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Impact of Latin-American and Caribbean Antidumping Measures on Chinese Exports

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Abstract

This paper uses customs transaction data covering all Chinese exporters and the World Bank's antidumping database to investigate how they responded to Latin-American and Caribbean (LAC) antidumping measures during 2000-2012 period. The paper uses the difference-in-differences identification strategy, and finds a substantial trade-dampening effect of these measures at the product level which operates through the intensive margin (i.e., a decrease in export volume per exporter) rather than the extensive margin (i.e., a decrease in the number of exporters) on average. Although we do not find a significant extensive margin effect, we still observe a positive number of exporters exited the LAC market after antidumping measures, specifically, less productive firms and trade intermediaries are more likely to exit the market. The pattern of Chinese exporters exiting the protected market was the same in ARG, BRA, MEX and COL. The antidumping measures taken by different countries had different impacts on Chinese exporters. MEX and BRA antidumping measures not only had an intensive margin but also an extensive margin effect on Chinese exports. ARG antidumping measures only had an intensive margin effect. COL antidumping measures had no effect. The paper also finds that MEX antidumping measures caused a significant increase in the export prices of the affected Chinese products, but no significant increase in the export prices for the other three countries. The paper does not find any shift in the destinations of the affected Chinese exports.

Keywords: Antidumping investigations; Difference-in-differences estimation; Extensive and intensive margins; Trade deflection;

JEL Codes: F13; D22; F14; L25

1 Introduction

Since 1995, more and more countries have become members of the World Trade Organization (WTO), which, with several rounds of tariff reductions, has resulted in increased international trade. Meanwhile, there has been persistent and ever increasing use of contingent trade protection policies (e.g., Prusa, 2001; Zanardi, 2006; Bown, 2011). Governments around the world have used antidumping measures, which are permissible under the WTO rules and regulations, to protect their firms and industries, especially in developing countries. More than 40 members of the WTO have become active antidumping users, led by developing countries, which have been the most frequent users since 1995 (Bown, 2007). For example, Argentina opened only 44 antidumping investigations before 1995; between 1995 and 2014, that number was 302. Brazil, Colombia, and Mexico have the same uptrend (see Table 1). Most of the antidumping investigations initiated by these four countries were opened against developing countries.

The antidumping literature suggests that antidumping should have a significant impact on trade, with respect to both its quantity and price dimensions. Most studies focus on its impact on developed countries. Prusa (2001) argues that the active use of antidumping duties is generally expected to reduce imports. Using extremely disaggregated trade data from the United States, he finds that antidumping actions have a very large effect on imports. Prusa estimates that, on average, import quantities fall by almost 70 percent and import prices rise by more than 30 percent after antidumping protection. The study also finds that antidumping protection increases imports from non-named countries.

More recently, Cohen-Meidan (2013) analyzes U.S. antidumping measures imposed on different trade partners in the cement industry. The study shows that only some antidumping cases increase domestic prices and production, and that the imports of antidumping products are substituted by imports from other countries. Besedes and Prusa (2013) analyze a rich panel data set of products involved in U.S. antidumping cases, looking at the overall effect at the product level over time. The study finds evidence that antidumping protection reduced imports. The study also highlights that the first phase of an antidumping investigation usually has a stronger detrimental effect than the effective imposition of duties. Vandenbussche and Zanardi (2010) empirically test the effect of antidumping duties on aggregate world trade flows using a gravity model approach. The study finds that antidumping actions lead to a reduction in annual aggregate trade by about 6.7 percent. The authors show that antidumping measures have a trade-chilling effect on aggregate import volumes, but the impacts are heterogeneous across sectors. In addition, "new users" (developing countries that become active antidumping users) experience a stronger negative impact on aggregate imports as a result of antidumping measures, substantially offsetting the increase in trade volumes derived from trade liberalization. Egger and Nelson (2011) base their analysis in a gravity model framework. They find a negative but modest effect of antidumping measures on aggregate trade volumes and welfare, with stronger effects in the case of new developing country users. Ganguli (2008) investigates Indian antidumping actions and finds that imports from named countries fall significantly, while imports from non-named countries increase. These contributions to the literature demonstrate how the country-product-specific nature of antidumping protection imposes different impacts on different markets, and also different externalities on non-targeted country-product pairs.

A small but growing part of this literature focus on the effects of antidumping on

Chinese exporters. Park (2009) studies Chinese trade diversion effects of antidumping actions. The results show that antidumping protection has significant trade depression and trade diversion effects. Bown and Crowley (2010) analyze the effects of U.S. and EU antidumping duties on China's exports, and find that trade depression effects are weak and trade deflection effects are significant. Li and Whalley (2010) analyze Chinese industry reactions to antidumping actions. They find that antidumping actions by developed and developing countries negatively impact industrial firm numbers and exports. Lu, Tao, and Zhang (2013) use a difference-in-differences (DID) approach to estimate the effect of antidumping investigations on targeted exporters. Using monthly export data, the study investigates how Chinese exporters respond to U.S. antidumping investigations. The authors demonstrate that the substantial negative impact on export volume is essentially driven by a decrease in the number of exporters. The least productive firms are forced to exit the market, increasing the market power and productivity of the surviving firms.

Only a few studies in this literature have focused on the impact of antidumping measures by developing countries, especially those adopted by Latin American and Caribbean (LAC) countries. This paper helps to fill this gap by analyzing the impact of antidumping measures adopted by LAC countries against China, using yearly firm-product level data. The focus is on Brazil, Colombia, Argentina and Mexico—countries which employ most of the region's antidumping measures against China and which are also the destination of most of China's exports to the region. The paper covers the cases filed during 2000-12, when bilateral trade was booming.

The China-LAC case is of particular interest, because, for one, China, as it swiftly rose to the position of the world's largest exporter, has also become the world's biggest target for antidumping investigations. Second, because LAC has made a significant contribution to these developments, both as an importer and as a proponent of antidumping cases against China. LAC accounted for approximately 20 percent of the cases filed between 1995 and 2014, a share higher than that of the U.S. or the European Union, which are among China's largest trade partners (WTO Antidumping Gateway).

