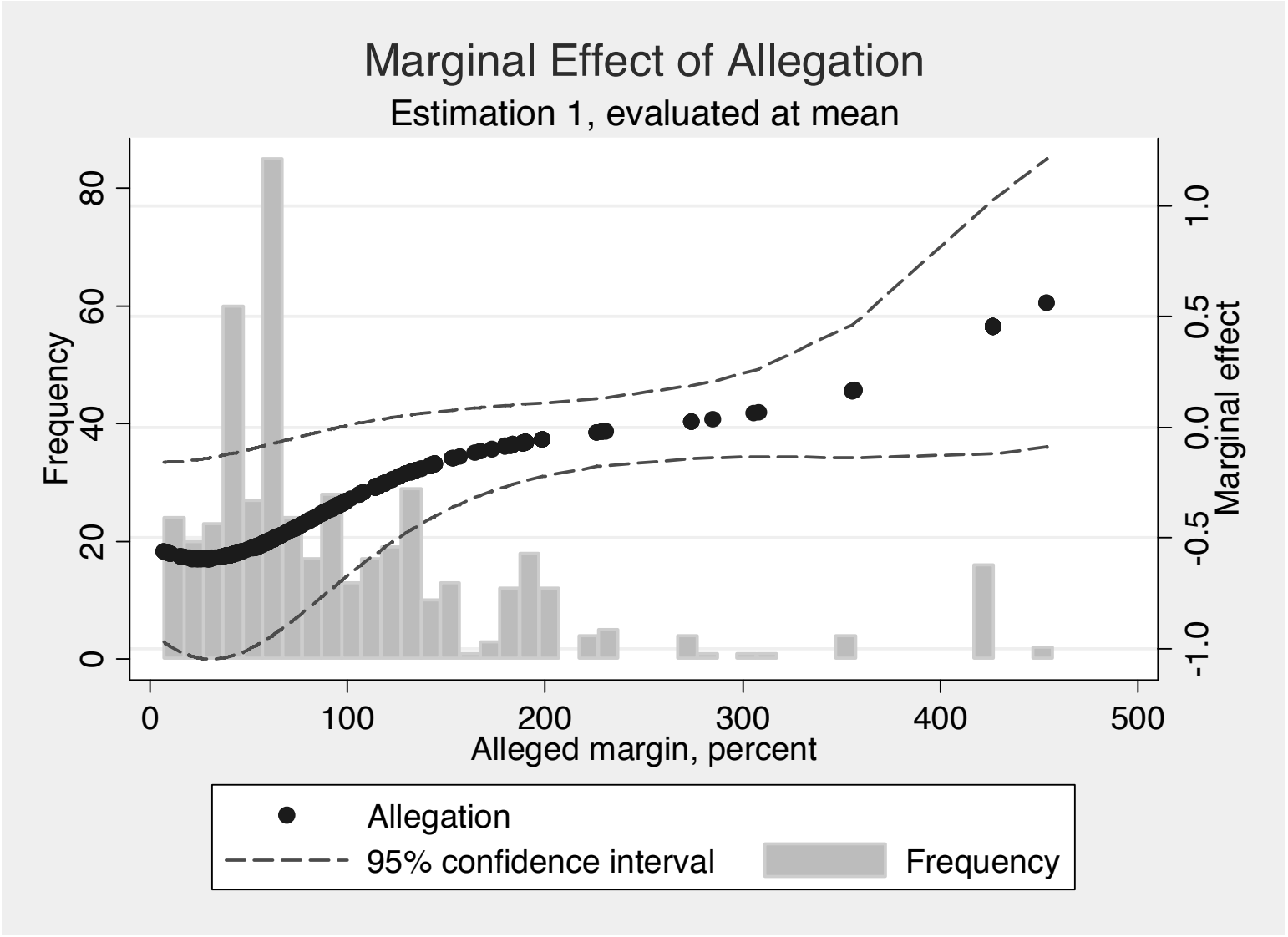

Marginal Effect of Predicted Commerce Margin
Estimation 1, evaluated at mean
Frequency
0
20
40
60
80
100
Marginal effect
-2.0
-1.0
0.0
1.0
2.0
0
50
100
150
200
250
Predicted Commerce margin, percent
Predicted Commerce margin
95% confidence interval
Frequency

Figure 3


Marginal Effect of Allegation
Estimation 1, evaluated at mean
Frequency
0
20
40
60
80
Marginal effect
-1.0
-0.5
0.0
0.5
1.0
0
100
200
300
400
500
Alleged margin, percent
Allegation
95% confidence interval
Frequency