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Claims?: An Empirical Analysis**

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

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Abstract

Foreign firms face punitive duties if they do not cooperate with the US Department of Commerce (DOC) in antidumping procedures. 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 solely as a result of investigating authority bias against imports.

^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 s 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. Maggie Chen deserves special thanks. 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 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.¹ These higher duties for individual firms are even more problematic if other foreign competitors cooperate in the antidumping investigation. Foreign firms consequently face the real possibility that non-cooperation could lead 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 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. There is however considerable variation across countries in terms of their cooperation. The DOC reported final dumping margins for 145 individual Japanese firms for the 1980-1994 time frame; 53 of these

¹ 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.”

firms, or 37 percent, were subject to facts-available procedures. In sharp contrast, Canadian firms were involved in 55 separate antidumping firm level antidumping investigations during this same time period for which 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.²

The relatively high percentage of firms subject to facts-available margins along with the differences across nations 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?

One line of research initiated by Blonigen (2006a) has focused on the role of Department of Commerce discretion. Antidumping margins have risen markedly since 1980 in the U.S. and Blonigen's work indicates that DOC interpretation of its own regulations has led to frequent use of facts-available techniques and consequently higher margins. Blonigen (2006b) focuses on the role of U.S. firms, especially how their actions can affect antidumping outcomes, especially with regard to the likelihood of an affirmative final decision. Our research in a sense takes over from where this earlier work stops by focusing on how foreign firms' own decisions may affect antidumping outcomes in the United States.

There is some anecdotal evidence that foreign firms may choose not to cooperate at the DOC stage of an antidumping investigation because they do not believe that the benefits are worth the costs. For example, Petroflex, a Brazilian firm facing an antidumping investigation in 1998, stated in an official letter to the U.S. government that it

“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.”³

² Moore (op cit.)

³ Source: 64 Federal Register, page 14863, March 29, 1999.

This research will offer some tentative suggests about what factors might help explain these decisions. In particular, we will use a two-stage instrumental variable probit analysis to examine the behavior of 372 individual foreign firm decisions about whether or not to cooperate in dumping allegations in the United States between 1995 and 2002. This period has the advantage that antidumping law and regulations remained essentially unchanged between the implementation of the Uruguay Round in 1995 and the passage of the Trade Promotion Authorization Act in 2002. In other words, we use a fairly short time frame and try to hold constant the legal and regulatory environment in which antidumping cases are administered.

A theoretical framework presented later includes a rational foreign firms will choosing 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 about a 0.39 percent lower probability that a respondent firm will find itself subject to adverse facts-available. The data also suggest that foreign firms are also more likely to cooperate if doing so will lower their expected dumping margins. We also present evidence that the U.S. share of foreign firms' exports are important----the larger the U.S. market for the firm's sales, the more likely that the firm will cooperate. In short, we find evidence that, far from ignoring credible threats of DOC "punishment," foreign firms' decisions may be rationally weighing the relative benefits of cooperation versus non-cooperation. Note that we do not analyze whether or not the DOC is "appropriately" applying the law and its own regulations but instead focus only on foreign firms' decisions, holding constant the DOC's own, possibly biased, procedures.

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 domestic 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 for each individual firm from the country in question. Thus, we will use the term “case” to refer to the industry-country pair and “observation” to the dumping margin outcome involving a specific firm within that industry-country pair. It also is important to note that the dumping and injury determinations are separate 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 in a particular case cause or threaten “material injury” to a domestic industry making a like product. The Department of Commerce investigates the degree of dumping for an individual firm observation. Final antidumping duties are only imposed if both agencies rule affirmatively. About 65 percent of ITC decisions have resulted in affirmative injury outcomes for the 1980-2002 period. In sharp contrast to the ITC stage, essentially all investigations (approximately 98 percent) conducted 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 only rarely would result in the antidumping process ending at the DOC investigative stage.⁴

The Department of Commerce (DOC) investigation focus on whether the foreign firm is 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

⁴ Moore (2004).

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 obviously 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. The WTO agreements, and the GATT before it, allow administrators to use domestic petitioners’ allegations (so-called “adverse facts-available”) if the authorities determine that a foreign firm is 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

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.