LAC's prominence in China's antidumping frictions can only be understood against the background of a booming bilateral trade. In just 10 years, two economies that had barely traded—let alone exchanged investments—have become major trade partners. Driven by a booming exchange of commodities for manufacturing goods, trade between China and LAC grew at a breakneck average annual rate of 31.2 percent between 2000 and 2011, only briefly interrupted by the financial crisis in 2009. In this process, China became LAC's second largest trading partner, with approximately 13 percent of its trade, and is now among the largest trading partner of countries such as Argentina, Brazil, Colombia, and Mexico. Although at more modest levels, LAC's share of China's trade also gained substantially, reaching 6 percent in 2015, with the region becoming one of China's main suppliers of key raw materials such as copper, iron ore, and soybeans. This booming trade, in particular the rapid influx of Chinese manufacturing imports, has prompted some of the largest manufacturing producers in the region to resort to antidumping measures in an attempt to protect their firms from dislocation. From 1995 to 2014, Argentina, Mexico, Brazil, and Colombia initiated 95, 53, 49, and 26 antidumping investigations against China, respectively, leaving no doubt about the direction of the trend (Figure 1).

Despite the importance of these measures, there is virtually no analysis in the literature about their impact on trade flows, particularly at the level of exporters. Several

questions about the behavior of the affected exporters remain unanswered: Is this kind of non-tariff barrier effective in stopping Chinese manufacturing exports to LAC? How do Chinese exporters respond to antidumping measures? Is there a significant shift in the destinations of the exports after antidumping?

This study draws on data from two sources: China Customs data (2000–12) and the World Bank’s Global Antidumping Database. From the first data set, information was obtained on yearly export transactions at the Chinese Harmonized System (HS) 8-digit product category level by all Chinese exporters to Argentina, Brazil, Colombia, and Mexico, including export volume, export value, and exporter identity. The second data set was used to compile all the antidumping cases carried out by Argentina, Brazil, Colombia, and Mexico against Chinese exporters at the HS 10-digit or HS 8-digit product category level over 2000–12, including information such as the affected products, initiation date, final determination date, and final decision. The two data sets were then combined at the HS 6-digit product category level, which is common to China and LAC.

The identification strategy relies on the comparison of outcome variables (such as export volume, number of exporters, and export price) for exporters in the affected product category (the treatment group) with the same variables for those in the unaffected product category (the control group) before and after antidumping. Two alternative control groups are used. First, for an HS 6-digit product subject to antidumping investigation, the control group is all other unaffected HS 6-digit products in the same HS 4-digit category. Second, following Blonigen and Park (2004), a matched control group is constructed based on the likelihood of products being subject to an antidumping investigation..

The main findings are summarized as follows:

- There is a substantial trade-dampening effect of antidumping measures at the HS 6-digit product level on the final decision year of LAC antidumping on average. This trade-dampening effect mainly comes from Argentina, Brazil, and Mexico. Brazil and Mexico’s antidumping measures against Chinese products are the most successful among the LAC countries. Colombia’s antidumping measures are not efficient in restraining the concerned Chinese exports, and have no significant trade-dampening effects on the affected Chinese products.
- On average, the analysis finds negative extensive margin effects (i.e., a decrease in the number of exporters) of LAC’s antidumping measures on Chinese exporters, but the effects are not very significant. The analysis finds statistically significant and negative extensive margin effects for Brazil and Mexico’s antidumping measures on Chinese exporters. It does not find significant negative extensive margin effects for Argentina and Colombia’s antidumping measures on Chinese exporters. Thus, Brazil and Mexico’s antidumping measures are the most successful against Chinese exporters; Argentina and Colombia’s antidumping measures are not as successful.
- Within the same product categories, less productive exporters are more likely to exit the LAC market after the countries undertake antidumping measures. Direct exporters are found to be less likely than trade intermediaries to exit the LAC market. The likelihood of exiting is similar for single-product firms and multi-product firms, and the pattern is the same for the four LAC countries.
- The analysis finds significant intensive margin effects (i.e., decrease in export volume per exporter) of LAC’s antidumping measures on Chinese surviving exporters

on average. Argentina, Brazil, and Mexico's antidumping measures have significant intensive margin effects on Chinese surviving exporters, but Colombia's antidumping measures do not.

- Within the same country, antidumping measures targeted at consumer goods have more trade dampening and intensive margin effect on average. For Argentina, antidumping measures targeted at consumer goods have more trade dampening and intensive margin effect. For Brazil, antidumping measures targeted at consumer goods have more trade dampening and extensive margin effect. For Mexico, antidumping measures targeted at consumer goods have more trade dampening, extensive margin and intensive margin effect. For Mexico and Colombia, antidumping measures targeted at consumer goods repell exporters have less adjustment on price than non-consumer goods after antidumping.
- On average, the analysis finds little freight on board (F.O.B) export price adjustment; it is positive but not statistically significant. Only Mexico's antidumping measures have a significant and positive effect on the F.O.B export price of Chinese exporters. Argentina, Brazil, and Colombia's antidumping measures have no impact on the export prices of the affected Chinese exporters.
- The analysis finds little trade deflection effect (i.e., shifting exports of the affected products to markets other than LAC) on average; it is positive but not statistically significant. There is a small trade deflection effect for Argentina, Brazil, and Colombia, but not for Mexico. Examination of the trade diversion effect of antidumping to LAC's largest trade partner (the United States) found no significant results on average for the four LAC countries studied.

These results are found to be robust in a series of checks on various potential data and estimation issues, such as exclusion of processing trade, exclusion of outlying observations, exclusion of antidumping cases under investigation by other countries, exclusion of processing traders, check for aggregation bias, control for China's WTO accession, and differential impacts across products with different import demand elasticities (see section 5.6 for details)

The results suggest that LAC's antidumping measures on Chinese products caused an overall trade-dampening effect on average, substantially decreasing the export volume of the affected Chinese products. On average, the trade-dampening effect operated mainly at the intensive margin, but not at the extensive margin. This means that LAC's antidumping measures against Chinese products did not significantly wipe out many Chinese exporters on average, but the antidumping measures caused a significant decrease in export volume for the surviving Chinese exporters. On average, the extensive margin effect is not statistically significant. However, compared with direct exporters, less productive firms and trade intermediaries were more likely to exit the LAC markets after antidumping measures were taken. And, on average, the LAC antidumping measures did not cause an increase in the export prices of Chinese exporters. The findings do not show a significant trade deflection effect of antidumping on exports of the affected Chinese products.

