January 2008

Antidumping Duties in the Agriculture Sector: Trade Restricting or Trade Deflecting?

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[1] This paper has been funded by T.A.R.G.E.T. (http://www.econ.ubc.ca/ine) at the Economics Department, University of British Columbia, and Canadian Agricultural Trade Policy Research Network (http://www.uoguelph.ca/~catprn/). We would like to thank Emily Yu for research assistance, and seminar participants at the AAEA (2006) annual meeting for insightful suggestions and comments on the paper.
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Abstract

In this paper we analyze whether U.S. Anti-Dumping (AD) duties in the agricultural sector are effective in restricting trade. More specifically, does imposition of an antidumping duty restrict imports of the named commodity or is there a diversion in the supply of imports from countries named in the petition to countries not named in the antidumping petition? We find that AD duties have had a significant impact on the imports of agricultural commodities from the countries named in the petition. However, our results also indicate that, unlike the manufacturing sector in the US, there was little trade diversion towards countries not named in the AD petition. Our results indicate that AD is a plausible protectionist policy in the Agriculture sector.

1. Introduction

In this article we analyze whether U.S. antidumping (AD) duties in the agricultural sector are effective in restricting trade. More specifically, does the imposition of an antidumping duty restrict imports of the named commodity, or is there a diversion in the supply of imports from countries named in the antidumping petition to countries not named in the petition?

This question is important given the significance granted to agricultural liberalization in the recent rounds of trade negotiations conducted under the World Trade Organization (WTO). On these occasions, developing countries have been seeking freer trade in the Agricultural sector (Anania 2005). The main issues on the table are the elimination of all forms of export subsidies, a progressive reduction of tariffs and reduction in domestic support or production subsidies. However, it is often observed that, rather than translating into a uniform transition to free trade, trade liberalization often involved moving from one set of distortions to another.[1] More specifically, it is observed that in the case of trade liberalization in manufacturing, countries have increasingly complemented lower tariffs with antidumping duties. Feinberg and Olson (2005) empirically show that countries which agreed to larger tariff reductions under the Uruguay Round are more likely to use antidumping statutes to protect their domestic industries. Thus, coming to our particular topic, if the use of antidumping duties in the agriculture sector is also effective as a trade barrier (i.e. if there is little trade diversion), then this needs to be pointed out. In this article we investigate whether antidumping duties are effective in the agriculture sector.

In case of a regular tariff measure such as a MFN tariff, all foreign firms are restricted access to the domestic market, and the gains from higher prices accrue only to the domestic producers. This is however not the case for an AD duty. If all foreign firms (or countries) were named in an affirmative-decision antidumping case, the 'spoils'[2] would be distributed among domestic producers via a price that is higher than what previously prevailed. However, one distinctive feature of the antidumping legislation is that usually only a subset of exporting countries or foreign firms are identified as 'guilty' of dumping. Where some countries or firms are excluded from antidumping petitions, it is quite conceivable for these excluded or 'non named' foreign entities to reap these spoils in conjunction with,

[1] Consider a recent example from agriculture. The move from quota system to bound tariffs in the 1990's was, to say the least, ineffective in liberalizing trade. (Josling, 1998)

[2] i.e. gains that accrue to the domestic producers in terms of higher prices.

or to the exclusion of domestic producers. The latter circumstance can occur due to trade diversion to these non named countries.

There exists a fairly substantial literature, both theoretical and empirical, devoted to the effectiveness (and ramifications) of antidumping investigations upon trading patterns for an importing country, concerned mostly with testing for trade diversion effects. Staiger and Wolack (1994), Prusa (1997), Vandenbussche et al (1999), Malhotra and Rus (2008) and Prusa (2001) are some of these works to which our article is closest in spirit. Prusa (1997) set forth to present evidence on the effectiveness of antidumping actions in the United States while Vandenbussche et al (1999) attempted to measure the effects of European antidumping measures on import flows and contrast their results with Prusa (1997). We add to this literature by concentrating solely upon trade diversion in agricultural products and focus entirely upon the effectiveness of U.S. antidumping investigations in agricultural products.

Previous studies have sought to measure the effectiveness of antidumping legislation by aggregating over all commodities, industrial and agricultural. While the conclusions and insights have been noteworthy, concentrating on agriculture by excluding industrial goods might yield different results due to the different nature of commodities in the two sectors, such as (i) aspects of seasonality, (ii) perishability, (iii) identification by genetic code and (iv) an outlet for surplus product.