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)

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. Tandé

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.

Nonetheless, some authors have 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, investigations 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 (2006a) examines the impact of various DOC discretionary methods on the final antidumping margins for 1980 through 2000, a period in which average dumping margins in the United States increased dramatically. Blonigen finds that DOC interpretation of statute has been a critical aspect of this increase. He finds that the use of BIA and FA has been an important contributor to this increase in margins. Blonigen also argues that this use is 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

⁹ See Blonigen and Prusa (2003) and Nelson (2006) for excellent reviews of theoretical and empirical work on antidumping.

particular, his econometric results suggest that discretionary use of BIA and FA may have increased antidumping margins by as much as 63 percentage points. Blonigen (2006b) examines another decision-maker in the antidumping process---the domestic firm. He finds that a domestic firm's prior experience with the antidumping process can increase the likelihood that a petition is filed but that the average margin is lower. Once again, the use of facts available can be an important contributor to higher final dumping margins.

Moore (2006) 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 work is the implicit presumption that the use of BIA/FA is primarily a consequence of the Department of Commerce's decisions. However, 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. Tandé (2004) also examines these decisions in a game theoretic context by considering further strategic interaction, especially reputational effects among domestic politicians, the administering authority and the foreign firm.

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 and ultimately faces an antidumping order subsequent to cooperating, it faces a profit level denoted by $\pi^c(t_{AD}, \tau^*)$, where t_{AD} is the antidumping duty imposed based on foreign firm information and where τ^* is the tariff 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 after cooperating (i.e., faces an antidumping duty of zero), it faces a profit level denoted by $\pi^c(0, \tau^*)$. 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

$$E[\pi^c] = \gamma \pi^c(t_{AD}, \tau^*) + (1 - \gamma) \pi^c(0, \tau^*) - K \quad (1)$$

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" normally will be the highest dumping margin alleged by the domestic petitioners for *any* firm in the particular antidumping case, i.e., for the country-industry pair. 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 that could be imposed by the U.S. government) 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:

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

where $\pi^{nc}(t_{FA}, \tau^*)$ 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:

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

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

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.

antidumping petition, that is, $\pi^{nc}(0, \tau^*) = \pi^c(0, \tau^*)$. This means that expression (3) can be rewritten as:

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

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 ($\pi^c(t_{AD}, \tau^*) > \pi^{nc}(t_{FA}, \tau^*)$).¹²

Ideally, one would prefer to use specific functional forms to estimate a structural version of these profit functions. This naturally is not 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, this private information is closely held under a DOC protective order.

Nonetheless, this simple theoretical structure embodied in expression (4) 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 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 third is the dumping allegation that would be used in the event of non-cooperation (i.e., t_{FA}). We also will explore whether

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.

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 investigations 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" for the complete data set. We see that the DOC used domestic allegations in 181 out of 492 observations or 37 percent compared to 29 percent in the 1980-1994 period as noted above. We also see that investigations 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 low of 9.5 percent for non-adverse outcomes (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

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.

do not cooperate consistently face far higher margins than those that the DOC determines are cooperative. Note that the final set of data analyzed in the empirical analysis will be smaller because of data availability in a first-stage instrumental variable procedure.

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. We will use robust standard errors with clustering based on the individual case (country-product pair) in all but one of the probit analyses.

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 that can be used in the event of adverse inferences, foreign firm characteristics, an instrument for the likelihood of foreign firm ultimately winning the case, and an instrument for the likely margins if the foreign firm cooperates.

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/>”).

The highest allegation of dumping for any individual firm in each country-specific case is denoted by “Alleged margin.” Note that this typically is not the allegation for the particular firm observation, unless there is only one firm in the antidumping case. But this is the margin 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 $\pi^{nc}(t_{FA}, \tau^*)$ and the less likely that expression (4) will hold.

The data also reflects how much “information” might be contained in the allegations of domestic competitors. In particular, in the observations in which information provided by the foreign company 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.

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 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-

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

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.

A foreign firm facing high antidumping margins as a result of non-cooperation will also likely consider alternative markets in which to sell its goods if closed out of the U.S. market. One alternative is to sell in other export markets and the other is to increase sales at home.