Antidumping measures of the different LAC countries had different impacts on Chinese exporters. Brazil and Mexico's antidumping measures were the most successful, causing a substantial decrease in the export volume of the affected Chinese products. On the

one hand, the antidumping measures of these two countries wiped out many weaker Chinese exporters from the two markets. On the other hand, the antidumping measures caused the surviving Chinese exporters in these two markets to decrease export volume substantially. Argentina’s antidumping measures did not wipe out a significant number of Chinese exporters from Argentina’s market, but did cause a decline in the export volume of the surviving Chinese exporters. Colombia’s antidumping measures were not very useful for restraining the affected Chinese exports. As for the export prices of the affected Chinese products, only Mexico’s antidumping measures caused a significant increase in the export prices of Chinese exporters. No significant adjustments in Chinese export prices after antidumping were found for the other three countries.

The rest of the paper is organized as follows. Section 2 describes the institutional background of antidumping investigations in LAC. The estimation strategy is discussed in section 3 and the data are reported in section 4. Section 5 presents the empirical findings. The paper concludes with section 6.

2 Institutional Background of Antidumping Investigations in the LAC

This section briefly describes the institutional context of antidumping investigations in Argentina, Brazil, Colombia, and Mexico, and its relevance to the identification strategy (Staiger and Wolak, 1994).

In these four countries, the antidumping procedures are similar. First, some companies or individuals apply for antidumping protection, then the government (different departments for different countries) decides whether to initiate the case within 30 days (Brazil), 30–70 days (Mexico), or 45 days (Argentina). Once an antidumping petition is filed, the preliminary determination has to be made within 130 days (Brazil and Mexico) or 200 days after initiation (Argentina). If the determination is negative, the investigation is terminated. Otherwise (i.e., where the preliminary determination is affirmative), the importers need to pay the preliminary antidumping duties four to six months before the final antidumping decision is made. The final decision needs to be made 12–18 months after the initial petition. The importers need to pay the antidumping duties within seven days after the final decision is made.

In summary, for these four countries, the antidumping procedures are similar, and entire antidumping procedure lasts more than 12 months. For this study, the final decision date was chosen as the DID strategy cutoff point. According to the literature (e.g., Staiger and Wolak, 1994; Prusa, 2001; Besedes and Prusa, 2013), antidumping measures have a harassment effect. That is, even if the case is rejected, the antidumping phase of the investigation has a detrimental effect on imports. That is why the following figures (Figure 2-6) show that the antidumping already has some effect before the final antidumping decision. Section 5 provides more details.

3 Estimation Strategy

To identify the possible effects of antidumping measures, the DID estimation strategy is employed at the product (defined at the HS 6-digit level) and firm-product levels. Two sources of variation are exploited: time variation (before and after a critical date in the

antidumping investigation process) and cross-sectional variation (affected products/firms or the treatment group, and unaffected products/firms or the control group). The identification relies on comparison of outcome variables for the treatment group with those for the control group before and after the relevant stages of the antidumping investigation process.

Two alternative control groups are constructed. The first control group encompasses all unaffected products/firms in the HS 4-digit product category to which the affected products/firms belong (referred to as *Control Group 1*). The second control group is a matched group (referred to as *Control Group 2*) which is constructed using the method employed by Blonigen and Park (2004). First the probability of a product being subject to antidumping investigation is estimated. (See Table A.1 in the Appendix for the logit regression results.) The variables used to predict the probability of being investigated for dumping include the import value of the product, the growth rate of real gross domestic product in LAC, an exchange rate index, a dummy variable indicating whether the product was previously subjected to antidumping investigation, and an HS 4-digit product dummy, similar to those used by Blonigen and Park (2004). The matched control group comprises unaffected products with predicted probabilities equal to at least the 75th percentile of the predicted probability of the treatment group (see also Konings and Vandenbussche, 2008; Pierce, 2011).

The estimation specification at the product level takes the following form

$$y_{cpt} = \beta Treatment_p \times Post + \lambda_p + \lambda_t + \lambda_c + \varepsilon_{pt}, \quad (1)$$

where y_{cpt} is the outcome variable (i.e., logarithm of export volume; logarithm of number of exporters; logarithm of export price; logarithm of total export volume to countries other than LAC; and logarithm of total export volume to LAC's largest trade partner, the United States) for product p in country c in year t ; $Treatment_p$ is a dummy variable taking the value 1 if product p belongs to the treatment group (i.e., is being investigated for dumping) and 0 otherwise; $Post$ is a dummy variable taking the value 1 if it is after the antidumping final decision and 0 otherwise. λ_p is the product dummy capturing all time-invariant product characteristics; λ_t is the year dummy capturing effects common to all products in the same month; λ_c is the country dummy capturing effects common to all products in the same country; and ε_{pt} is an error term. To deal with potential heteroskedasticity and serial correlation, standard errors are clustered at the product level (see Bertrand, Duflo, and Mullainathan, 2004).

The estimation specification for the firm-product level analysis is similar to the specification for the product level, with the only change being replacement of the outcome variable y_{cpt} at the product level with that at the firm-product level.

The coefficients of interest in this study are β . Consistent estimation hinges on the assumption that the difference in the error term of the pre- and post-antidumping investigation period for the treatment group is the same as the corresponding one for the control group, that is,

$$E[\Delta\varepsilon_{pt}|Treatment_p = 1] = E[\Delta\varepsilon_{pt}|Treatment_p = 0].$$

With panel data for multiple periods and multiple groups, we conduct two validity checks following Angrist and Pischke (2009) and Imbens and Wooldridge (2009). The first is a check on whether there is any difference in time trends between the treatment and control groups before the antidumping investigation. The second allows for the possibility that different HS 6-digit products have different time trends. Section 5.6 provides more details.