Seasonality is an important aspect in the trade of fresh agricultural products and the effectiveness of 'non named' countries to capture the benefits of trade diversion depends very much upon the marketing window. This is in contrast to industrial commodities that may be stocked and shipped at any time of the year without being susceptible to perishability.[3]

Moreover, in order for antidumping legislation to be effective in its protection, a necessary condition is that the foreign entity alleged to be dumping should be restricted from shipping its product via a third country in order to circumvent the antidumping duty. In the case of an industrial commodity, identification of origin may, at times, prove to be difficult. Rubber tires made in China may be indistinguishable from rubber tires made in Pakistan, particularly if the raw rubber in both countries was imported from a common source such as Malaysia. Agricultural products, however, are identifiable through genetic codes, and

[3] A noteworthy exception is due to obsolescence, an important feature of some products. For instance electronic and computer components are upgraded and enhanced frequently.

routing through third countries may be quickly identifiable.[4] Thus it may be less likely to find such a disguised type of trade diversion in the agriculture sector.

Lastly, fresh agricultural products present the advantage of the easy availability of an alternative outlet in the event that an antidumping petition is allowed to proceed. For the manufacturing sector, sizing conventions (metric v. standard) and voltage differences, as well as other product characteristics complicate the finding of markets alternative to the U.S., and thus a foreign firm is likely to bear the burden of higher duties to still serve the U.S markets. A restriction of imports would probably be observed once the AD duties have had an impact on the production of the good, if any. Fresh agricultural products, on the other hand, have the option of available alternate markets (barring health or sanitary regulations) and where none exists, the processing sector may absorb the surplus product. This characteristic of the agricultural goods makes it more likely for foreign firms to bypass the U.S market and look for alternate processing sectors. Thus, if antidumping duties are restrictive, we are likely to observe an earlier impact on imports for the agriculture sector than for the manufacturing sector.

We find, as expected, that antidumping duties have a significant impact on the imports of agricultural commodities from countries named in a petition. However, our results also indicate that there was little trade diversion towards countries not named within in the antidumping petition. In contrast to previous studies such as Prusa (1997), we find little change in trade flows of agricultural goods from countries named in the petition when there was a negative determination for antidumping, i.e. the so-called 'investigation effect.' It seems that AD is an effective protectionist trade policy that can compensate for the lower overall tariffs sought through the international talks on trade in agricultural products. Our results imply that it might be useful to bring AD into the next round of agricultural negotiations.

Utilizing U.S. data, Prusa (1997) concluded that (i) antidumping duties substantially restrict the volume of trade from countries named in the petition and particularly for those cases where relatively 'high' duties were imposed and (ii) substantial trade diversion exists from named to non named countries, with the diversion being larger the greater the duty. Accordingly, for the U.S. data, antidumping laws have the side effect of benefiting countries and firms that were not named in the investigation through substantial price increases and volumes. In contrast, Vandenbussche et al (1999) find that little or no trade diversion exists in

[4] A 1998 analysis of a seized Mexican garlic shipment at a California port was tested by a Customs Research Laboratory with a conclusion that 23% of the shipment was of Chinese origin. (http://nfapp.east.asu.edu/policy/2000/04/Pb00-4.htm)

the European Union data. Their conjectures regarding this difference include (i) differences in concentration levels, (ii) the nature of antidumping legislation as well as the differences in the calculation of penalties and (iii) the lack of transparency and the extent of uncertainty with respect to protection offered in Europe. Our results for the agriculture sector are similar to Prusa's study as far as trade restriction is concerned but we find no evidence of trade diversion.[5]

Our article is organized into following sections. Section two provides a characterization of U.S. antidumping investigations. Section three gives details about the data and provides a brief background in the area of trade diversion with the help of data. Section four formalizes our econometric model and provide the results of our analysis, and section five concludes.