We control for the former by including a variable (“Non-U.S. Export Share”), which is the share of the country’s exports of the products under investigation in non-U.S. markets in the year prior to the year in which the antidumping petition is initiated. One expects that the higher is the percentage, the less likely that the foreign firm will cooperate, i.e., the estimated coefficient should be positive. We would prefer to have the market share of each individual foreign firm in the U.S. import market but this is not publicly available.

A second alternative market is the domestic market for the exporting firm. We control for this by including the real GDP growth (“Home Market Growth”) in the exporting country in the initiation year. We would expect this coefficient to have a positive sign---the more robust the home market, the less likely that the foreign will cooperate since it will have less to fear from losing access to the U.S. export market.

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. This measure is called “Previous Experience” and takes on a value of 1 if the particular foreign firm was subject to at least one antidumping investigation from 1980 through 1994 and a 0 otherwise. The expected sign for this dummy variable is ambiguous. One might 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.

Recall from the discussion above that we expect that the more likely that the firm thinks it will win at a later stage of the antidumping process, the less likely that it will expend resources to reduce the dumping margin. To control for this, we include “ITC Decision,” which takes on a value of 1 if the ITC decides in the latter material injury decision that dumped imports have *not* caused economic stress to a domestic industry and equals 0 if the foreign firm loses in the material injury phase. 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.¹⁶ The value of the coefficient is expected to be positive----if the foreign firm expects to win at the ITC, there is a less incentive to cooperate with the DOC.

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 for a particular product.¹⁷ 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.

¹⁶ We treat this as an exogenous explanatory variable. One might argue that the decision of whether or not to cooperate at the DOC stage might affect the latter ITC decision. Research by Moore (1992) and others have shown that the ITC does not systematically consider the DOC stage outcome in its decision making process.

¹⁷ Recall that all firms from a particular country may receive the highest alleged marginal for firms in that country.

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. The sign on this variable is ambiguous. One might imagine 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. However, a large number of firms may reflect a fragmented industry and thus make cooperation less likely among firms, especially when trying to coordinate a legal response to dumping allegations. For example, cases involving Vietnamese fish fillets and Chinese crawfish included 11 and 16 firms, respectively. None of the Vietnamese firms and only half of the Chinese firms were found to be cooperative by the DOC.

We also include a time trend to control for changes in the use of facts-available over time. This is denoted by “Year.” One might expect a positive coefficient if one expects that foreign firms are increasingly unlikely to cooperate.

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 nor to the DOC. 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 a two-stage instrumental variable approach to estimate the expected margin in the event of cooperation. In particular, we use a standard least squares regression in the first stage where the dependent variable is the final dumping margin for the individual firm.

The explanatory variables in the first stage include the entire set of explanatory variables used in our basic probit specification described above. We include two instrumental variables in

the first stage. The first is the percentage change in the unit value for the country and specific product (called "Change in Unit Value") under investigation in the year prior to the dumping allegation and the previous year. We expect a negative coefficient on this variable since a falling unit value would be correlated with an expectation that the foreign firm would likely face higher margins, since the average export prices for the country as a whole are falling for this particular product. The other instrument is the percentage of underselling ("Underselling") between the country/product combination and the imports of the product *not* subject to the dumping investigation. We expect a negative value on the coefficient on this variable as well. Both 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 IV estimation are then used to calculate a fitted value which is the predicted cooperative dumping margin (labeled "Expected Cooperative AD Margin"). Note that this variable will vary across individual foreign firms. We expect that the coefficient on this variable to be positive in the second stage estimation; *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 include two other measures of dumping margins in the analysis. Our theoretical analysis above suggested that the differences in profit margins were important. We do not have a structural model of the entire profit functions but we can measure the differences in alleged and cooperative margins. We expect that this difference should be negative for reasons that parallel the discussion above about the individual levels. We also include the natural log of each measure of dumping margins to control for possible non-linear effects.

Note that some unit values for imports were not available from ITC sources so that the total number of observations used in the study drops from 492 to 372 individual foreign firm cooperation decisions.

IV.B. Econometric Results

Table 3 contains the first stage IV results for the expected cooperative margin for the estimation reported in Table 4, Column 1. Similar results hold for other estimations.