4 Data

The study draws on data from two sources. The first data source is the China Customs data for 2000–12, part of which (data for 2000–06) was generously provided by the China Data Center at Tsinghua University, Beijing, and part (data for 2007–12) provided by the School of Economics of Shanghai University of Finance and Economics.¹ This data set covers the yearly import and export transactions of every Chinese exporter and importer, including product information (classified at the Chinese HS 8-digit level), trade volume, trade value, identity of the Chinese exporter or importer, and export destinations or importing countries. As the analysis focuses on antidumping cases taken by four countries in LAC (Argentina, Brazil, Colombia, and Mexico) against Chinese exporters, information about export transactions by Chinese exporters to these four countries was extracted.

The second data source is the World Bank’s Global Antidumping Database (GAD), covering all antidumping cases around the world from 1980 to 2014 (Bown, 2010). GAD has detailed information on each antidumping case, such as product information (classified at the HS 10-digit level for Argentina and Colombia, and at the HS 8-digit level for Brazil and Mexico), initiation date, and final decision and final determination dates. For this analysis, information was collected on all affirmative antidumping cases against China for these four countries during the sample period (i.e., 2000–12).

The two data sets (i.e., the China Customs data and the GAD data) were matched at the HS 6-digit level, the most disaggregated level at which the two data sets are comparable. By doing so, the study essentially aggregated export information in the China Customs data from the Chinese HS 8-digit level to the HS 6-digit level, and aggregated LAC antidumping cases (against China) from the LAC HS 10-digit level to the HS 6-digit level.

There were a total of 79 affirmative antidumping cases against Chinese exporters for these four countries during 2000–12. These cases include 32 cases from Argentina, 22 cases come from Brazil, 13 cases come from Colombia, and 12 cases come from Mexico.

The matched panel data for 2000–12 contain 7,595 country-product-year-level observations and 171,567 country-firm-product-year-level observations. Among the 632 HS 6-digit product categories included in the matched data, 133 product categories were successfully subject to antidumping duties.² However, as antidumping investigations take place at the LAC HS 10-digit or HS 8-digit level (similar to the Chinese HS 8-digit level), there may be concern about potential aggregation bias, that is, some adjustments taking place at the HS 10-digit level could not be detected at the HS 6-digit level. To address this concern, a robustness check was conducted by examining whether there are differential responses for HS 6-digit products with different numbers of HS 10-digit products. The premise is that adjustments at the HS 10-digit level should be relatively easier for those HS 6-digit products with more HS 10-digit products. Hence, a finding of insignificant differential responses would indicate that the concern about aggregation bias is not a serious one in this setting.

Other countries across the world may conduct antidumping investigations into the same products as those investigated by LAC in the same period, which could confound the results. To alleviate this concern, the study experimented by excluding cases (i.e., four in total) also being investigated for dumping in other countries. Finally, as some

¹The year 2000 is the earliest year when China Customs released this monthly trade transaction data set; 2012 was the latest year for which the data set was available for this study.

²Note that one antidumping case may involve several HS-6 digit product categories.

Chinese exporters conduct processing trade with LAC companies, robustness checks were conducted by excluding processing trade from the sample.

5 Empirical Findings

This section first provides five baseline empirical findings on how exporters respond to antidumping investigations, in subsections 5.1 to 5.5. It then presents a series of robustness checks on the validity of the DID estimation and other econometric concerns, in subsection 5.6.

5.1 Product-Level Quantity Response

The analysis begins by examining the possible trade-dampening effect of antidumping investigations at the product level. Before presenting the regression results regarding the main specification, time trends of export volume are plotted for the treatment and control groups over the pre- and post-antidumping investigation periods in Figure 2. The "0" on the horizontal axis indicates the year of the final antidumping decision. A few results emerge from Figure 2. First, there is clearly an upward trend in the export volumes of the treatment and control groups before the LAC antidumping investigation, which is consistent with the general trend of increasing Chinese exports to LAC in the past two decades. Second, the treatment and control groups exhibit similar time trends before antidumping, implying that there is no selection on the outcome variable and hence alleviating concerns about the validity of the DID estimation. Third, there is a clear dampening effect of antidumping investigation on the export volume of the treatment group, consistent with findings in the literature (e.g., Prusa, 2001; Vandebussche and Zanardi, 2010; Egger and Nelson, 2011). In addition, the decline in export volume begins to take place before the affirmative final determinations. The reason is that the entire antidumping procedure lasts 13 months at least, and firms involved in antidumping investigations must pay a deposit after the preliminary affirmative dumping decision.

Regression results corresponding to main equation are reported in Columns 1 and 2 of Table 2, where *Control Group 1* and *Control Group 2* are used, respectively. The findings show that affirmative antidumping has negative and statistically significant impacts on the export volume of antidumping products. In terms of magnitude, affirmative antidumping leads to a decrease in export volume of antidumping products by around 41.61 percent (42.82 percent) compared with the control group products after antidumping.

Table 3 shows the impact of antidumping on the export volume of antidumping products for each country. The table shows that Mexico's antidumping measures against China are the most successful. The export volume of Chinese antidumping products decreased about 76.64 percent after Mexico implemented antidumping measures. Brazil and Argentina's antidumping measures against Chinese products led to 59.55 and 50.04 percent decreases in export volumes, respectively. Colombia's antidumping measures against China had a negative but not statistically significant impact on the export volume of the affected Chinese products.

5.2 Extensive Versus Intensive Margins

The previous subsection documented a substantial dampening effect of antidumping investigations on export volume, especially for Mexico and Brazil. Next, this effect is anat-

omized by investigating its underlying mechanism. This subsection looks at the effect of antidumping investigations on the number of exporters to LAC (the extensive margin effect) and the average export volume for surviving exporters (the intensive margin effect).

Figures 3 plots time trends of the number of exporters for the treatment and control groups over the pre- and post-antidumping years. It shows that LAC's antidumping measures caused a small decrease in the number of exporters. Figure 4 presents time trends of export volume for the surviving exporters and control groups over the pre- and post-antidumping years. Clearly, there is a significant decline in the export volume of surviving exporters compared with the control groups after the LAC antidumping measures were implemented.