2. Antidumping Investigations in the United States

Antidumping Procedure

Under article VI of the General Agreement of Tariffs and Trade countries may impose duties on imports from a particular country or set of countries in order to protect domestic industries if it is deemed that these imports are being dumped, where dumping is defined as selling a product at a price which is lower in the U.S. than in the home market. In case there are no comparable home market sales, sales in a surrogate 'third country' may be used. In the absence of sufficient home market and third country sales, a 'constructed value,' which uses a cost-plus-profit approach to arrive at normal value is employed. An interested party[6] may file an antidumping petition with the International Trade Administration (ITA) and the International Trade Commission (ITC) alleging that the domestic industry has been materially injured or threatened with material injury by dumped imports. The ITA determines whether and to what extent dumping has occurred while the ITC determines whether the domestic industry has suffered material injury as a result of dumped imports. In the event that the petition is accepted by both the ITC and ITA, an antidumping investigation is initiated.

The petitioner must file on behalf of the entire industry, and on this basis, ITA subsequently forwards a questionnaire to the non petitioning producers to determine the extent of support for the petition. If both the ITA and the ITC make

[5] After completing our paper we became aware of a recent working paper by Carter and Gunning-Trant (2007) in which they find diversion effects when considering both antidumping and countervailing duties.

[6] Interested parties include: (i) a manufacturer, producer, or wholesaler of the product in the US; (ii) a certified union or group of workers that is representative of the industry; (iii) a coalition of firms, unions, or trade associations that represent the industry.

affirmative findings of dumping and injury (which, we term as 'positive final decision'), an antidumping duty equivalent to the dumping margin is imposed on imports of that product from the country of the accused. The duties remain in effect until an administrative review is held and the exporter is found to have ceased dumping.

3. Data

Data for U.S. antidumping investigations, for the complete period (1990-2002), has been put together using the information provided by the US ITC and ITA websites.[7] We subsequently combed through US ITC reports for these specific cases in order to obtain the identity of these products at the 10 digit HS level. We use annual trade data disaggregated at the 10 digit HS level for the named, as well as the non-named countries. The trade data is obtained from the Foreign Agricultural Trade of the United States (FATUS) database on the USDA website.[8] Import values are deflated by an import price index obtained from the U.S. Bureau of Labor Statistics.

In Table 1 we list all the AD cases used in our analysis. There are 30 antidumping cases filed, consisting of 19 Products. We use data on the products listed in Table 1, which at times consist of multiple HS 10 digit commodities. Overall we have data on 188 HS 10 digit commodities[9,10]. Table 1 also reports the exporting regions and countries that have undergone investigations in our data. China has faced the maximum number (21%) of petitions against their exports to the U.S.. Canada and Chile are next in line, each with 14% of the total AD cases.

Out of these 30 cases, 19 resulted in an affirmative decision, 9 in negative decision and 2 cases were suspended (for Fresh Tomatoes and Honey). However, the suspension amounted in fact to a form of restriction since they resulted in price agreements between the U.S. industry and the foreign firms named in the petition. The average antidumping duty imposed in the agriculture sector is roughly 100 percent, varying from 3.7 percent for Fresh Atlantic Salmon against Chile to 376 percent for Fresh Garlic against China.

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[7] See www.usitc.gov and www.ia.ita.doc.gov, respectively.
[8] See http://www.ers.usda.gov/data/FATUS/.
[9] Results for a particular product from the list in Table 1 can be obtained from the corresponding author.
[10] For example, apple juice consists of the following 10 digit HS codes: 2009700010, 2009700020, 2009700090, 2009700010, 2009700010.

Table 1: Products named in Antidumping Petitions filed by the U.S. Agriculture Industry (1990-2002)[11]

YEAR	PRODUCT	COUNTRY
1990	Fresh And Chilled Atlantic Salmon	Norway
1991	Tart Cherry Juice & Concentrate	Former Yugoslav
1991	Tart Cherry Juice & Concentrate	Germany
1991	Fresh Kiwifruit	New Zealand
1994	Canned-Pineapple	Thailand
1994	Fresh Garlic	China, Peoples Republic
1994	Honey	China, Peoples Republic
1994	Fresh Cut Roses	Colombia
1994	Fresh Cut Roses	Ecuador
1995	Non-Egg-Pasta	Italy
1995	Non-Egg-Pasta	Turkey
1996	Freshwater Crawfish Tail Meat	China, Peoples Republic
1996	Fresh Tomato	Mexico
1997	Fresh Atlantic Salmon	Chile
1998	Butter Cookies In Tins	Denmark
1998	Live Cattle	Canada
1998	Live Cattle	Mexico
1998	Preserved Mushrooms	Chile
1998	Preserved Mushrooms	China, Peoples Republic
1998	Preserved Mushrooms	India
1998	Preserved Mushrooms	Indonesia
1999	Non-Frozen Apple Juice Concentrate	China, Peoples Republic
2000	Honey	Argentina
2000	Honey	China, Peoples Republic
2001	Individually Quick Frozen Red	Chile
2001	Spring Table Grapes	Chile
2001	Spring Table Grapes	Mexico
2001	Live Processed Blue Mussels	Canada
2002	Certain Frozen Fish Fillets	Vietnam
2002	Durum And Hard Red Spring Wheat	Canada