The results generally conform to expectations. (Note that fixed effects results are not reported here.) Most importantly, we find that the two instruments, “Unit Value Change” and “Underselling” are of the expected sign and significantly different from zero at the 1 and 16 percent significance level, respectively.¹⁸

Results for five different specifications of the second stage are reported in Table 4. Column 1 reports the results when the residuals are assumed to be i.i.d while all other columns include clustered standard errors, with the industry-country pair as the basis for the clustering. Columns 1 and 2 include results when the level for the alleged and expected dumping margins is used. Column 3 uses the natural log of the dumping margins in order to consider non-linear effects. Column 4 includes results when we use the difference between the alleged and expected margin; Column 5 repeats this with the natural log of the differences.

Marginal probability effects for the same five specifications are given in Table 5.

Looking across the columns of Table 4 we observe patterns that are consistent with most of our theoretical expectations about foreign firms rationally choosing whether or not to participate in antidumping investigations. We find that foreign firms are more likely to cooperate if the domestic firms’ allegation of dumping are high. We also see that the higher that foreign firms expect the margins to be if they decide to open their books to DOC, the less likely they are to cooperate. We see little evidence however that foreign firms take into account their chances of winning the case at the ITC before deciding whether to expend resources complying with DOC

¹⁸ The Amemiya-Lee-Newey minimum chi-square statistic for overidentification yields a test statistic of 0.154, which suggests that both variables should be included in the first stage.

requests for information. We also find evidence that is consistent with foreign firms looking at other market alternatives if the U.S. market becomes closed to them through facts available margins. There is little evidence that respondent firms take into account the actions of other foreign firms nor consider their home market economic growth when deciding whether to cooperate.

The reported coefficient for “Alleged Margin” is negative and significantly different from zero at a five percent level in Columns 1 and 2, i.e. the greater is the highest allegation for any firm in the individual antidumping case, the more likely that the firm will cooperate. Recall that this is the highest margin alleged against any firm in the particular case; it is not necessarily the allegation faced by the individual firm but instead the one that will be imposed if it does not cooperate. Both specifications yields the anticipated sign (positive) for “Expected Cooperative AD Margin” and that coefficient is statistically significant from zero at a 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.

Column 4 includes the simple differences between the alleged and expected cooperative margin. As expected, the coefficient is negative and significantly different from zero at a 5 percent level.

Columns 3 and 5 include the natural log of the levels and log of the differences between the alleged and expected cooperative margins, respectively. We see no evidence of non-linearities in the levels in Column 3. There is weak evidence of non-linear effects for the log of the differences, with a negative coefficient that is significant at only the 10 percent level.

We turn now to other variables included in the estimation.

The second stage coefficient estimates on “ITC Decision and “Previous Experience” are not significantly different from zero. 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 nor are forward looking in that they can correctly anticipate the case's outcome at the ITC stage. In regressions not reported here, we also tried other measures for these two variables. We obtained similar results when we substituted the past antidumping case success rates for the individual country or industry for "ITC Decision." Likewise, substituting the percentage of past cases in which the individual foreign firm faced FA margins for "Previous Experience" also yielded non-significant coefficient estimates.

We see some evidence of a time trend. The coefficient on "Year" is significantly different from zero (at least at 5 percent level) in three of the five specifications. This suggests a slight increase in the likelihood of foreign firms not cooperating over time. There is however only weak evidence that the latter years were treated systematically differently. In estimations not reported here, we repeated the estimations using a dummy variable for post-1997 cases as well as analyzing the post-1997 period alone and found qualitatively identical results to those reported in Table 4.

We see mixed results about whether foreign firms consider alternative markets when deciding whether to risk losing the U.S. market by not cooperating. In three of the five specification, there is evidence that the more a country's exports of the particular product are exported to non-U.S. markets in previous years, the more likely that the firm will not cooperate. However, our measure of home country demand conditions ("Home Market Growth") does not help explain foreign firms' decisions in any of the outcomes. A preferable approach would be to have access to sectoral demand in the exporting country but these are not available on a systematic basis.