The regression results for the extensive margin effects of antidumping are reported in columns 1 and 2 in Table 4. The findings show that LAC's antidumping measures did not have a significant impact on the number of exporters on average. For Control Group 2, there is a 9.61 percent decrease in the number of exporters (at the 10 percent statistical significance level). The regression results in columns 1 and 2 in Table 4 are consistent with the findings revealed in Figure 3, implying that LAC's antidumping measures did not, on average, have a strong extensive margin effect. Columns 3 and 4 in Table 3 report the regression results for the intensive margin effects of LAC's antidumping measures. The findings show that LAC's antidumping measures had negative and statistically significant impacts on export volume per surviving exporter. These results are consistent with the findings in Figure 4. In terms of economic magnitude, affirmative antidumping measures led to a decrease in export volume per surviving exporter of around 18.94 percent (18.86) after antidumping.

Table 5 shows the extensive and intensive LAC antidumping effects for each country. Columns 1 to 8 show the extensive and intensive antidumping effects for Control Group 1 for Argentina, Brazil, Mexico, and Colombia, respectively. Columns 9 to 16 show the extensive and intensive antidumping effects for Control Group 2 for Argentina, Brazil, Mexico, and Colombia, respectively. From columns 1, 2, 9, and 10 in Table 5, Argentina's antidumping does not have a significant extensive effect on Chinese exporters, but it does have a significantly negative intensive effect, a decrease of about 15.97 percent in export volume per Chinese surviving exporter. Columns 3, 4, 11, and 12 in Table 5 show that Brazil's antidumping measures have statistically significantly negative extensive and intensive effects on Chinese exporters. In terms of magnitude, the number of Chinese exporters decreases 22.35 percent (23.97 percent) after Brazil's antidumping measures. The export volume decreases 24.04 percent (24.27 percent) per Chinese surviving exporter. Columns 5, 6, 13, and 14 in Table 5 show that Mexico's antidumping measures have significantly negative extensive and intensive effects on Chinese exporters. In terms of magnitude, the number of Chinese exporters decreases 40.79 percent (40.25 percent) after Mexico's antidumping measures. Export volume for Chinese surviving exporters decreases around 40.07 percent (42.42 percent) after Mexico's antidumping measures. Columns 7, 8, 15, and 16 in Table 5 show that Colombia's antidumping measures have a significant and positive extensive effect, an increase of about 32.84 percent (26.87 percent) after Colombia's antidumping measures, but no significant intensive effect on Chinese exporters.

5.3 Heterogeneous Responses

The previous subsection documented that for some countries, a significant part of the AD was attributed to the decrease of the number of exporters. This subsection investigates what kinds of exporters are more likely to exit the export market after antidumping measures have been implemented. The recent trade development literature centers on how firm heterogeneity, in particular firm productivity, affects exporting behavior. Hence, this subsection starts by looking at whether more productive exporters are less likely to exit after antidumping. Other recent studies in international trade have gone beyond firm productivity by looking at different types of exporters, such as trade intermediaries versus direct exporters, and single-product versus multi-product direct exporters. Following these lines of studies, this subsection also looks at the possible differences in the likelihood of exit among these types of exporters.

5.3.1 Firm Productivity

Unfortunately, because of data limitations, there is no information available from the China Customs data to measure firm productivity directly.³ Instead, export volume is used as a proxy for firm productivity.⁴

Instead, export volume is used as a proxy for firm productivity. (denoted as *Exit*). The regression specification is as follows:

$$Exit_{fp} = \gamma \cdot ExportVolume_{fp} + \lambda_p + \varepsilon_{fp}, \quad (2)$$

where the control of product dummy (λ_p) allows comparing the likelihood of firms exiting within a narrowly defined product category (i.e., HS 6-digit product level). The specification (2) is estimated using the Probit model.

As shown in column 1 in Table 6, among all exporters, exporters with larger export volumes are less likely to exit after antidumping. The results hold for the control for different types of exporters (i.e., columns 3 and 5 in Table 6). The results also hold for different countries (Table 7).

Explanation: The observed relation between productivity and likelihood to exit is in line with the firm heterogeneity literature. Specifically, in the case of a per-period fixed cost of exporting, the Melitz (2003) model shows that when facing negative shocks induced by antidumping investigations, exporters experience a fall in their revenue. This makes some less productive exporters unable to recover the per-period fixed cost of exporting and thereby forces them to exit from the LAC market. In a world without fixed costs of exporting, the Melitz and Ottaviano (2008) model suggests that the negative shock causes a decrease in exporters' markups, as a result of which some less productive exporters incur losses and hence exit the LAC market.

³The China Customs data only have information on output (i.e., export volume and export value), but not information on inputs (i.e., labor, capital, and materials), which prohibits the calculation of firm productivity.

⁴Export price is not a good proxy for firm productivity due to a number of reasons. Firstly, more productive exporters may charge lower prices due to their lower production costs; but they could also charge higher prices because of the higher quality of their goods. Secondly, higher export prices may diminish the likelihood of a firm being imposed by antidumping duties, and hence have a direct influence on its exit likelihood, which compounds the results using export price as a proxy for firm productivity.

5.3.2 Trade Intermediaries versus Direct Exporters

Table 6 reports the regression results on the differences in the likelihood of exiting the LAC market between trade intermediaries and direct exporters. The regressor of interest, *Trade Intermediary*, takes the value 1 if the exporter is a trade intermediary and 0 otherwise.

As shown in columns 2 and 3 in Table 6, *Trade Intermediary* has positive and statistically significant estimated coefficients, suggesting that trade intermediaries are more likely to exit the LAC market for the affected products than are direct exporters after antidumping. These results are robust to the control of firm productivity (proxied by export volume).

5.3.3 Single-Product versus Multi-Product Direct Exporters

Table 6 also shows the relative likelihood of exit from the LAC market for the affected products between single-product and multi-product direct exporters following antidumping measures. The key regressor is *Single Product*, which takes the value 1 if the direct exporter is a single-product direct exporter to the LAC and 0 otherwise.

Column 4 in Table 6 reports the results on the likelihood of exit after antidumping. The findings show that *Single Product* does not have a statistically significant estimated coefficient.

Table 7 shows the same exiting pattern for Argentina, Brazil, Colombia, and Mexico. Less productive firms and trade intermediaries are more likely to exit the market after antidumping measures are taken.