[11] In order to make this table easier to read, we have not reported the decisions on various cases and the names of non-named countries. The complete and detailed database can be obtained from the corresponding author.

Table 2 reports the share of total imports affected by the petition, that is, named countries' share in total imports. The table is at the Product level. The share of imports affected by antidumping claims varies from 8% to 99.56%. For products like Live Cattle, Fresh Crawfish Tail Meat, Grapes, Tomatoes and Kiwifruit more than 90% of total U.S.'s imports were claimed to be dumped in the antidumping petitions.

Table 2: Named Countries Share in Total Imports at the time of the Petitions.[12]

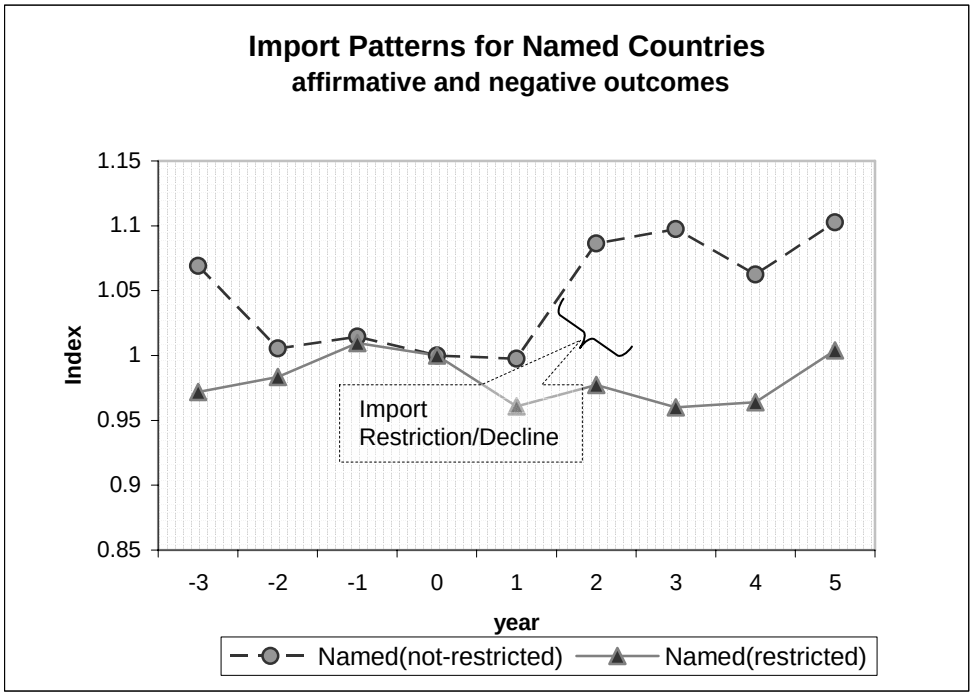
Product	Share of U.S. imports
Non-Frozen Apple Juice Concentrate	14.77%
Fresh And Chilled Atlantic Salmon	36.26%
Canned-Pineapple	49.20%
Live Cattle	99.56%
Tart Cherry Juice & Concentrate	8.16%
Freshwater Crawfish Tail Meat	98.42%
Certain Frozen Fish Fillets	13.43%
Individually Quick Frozen Red Raspberries	60.23%
Fresh Garlic	6.97%
Spring Table Grapes	97.69%
Honey	76.22%
Fresh Kiwifruit	97.68%
Preserved Mushrooms	84.44%
Live Processed Blue Mussels	88.69%
Non-Egg-Pasta	70.01%
Fresh Cut Roses	84.95%
Fresh Tomato	90.14%
Durum And Hard Red Spring Wheat	95.21%
Butter Cookies In Tin	8.00%

[12] 'Honey' includes two cases: one filed in 1994 and the other in 2000. Similarly, 'Fresh Atlantic Salmon' also consists of the cases filed in 1990 and 1997.