We find that there is explanatory power in the number of other foreign country firms named in the petition ("Domestic Competitors"). This coefficient is significantly different from zero and positive in all but one of the specifications. This is consistent with a world in which a

fragmented foreign industry may find it difficult to coordinate a response to the complicated questionnaires required by the DOC.

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 5 contains the results of these calculations. We see in Column 2 that a one percent increase in alleged margin increases the chance of non-cooperation by 0.39 percent. There is also evidence that an increase in the expected margin if firms cooperate also importantly increases the chance that the firm will decide that is not worth providing information to the DOC. A one percent increase in the gap between the alleged and expected cooperative margin decreases the probability that the firm will not cooperate by 0.49 percent. The results for Columns 3 through 5 suggest that a one percentage point increase in the non-U.S. market share of a country's exports increases the probability of non-cooperation between 0.11 and 0.94 percent.

Finally, we briefly discuss the country and industry fixed effects from the various estimations all of which are displayed in Table 6. There is very strong evidence for the specification of Estimation 1 that the industry and country fixed effects separately provide important 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 114 and a marginal significance level below one percent. The analogous hypotheses for industrial indicator variables are jointly zero yields a chi-squared statistics of 23 and a marginal significance level less than one percent.

The individual fixed effects provide less explanatory power. We do see that the dummy variable for "Steel products" and "Steel" are positive and significant in Estimations 1 and 2. For those familiar with U.S. antidumping patterns, these results are especially interesting given that these two industries are the most frequent user of this type of import relief. These results suggest that even though these foreign firms in these industries have the most experience with U.S.

antidumping procedures, they may be systematically less likely to cooperate. This may reflect these firms' assessment that participating in DOC investigations are not worth the expense.

The only consistent result among country dummies is for China, which has strong explanatory power. We see that Chinese firms are *more* likely, with the exception of Estimation 3, 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 as well. 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 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. The results also suggest that antidumping cases involving large numbers of foreign respondents are more likely to end in non-cooperation, an outcome consistent with small fragmented industries finding DOC questionnaires burdensome.

There is also evidence that firms with important reliance on the U.S. as an export market may be more likely to cooperate. This is consistent with the earlier discussion about how Canadian firms generally are deemed to be cooperative in antidumping investigations. Indeed, we were unable to include Mexican firms in the formal analysis because they were not subject to facts-available methods at all in our data set. Finally, we see indications that Chinese firms,

among those most likely to face high margins within the antidumping system, are more likely than others to cooperate within the trade remedy process.

These results do not rule out the possibility that the Department of Commerce is using its discretionary powers to make it difficult for foreign firms to be considered cooperative. And we do not know whether domestic firms strategically make allegations with the knowledge that this might affect foreign firms participation in investigations. We have found evidence that, given the decisions of the U.S. administrators and import-competing industries, foreign firms, far from illogically accepting prohibitive antidumping duties, seem to weigh the alternatives in a rational and profit-maximizing fashion.

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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