5.3.4 Consumer goods versus Non-consumer goods

Table 8 shows the heterogeneous effects of LAC's antidumping measures targeted at consumer goods versus non-consumer goods. The findings indicate that antidumping measures targeted at consumer goods have more trade dampening and intensive margin effect, on average. For Argentina, antidumping measures targeted at consumer goods have more trade dampening and intensive margin effect. For Brazil, antidumping measures targeted at consumer goods have more trade dampening and extensive margin effect. For Mexico, antidumping measures targeted at consumer goods have more trade dampening, extensive margin and intensive margin effect. For Mexico and Colombia, antidumping measures targeted at consumer goods repel exporters have less adjustment on price than non-consumer goods after antidumping (Table 9).

5.4 Price Response

This subsection analyzes the possible price response of LAC antidumping, that is, the effect on average F.O.B. export prices for surviving exporters.

Figure 5 presents time trends of export prices of the affected products among surviving exporters and those of the control groups over the pre- and post-antidumping years. The findings show no substantial difference in the time trend of export prices during the five years after LAC's antidumping measures were implemented. The regression results on the effects of antidumping investigations on the export prices of surviving exporters are reported in columns 1 and 2 in Table 10. The findings show that surviving exporters

do not have statistically significant price increases upon the imposition of antidumping duties.

Table 11 shows the regression results for the export prices of affected products of surviving exporters for each country. Except for Mexico, the other three countries' antidumping does not have a significant effect on surviving Chinese exporters. Mexico's antidumping against Chinese products is very successful; export prices increase 11.18 percent (13.20 percent) after antidumping.

5.5 Trade Deflection Response

This subsection examines whether Chinese exporters respond to LAC's antidumping measures by diverting their exports to countries other than LAC, namely, the trade deflection response (e.g., Bown and Crowley, 2007).

Figure 6 presents time trends of total export volume to other countries of affected HS 6-digit products and their control groups over the pre- and post-antidumping years. The findings show that there is a small increase in export volume to other countries after LAC's antidumping measures. The regression results reported in columns 1 and 2 in Table 12 reaffirm the findings revealed in Figure 6. LAC's antidumping measures have a small positive effect on the export volume of the affected Chinese products to other countries on average, but not very significantly.

The analysis also examines whether Chinese exporters respond to LAC's antidumping measures by diverting their exports to the United States (LAC's largest trade partner). The regression results in columns 3 and 4 in Table 12 show that Chinese exports of the affected products are not shifted to the United States on average.

Table 13 panel A shows the trade deflection effect to all other countries. None of the results for antidumping trade deflection effects is very significant for the four countries. Table 13 panel B shows that Chinese exports of targeted products are not diverted to the United States for these four countries.

5.6 Robustness Checks

In this section, we conduct a series of robustness checks on the aforementioned DID estimation results for all the relevant outcome variables examined in sub-sections 5.1-5.5 (i.e., quantity response, extensive and intensive margin effects, price response, and trade deflection response).

First, the validity of our DID estimation hinges upon the assumption that the treatment and control groups are comparable before the treatment occurs. To be robust, we control for the time trend of one year before antidumping measures taken, we conduct this robustness check by including an additional regressor, $Treatment_p \times Pre_{pt}$, where $Pre_{pt} = 1$ if $t \in [t_{p0} - 1, t_{p0})$ and 0 otherwise. The estimation results are summarized in Table A.19-21 of the Appendix. After control of time trends of previous 1 year, our main findings on the effects of antidumping investigations also remain robust.

Second, one may be concerned that products in the treatment group and their counterparts in the control group may follow different time trends. To address this concern, we allow for product-specific time trends in our estimation, i.e., the inclusion of additional controls $\lambda_p \times t$. The estimation results are reported in Table A.10-12 of the Appendix. Clearly, our main findings on the effects of antidumping investigations remain robust to

the inclusion of product-specific time trends, again implying that our DID estimations are valid.

Third, to further address the concern that our results may be affected by some outlying observations, we focus on a sub-sample excluding the observations at the top and bottom 1% of the corresponding outcome variables. Regression results reported in Table A.4-6 of the Appendix show the robustness of our earlier findings and offer limited evidence supporting the intensive margin effect.

Fourth, it is possible that other countries conduct antidumping investigations into the same products as those examined by the LAC during the same period, thereby confounding the effects of the LAC antidumping investigations on Chinese exporters and complicating the interpretation of our results. To address this concern, we conduct a robustness check by excluding such overlapping antidumping cases. The regression results are reported in Table A.7-9 of the Appendix. Clearly, our main findings remain robust to this sub-sample.

Fifth, as some of Chinese exporters conduct processing trade with LAC companies, one may concern whether antidumping investigations may have different impacts on Chinese processing traders than those ordinary traders, thus compound our findings. To alleviate this concern, we conduct a robustness check by excluding processing traders from our sample,⁵ and find our results remain robust (see Table A.1-3 in the Appendix).

Sixth, to address the concern of a potential aggregation bias, we conduct a robustness check by including interaction terms between our key explanatory variables with the number of HS-10 digit products within each HS-6 digit product. The regression results are reported in Table A.16-18 of the Appendix. It is found that none of these interaction terms has any statistical significance. Meanwhile, our main findings remain robust to the inclusion of these interaction terms. These results imply that our findings are not affected by the potential aggregation bias.

Seventh, China's accession into the WTO by the end of 2001 led to a reduction of Chinese import tariffs and more competitive domestic market, possibly affecting the exporting behavior of Chinese firms. If the timing of China's progressive tariff reduction coincides with that of LAC antidumping investigations, it would compound the effect of antidumping investigations. To address the concern of this WTO effect, we include an additional control for China's import tariffs in Tables A.13-15. It is found that our main findings regarding the effects of antidumping investigations remain robust to the control of these two important trade shocks.

Eighth, the aforementioned exercises give us the average effects of antidumping investigations. To explore potential heterogeneous effects across products, we consider a key difference among products, namely, the elasticity of import substitution. Specifically, we interact our regressors of interests with the elasticity of substitution at the HS-6 product level (data obtained from Broda and Weinstein, 2006; see also Nizovtsev and Skiba, 2010). Estimation results reported in Tables A.22-A.24. reveal little differential effects of antidumping investigations across products with different elasticity of import substitution. This can be explained by the limited variations in the elasticity of import substitutions of Chinese exports.