Trade Patterns

In this section, before carrying out a systematic econometric analysis, we glance at the aggregate trade pattern for both named and non-named countries. Figure 1 depicts the trends in trade volumes for two different groups. The horizontal axis measures the time periods, and year 0 corresponds to the year the petition was filed (cases and year of petition areas listed in Table 1). The vertical axis represents an import index in which the value of imports is normalized with respect to the year of petition (the import figure for year 0 is 1). We first calculate the index for each country and then sum this over all the countries in a group.

Figure 1: Trade Restriction - Import Patterns prior to and subsequent to the filing of an antidumping petition



Our first group represents countries that were named in the petition but whose imports were not restricted; that is, no final AD duty was imposed on imports. More specifically, there was a negative determination made for products imported from these 'named' countries. For this particular group, U.S. imports stabilized around the time of the petition but began to rise a year after the petition. The second group consists of countries that were named in the petition and for whom

an affirmative decision was made and AD duties were imposed. Facing AD duty restriction, these countries witnessed a fall in imports in the year after the petition, which we highlight as an import decline. It should be reinforced that the two groups we compare in this figure might or might not be exporting the same good to the U.S..

Figure 2: Trade Diversion - Import Patterns prior to and subsequent to the filing of an antidumping petition

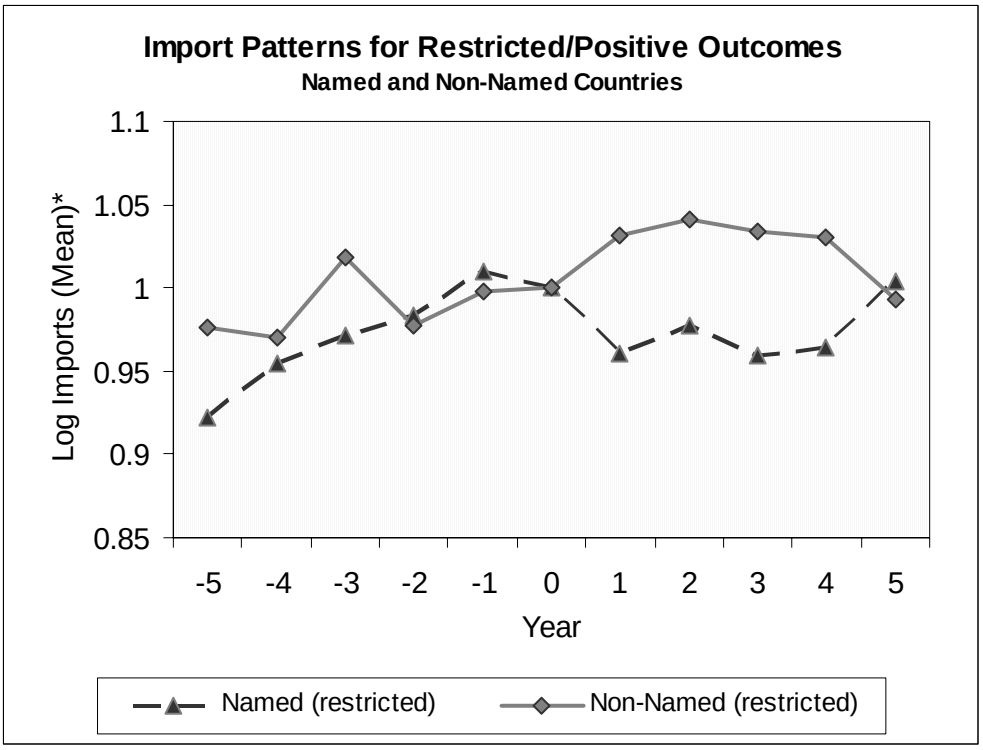


Figure 2 depicts the trends in trade for two groups. Named (restricted) consists of countries that were named in the petition and whose imports were restricted; that is final AD duty was imposed on imports. The second group Non-Named (restricted) consists of countries that were not named in the petition, and hence were in no danger of trade restrictions, but exported the same product to the U.S. that was named in the petition. Basically, the above graph shows trade patterns for

countries exporting the same product to the U.S., when only one was targeted by an AD duty, while the other was not.[13]

4. Estimation and Results

Empirical Model

Our main objective is to test whether antidumping duties restrict imports from countries specifically named in a petition, and if so, whether imports are diverted to countries that are not named. Employing first ordinary least squares estimation, we estimate the following reduced form equation:

$$\ln m_{i,t} = \beta_0 + \beta_1 \ln m_{i,t-1} + \beta_2 affirmative_i + \beta_3 negative_i + \phi_t year_t +$$

$$+ \sum_{j=1}^{4} \left[\delta_j D_j + \alpha_j (affirmative_i * D_j) + \psi_j (negative_i * D_j) \right]$$

where $t \in \{-3,-2,-1,0,1,2,3,4\}$.