Variable		Mean	Standard Deviation
Adverse Facts Available (FA)	1=foreign firm deemed uncooperative by DOC; 0 otherwise (dependent variable)	0.336	0.473
Alleged margin	Highest alleged margin of any firm in the investigated country	1.102	0.928
Log of alleged margin	Natural log of (Alleged Margin)	-0.199	0.782
Differences	Alleged margin –Expected Cooperative AD margin	0.632	0.674
Log of differences	Natural log of (Differences)	-1.969	2.876
Previous experience	1=foreign firm involved in antidumping case during 1980-1994; 0 otherwise	0.191	0.394
Expected Cooperative AD margin	Margin imposed in the final antidumping order	0.470	0.557
Past FA Experience	Percentage of cases in which foreign firms subject to facts-available (1980-94)	0.074	0.238
ITC decision	1=ITC final negative antidumping decision; 0 otherwise	0.306	0.462
Non-U.S. Export Share	Percentage of investigated country in non-U.S. export markets in year prior to initiation	0.673	0.254
Home Market Growth	Average annual growth in GDP in year of initiation	4.827	3.866
Domestic competitors	Number of other firms accused of dumping for the particular country	5.121	3.969
Highest competitor allegation	Highest alleged margin for other firms in another country accused of dumping	0.672	0.765
Year	Year antidumping investigation initiated	1999	1.879
Chemicals	Dummy variable for chemicals industry	0.073	0.260
Manufacturing	Dummy variable for manufacturing	0.126	0.333
Steel	Dummy variable for primary steel industry	0.419	0.494
Steel products	Dummy variable for steel products industry	0.094	0.292
Electronics	Dummy variable for electronics industry	0.011	0.103
Commodities	Dummy variable for primary (non-agricultural) industry	0.040	0.197
Canada	Dummy variable for cases involving Canada	0.056	0.231
Mexico	Dummy variable for cases involving Mexico	0.008	0.090
Other Latin America	Dummy variable for cases involving non-Mexican Latin American countries	0.038	0.191
European Union	Dummy variable for cases involving for EU-15 countries	0.113	0.317
Japan	Dummy variable for cases involving Japan	0.091	0.289
South Korea	Dummy variable for cases involving South Korea	0.054	0.226
Taiwan	Dummy variable for cases involving Taiwan	0.078	0.268
Other Asia	Dummy variable for cases involving other Asian countries not otherwise noted	0.113	0.317
China	Dummy variable for cases involving China	0.352	0.478
Former Soviet Union	Dummy variable for cases involving countries of the former Soviet Union	0.022	0.145
Change in unit value	Percentage change in the unit value for the country and specific product	-0.067	0.162
Underselling	Percentage of underselling between investigated products and non-investigated imports	-0.104	0.270

Number of observations: 372

Table 3
First Stage OLS results
Dependent Variable: Final Antidumping Margin for Individual Firm

Variable (expected sign)	Coefficient (Standard error)
Change in Unit Value (-)	-0.448*** (0.127)
Underselling (-)	-0.108 (0.077)
Alleged margin	0.449*** (0.028)
Year	-0.035*** (0.011)
ITC Decision	0.117** (0.046)
Non-U.S. Export Share	0.403*** (0.105)
Home Market Growth	0.016** (0.006)
Previous Experience	0.048 (0.051)
Number of domestic competitors	-0.004 (0.009)
Highest competitor allegation	0.188*** (0.028)
Constant	68.995*** (21.885)
Industry/Country Fixed Effects	Y / Y
Observations	372
R-Squared	0.67
***, ** Significantly different from zero at 1 and 5 percent, respectively	

Table 4: Second Stage Probit Estimation Results (Adverse Facts Available used = 1; 0 otherwise)					
Variable (expected sign)	Estimation 1	Estimation 2	Estimation 3	Estimation 4	Estimation 5
Alleged margin (-)	-1.878** (0.902)	-2.147** (0.913)			
Log of alleged margin (?)			-1.001 (1.540)		
Expected cooperative AD margin (+)	5.855*** (1.953)	6.402*** (1.903)			
Log of expected cooperative AD margin (+)			1.445 (2.018)		
Difference of alleged margin and expected cooperative AD margin (-)				-1.547** (0.709)	
Log of difference of alleged margin and expected cooperative AD margin (-)					-0.859* (0.471)
Year (?)	0.532*** (0.136)	0.529*** (0.145)	0.192 (0.246)	0.107 (0.111)	0.334** (0.145)
ITC Decision (+)	0.59 (0.401)	0.628 (0.434)	0.671 (0.497)	0.371 (0.336)	0.815 (0.556)
Non-U.S. Export Share (+)	0.893 (0.954)	0.273 (1.154)	1.802*** (0.662)	2.021*** (0.706)	3.02*** (1.039)
Home Market Growth (+)	-0.006 (0.067)	-0.021 (0.067)	0.000 (0.062)	0.006 (0.043)	0.081* (0.048)
Previous Experience (?)	-0.096 (0.377)	-0.085 (0.375)	0.028 (0.245)	0.163 (0.233)	0.153 (0.379)
Domestic Competitors (?)	0.314*** (0.092)	0.360*** (0.098)	0.173 (0.147)	0.317*** (0.096)	0.444*** (0.156)
Highest competitor allegation (+)	-0.676 (0.443)	-0.728* (0.422)	-0.02 (0.366)	-0.143 (0.276)	-0.144 (0.339)
Constant	-1067.433*** (270.922)	-1060.276*** (288.592)	-384.857 (489.996)	-216.769 (221.777)	-672.955** (289.808)
Clustered standard errors	N	Y	Y	Y	Y
Observations	372	372	372	372	372
Log pseudolikelihood	-260.13	-169.71	-702.55	-385.73	-876.76

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

All estimations include country and industry fixed effects that are reported in Table 6. Clustering based on ITC case number (i.e., product-country pair).