Ninth, the specification for the *Exit* in subsection 5.3.1, we use logit model with fixed

⁵In the Customs data, there is information regarding the nature of trade, such as ordinary trade and different types of processing trade (including processing exports with assembly, processing exports with imported materials, foreign aid, compensation trade, etc). In this robustness check, we only include ordinary trade.

effects, to be robust, we did a robustness check using OLS (Ordinary Least Squares) model (see Table A.25-26).

6 Conclusion

Antidumping measures have become a very popular tool, enabling governments to protect their domestic firms and industries, especially for developing countries. Much of the literature has analyzed how antidumping measures from developed countries impact their trade partners. Few studies have focused on how antidumping measures from developing countries impact their trade partners, especially antidumping measures initiated by developing countries against developing countries. This study seeks to contribute to this literature by evaluating how Chinese exporters responded to antidumping measures taken by their main trade partners in LAC between 2000-12. Were LAC antidumping measures effective in stopping Chinese manufacturing exports to LAC? How did Chinese exporters respond to these measures? Was there a significant shift in the destinations of these exports?

To identify the effects of the antidumping measures, this study used the DID estimation strategy involving the comparison of outcome variables of exporters in the affected product categories with those of exporters in unaffected product categories before and after the antidumping measures.

The study found that a substantial trade-dampening effect of LAC antidumping measures at the product level operates through the intensive margin (i.e., a decrease in the number of exporters) rather than the extensive margin (i.e., a decrease in export volume per exporter) on average. Although the study did not find a significant extensive margin effect, a positive number of exporters exited the LAC market after the antidumping measures. In particular, less productive firms and trade intermediaries were more likely to exit the LAC market. This exiting pattern showed up for all four countries studied. Antidumping measures taken by different countries have different impacts on Chinese exporters. Brazil and Mexico's antidumping measures not only have extensive margin effects, but also intensive margin effects on Chinese exports. Argentina's antidumping measures only have intensive margin effects on Chinese exports. Colombia's antidumping measures have no effect on Chinese exports. The study also found that Mexico's antidumping measures caused a significant increase in the export prices of the affected Chinese products, but no significant increase in export prices was found for the other three countries. The study did not find any shift in the destinations of the affected Chinese exports.

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**Figure 1: Number of LAC antidumping cases against China
(1995-2013)**

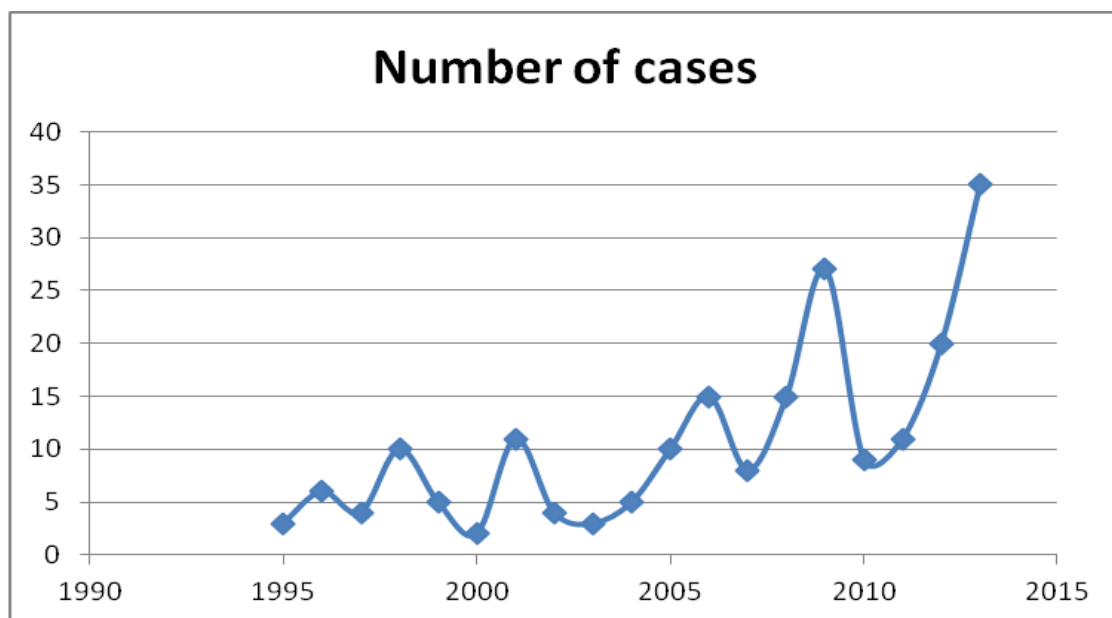
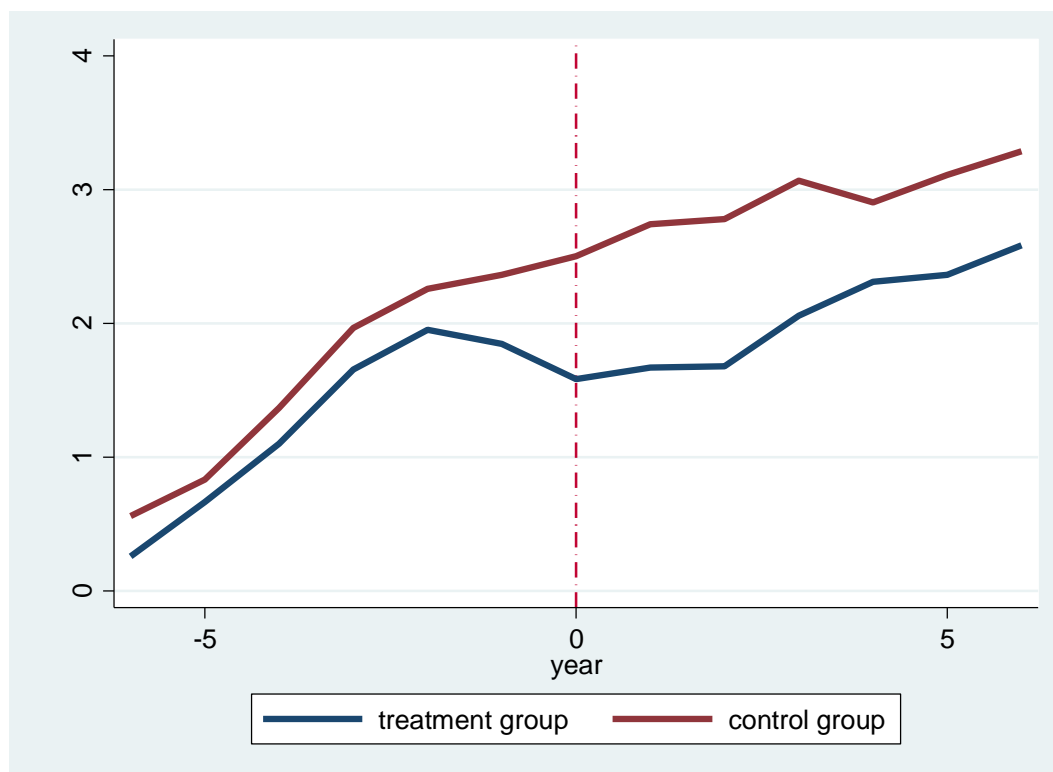
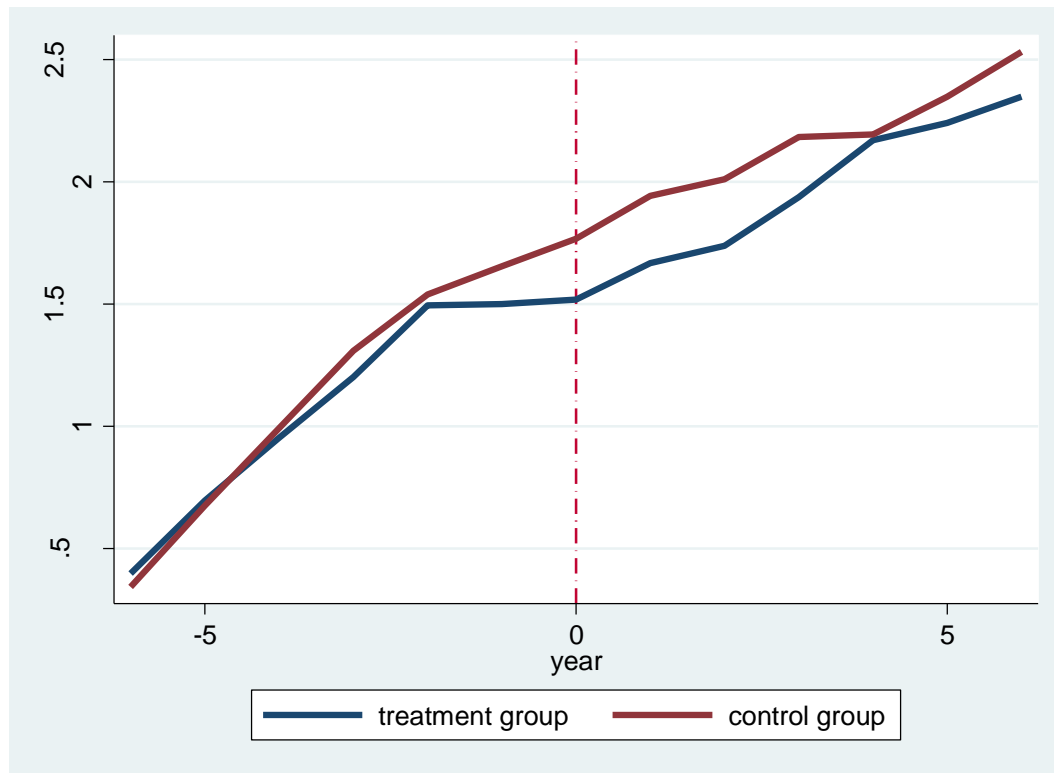