The variable $lnm_{i,t}$ represents the natural log of imports for case i at time t. Time t=0 denotes the year that the petition was filed, t=1is the period of investigation as well as the outcome[14] and t=2 to t=4 representing the years following the final decision. The variable $lnm_{i,t-1}$ is included to control for the initial size of imports for the countries. Variables 'affirmative' and 'negative' are final decision dummies for affirmative and negative cases. The variable 'affirmative' takes the value of 1 for a case if the decision was affirmative and if duties were subsequently imposed. The variable 'negative' takes the value 1 if the decision was negative and no duties were imposed.[15] D_j are dummy variables for the years after the decision was made: D_1 is a dummy variable that takes the value of 1 if t=1 and so on. This dummy variable would pick up the trend in imports for the control group, which consists of all the cases with non-affirmative decision. We also interact 'affirmative' and 'negative' dummies with the D_j dummy in order to capture the time trend of imports for affirmative and negative cases; and we do this for both named and non-named countries. In estimating the above equation

[13] The term trade diversion is loosely defined here. The correct measure would be the difference between the actual imports by the named (restricted) countries, and what would have been imported without any restrictions (predicted by the control group).

[14] For all the cases, the year of investigation is also the year the final decision was made.

[15] We have not included the two cases that resulted in suspension, namely honey and tomatoes. Each of these suspended cases resulted in both price and quantity restrictions.

we control for macroeconomic influences such as exchange rate changes, changes in GDP and business cycles by including calendar year dummies $year_t$.

Additionally, we run an alternate set of regressions for both the named and the non-named countries where we also include product level fixed effects so as to control for any product level (cross-sectional) variations that cannot be captured by the year dummies. This would take into account any technological change, production costs or seasonal impacts on a particular product. While eliminating the individual effect, the FE estimator is, in this application, likely to be biased due to autocorrelation: first-differencing equation (1) above yields a first regressor correlated with the remaining time-dependent part of the differenced residual. To address this issue we use a GMM estimator, in particular the Arellano-Bond instrumental variable procedure. This method estimates a dynamic panel specification like above by first-differencing it in order to eliminate the individual error component u_i, and then estimating it by employing as instruments higher lags of the dependent and independent variables, as well as differences of regressors not subject to the above endogeneity concern.[16]

Results

Our results are presented in Table 3. The first column lists the regressor, while the results for the named country are found in the second and third columns by type of regression. Columns 4 and 5 report the results for countries not named in any petition. The coefficient for lagged import value is found to be positive and significant for all regression estimates depicting an overall upward trend in imports.

According to the results from column 2 we find, as expected, a very significant impact of antidumping duties on imports from countries named in a petition. The trade restricting effect is also quite high in magnitude. In the first year, imports from the named countries decreased by more than 64 percent[17], subsequent to an affirmative decision being given and antidumping duties imposed. Our result is significant at the 1% confidence interval level. For the years after the duty, particularly at t=2, t=3 and t=4 there is no significant change in the level of imports. A similar trend was also depicted in Figure 2.

These findings are also consistent with the results for our fixed effects and GMM models, which we believe to be more reliable in our set of regressions, given that

[16] The Arellano-Bond method for estimating dynamic panels is implemented in Stata by the command xtabond, which assumes away any second-order autocorrelation. See *Stata Reference Manual [Su-Z]*, p. 291-308.

[17] This is calculated as [exp (-1.041) -1].

they control for product level differences and serial correlation, respectively. Once we control for product level variations, the fixed effect model (reported in the third column) shows that imports from named countries decreased by 61 percent. In the Arellano-Bond model, the same figure stands at 52 percent.[18] Our orders of magnitude for trade restriction are comparable with Prusa's, who estimated that named country imports declined by approximately 54 percent after the imposition of antidumping duties.