Table 5: Probit Marginal Effects, Evaluated at Mean (Adverse Facts Available used = 1; 0 otherwise)					
Variable (expected sign)	Estimation 1	Estimation 2	Estimation 3	Estimation 4	Estimation 5
Alleged margin	-0.347**	-0.385**			
Log of alleged margin			-0.059		
Expected cooperative AD margin	1.082***	1.148***			
Log of expected cooperative AD margin			0.085		
Difference of alleged margin and expected cooperative AD margin				-0.485**	
Log of difference of alleged margin and expected cooperative AD margin					-0.268*
Year	0.098***	0.095***	0.011	0.034	0.104**
ITC decision†	0.125	0.131	0.053	0.122	0.275
Non-U.S. export share	0.165	0.049	0.106***	0.634***	0.943***
Export market growth	-0.001	-0.004	0.000	0.002	0.025*
Previous experience†	-0.017	-0.015	0.002	0.053	0.049
Number of domestic competitors	0.058***	0.065***	0.010	0.099***	0.139***
Highest competitor allegation	-0.125	-0.131*	-0.001	-0.045	-0.045

These estimations correspond to those in Table 4.

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

† Discrete change from 0 to 1

**Table 6: Industry and Country Fixed Effects
(From second-stage Probit estimation)**

	Estimation 1	Estimation 2	Estimation 3	Estimation 4	Estimation 5
Chemicals	-1.293 (1.293)	-1.357 (2.579)	0.61 (0.54)	0.917 (1.044)	1.364 (0.948)
Manufacturing	0.995 (1.399)	1.085 (0.831)	-0.544 (0.534)	-1.364 (0.843)	-2.376* (1.441)
Steel	1.633** (0.655)	1.728** (0.709)	-0.225 (0.366)	0.015 (0.717)	-1.127 (1.006)
Steel products	2.64*** (0.827)	2.707*** (0.84)	0.695 (1.038)	0.831 (0.824)	0.239 (1.013)
Electronics	-1.165 (1.491)	-1.271 (1.002)	-2.299 (2.744)	-0.579 (0.818)	-2.997** (1.416)
Commodities	1.218 (0.936)	1.328 (0.833)	0.408 (0.451)	0.317 (0.866)	-0.463 (1.153)
Canada	-0.058 (0.957)	-0.581 (1.232)	0.26 (0.586)	-0.33 (1.077)	-1.098 (1.365)
Latin America	-0.476 (0.831)	-0.586 (0.805)	-0.962 (0.754)	-0.195 (0.8)	-2.165 (1.336)
European Union	-0.349 (0.516)	-0.201 (0.526)	-0.491 (0.404)	0.124 (0.465)	0.277 (0.847)
Japan	-0.277 (0.91)	-0.485 (0.85)	-0.111 (0.629)	0.144 (0.639)	-1.315 (1.424)
South Korea	-1.001 (0.985)	-0.891 (0.838)	-1.093** (0.434)	-0.062 (0.578)	-1.237* (0.731)
Taiwan	0.645 (0.526)	0.674 (0.531)	0.844 (1.563)	-0.259 (0.451)	-0.231 (0.676)
Other Asia	-0.028 (0.527)	-0.07 (0.573)	-0.233 (0.352)	0.961** (0.481)	0.787 (0.688)
China	-4.078*** (0.776)	-4.26*** (0.816)	-2.796 (1.761)	-1.894** (0.867)	-3.82*** (1.106)
Former USSR	-1.711 (1.106)	-1.818 (1.339)	-0.467 (1.024)	1.218* (0.651)	1.046 (1.419)

***, **, * Significantly different from zero at 1, 5 and 10 percent, respectively.
Columns correspond to those in Table 3.

Figure 1

Average Alleged and Final Dumping Margins