In comparison, for cases where no duties were imposed (negative cases), there is no statistically significant change in imports from the named countries. Thus, there is apparently no strong indication of an 'investigation/harassment' effect: a negative dumping determination has no significant trade effects for both named and non-named. These results are in contrast to Prusa (2001) who finds that trade is restricted from the named countries even when there is a negative decision: the investigation effect. Prusa (2001) further concluded that even in the case where no antidumping duty was imposed, the value of imports declined by roughly 30% in the first year.

We find no evidence of trade diversion, as reflected in column 5. There is no significant increase in imports from non-named countries. This is different from the results driven by the manufacturing industries in Prusa (1997) and Prusa (2001), which find statistically significant trade diversion towards the non-named countries.[19] Again, Prusa (1997) and Prusa (2001), carry out the analysis for all the products, but since roughly 80% of the cases in the US[20] are filed in manufacturing, the results are driven by this sector. We do not find this to be true for our analysis which has concentrated solely upon the agricultural sector. For cases with affirmative decisions, there is no significant increase in imports from countries not named in a petition against an agricultural commodity.

There might be a concern related to the large market share of target countries such as China, for example. A lack of trade diversion might be generated by the fact that very large suppliers could hardly be replaced by sources not named in a particular investigation. However, this does not appear to be an issue in our sample. Table 4 in the Appendix shows that including a China dummy does not

[18] These figures are calculated as [exp (-0.941) -1] and [exp (-0.744) -1], respectively.
[19] Prusa (2001) further finds that imports from non-named countries increase by 36 percent, 28 percent and 47 percent respectively in the first (t1), second (t2) and third (t3) year of filing the case, this being significant at 1 percent confidence interval level. For the negative cases we see an increase in imports from non-named countries, but once we control for product level difference (FE) the effect is no longer significant.
[20] Source: WTO, years: 1995-2003.

alter the results and the robustness check can be repeated with a number of other supplier countries with similar results.

5. Conclusions

Utilizing data on all U.S. antidumping petitions imposed on agricultural commodities between the period 1990 and 2002, our analysis indicates that antidumping duties resulted in the anticipated benefit of restricting imports from countries named on the petition with the added benefit that little trade was diverted to countries not named on the petition. In contrast to previous papers which have amalgamated over all commodities, industrial and agricultural, our study finds that in the case of a negative decision, there was little change in the trade flows from both countries that were named in the petition and those that were excluded from the petition. In contrast to previous studies, we also find that the threat of an investigation alone does not seem to be an effective deterrent to agricultural exporters.

Our results suggest that antidumping measures are effective in protecting U.S. agricultural producers. This is true so long as the petition is granted and duties are imposed. Unlike Prusa (1997) we do not find any trade restrictive effect of negative decisions. It has become clear that much of the delay in completing trade negotiations has centered upon the inability to agree upon issues related to agriculture (McCalla (1993)). Knowledge on the impacts and ramifications of trade remedy laws in the agricultural sector may help to provide a step towards a better understanding of the trade talks, and to decide what other issues need to be addressed. It is generally accepted - at least by most academics - that trade remedy laws are an easy vehicle by which governments may appease domestic industry lobbies while still adhering to international liberalization commitments. Whether trade remedy laws, particularly antidumping legislation, are an effective vehicle for this purpose is debatable. The analysis in this article is one effort to better inform this debate.

Table 3: Results – Antidumping Action and Value of Imports

Dependent variable: ln value of imports	**NAMED**			**NON-NAMED**		
	(1) OLS	(2) FE	(3) AB	(4) OLS	(5) FE	(6) AB
ln value imports in t-1	0.889	0.832	0.459	0.893	0.892	0.265
	(29.89)**	(19.38)**	(5.50)**	(91.12)**	(89.22)**	(5.14)**
affirmative	-0.101	0.490	0.825	0.276	0.283	-0.648
	(0.42)	(1.08)	(2.03)*	(0.47)	(0.40)	(0.52)
negative	-0.029	0.000	0.000	-0.088	0.000	0.000
	(0.11)	(.)	(.)	(0.15)	(.)	(.)
negative*t1	-0.018	0.066	-0.093	0.513	0.289	0.313
	(0.06)	(0.20)	(0.29)	(2.68)**	(1.08)	(1.11)
negative*t2	0.061	0.179	0.057	0.125	-0.056	0.132
	(0.19)	(0.52)	(0.17)	(0.64)	(0.21)	(0.46)
negative*t3	0.058	0.188	-0.058	0.258	0.119	0.252
	(0.18)	(0.53)	(0.17)	(1.28)	(0.41)	(0.86)
negative*t4	0.069	0.280	0.169	0.600	0.676	0.581
	(0.15)	(0.55)	(0.35)	(1.62)	(1.80)	(1.56)
affirmative*t1	-1.041	-0.941	-0.744	0.074	0.118	0.179
	(4.76)**	(4.13)**	(3.50)**	(0.73)	(1.09)	(1.93)
affirmative*t2	-0.052	-0.036	-0.237	0.009	0.077	0.186
	(0.25)	(0.16)	(1.08)	(0.09)	(0.70)	(1.92)
affirmative*t3	-0.368	-0.255	-0.521	-0.002	0.085	0.292
	(1.59)	(0.97)	(2.06)*	(0.02)	(0.69)	(2.67)**
affirmative*t4	-0.026	-0.006	-0.281	-0.019	0.068	0.290
	(0.10)	(0.02)	(1.00)	(0.17)	(0.51)	(2.43)*
year dummies	yes	yes	yes	yes	yes	yes
Constant	1.571	1.992	0.000	0.517	0.951	0.000
	(3.63)**	(3.26)**	(.)	(0.86)	(1.54)	(.)
Observations	185	185	145	2223	2223	1578
R-squared	0.90	0.75		0.80	0.79	

Notes: Absolute value of t statistics in parentheses;
AB regressors are differenced
* significant at 5%; ** significant at 1%
{t=-4..0..4}

Appendix:

Table 4: Results – Antidumping Action and Value of Imports (China dummy)

Dependent variable: ln value of imports	**NAMED**			**NON-NAMED**		
	OLS	FE	AB	OLS	FE	AB
ln value imports in t-1	0.890	0.654	0.459	0.892	0.390	0.265
	(28.45)**	(11.17)**	(5.48)**	(90.73)**	(18.45)**	(5.14)**
affirmative	-0.093	0.726	0.825	0.271	0.561	-0.648
	(0.36)	(1.66)	(2.02)*	(0.46)	(0.47)	(0.52)
negative	-0.021	0.000	0.000	-0.086	0.000	0.000
	(0.07)	(.)	(.)	(0.14)	(.)	(.)
negative*t1	-0.018	0.026	-0.093	0.510	0.084	0.313
	(0.06)	(0.08)	(0.29)	(2.66)**	(0.34)	(1.11)
negative*t2	0.061	0.115	0.057	0.122	-0.160	0.132
	(0.19)	(0.34)	(0.17)	(0.62)	(0.62)	(0.46)
negative*t3	0.058	0.078	-0.058	0.254	-0.090	0.252
	(0.18)	(0.23)	(0.17)	(1.26)	(0.34)	(0.86)
negative*t4	0.070	0.297	0.169	0.601	0.136	0.581
	(0.15)	(0.61)	(0.35)	(1.62)	(0.39)	(1.56)
affirmative*t1	-1.042	-0.902	-0.744	0.076	0.137	0.179
	(4.74)**	(4.11)**	(3.49)**	(0.75)	(1.40)	(1.92)
affirmative*t2	-0.053	-0.201	-0.237	0.011	0.162	0.186
	(0.25)	(0.88)	(1.08)	(0.11)	(1.61)	(1.92)
affirmative*t3	-0.368	-0.466	-0.521	-0.000	0.222	0.292
	(1.58)	(1.81)	(2.05)*	(0.00)	(1.95)	(2.67)**
affirmative*t4	-0.026	-0.270	-0.281	-0.018	0.186	0.290
	(0.10)	(0.92)	(1.00)	(0.16)	(1.51)	(2.43)*
year dummies	yes	yes	yes	yes	yes	yes
China dummy	yes	yes	yes	yes	yes	yes
Constant	-47.725	-76.726	0.000	-36.695	-56.764	0.000
	(0.86)	(1.15)	(.)	(1.28)	(1.72)	(.)
Observations	185	185	145	2223	2223	1578
R-squared	0.90	0.58		0.80	0.20	

Notes:

All regressions include a dummy for China
Absolute value of t statistics in parentheses
AB regressors are differenced
* significant at 5%; ** significant at 1%; {t=-4..0..4}

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