Figure 2: Time trends of export volume, product level



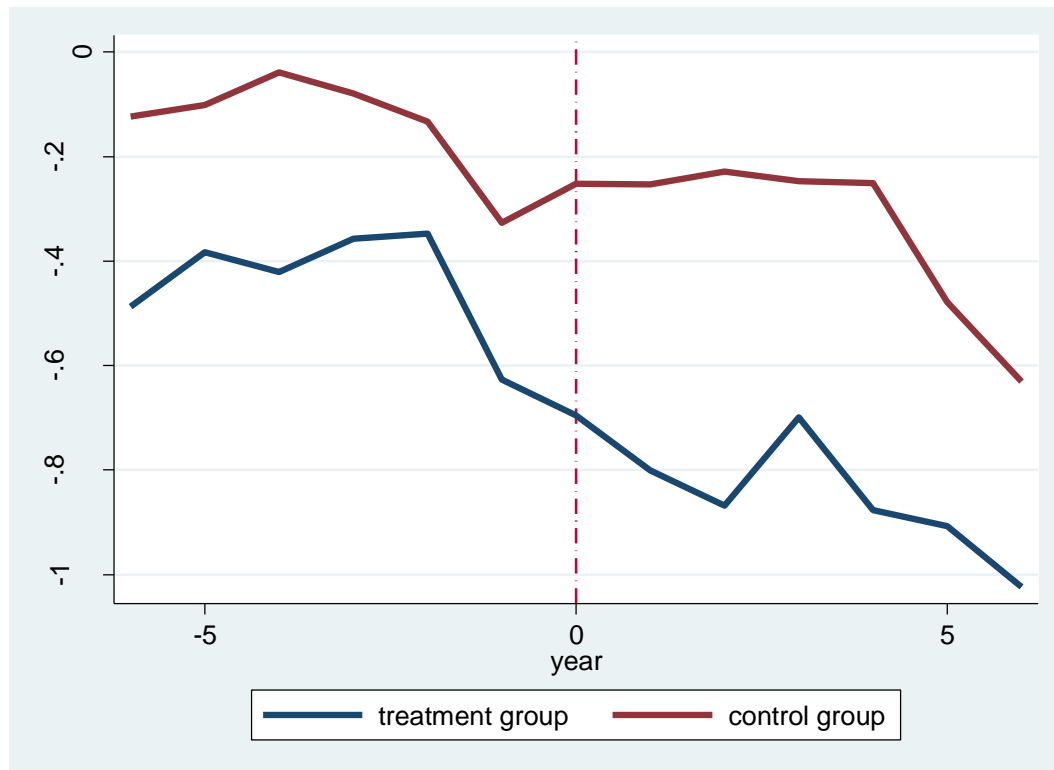
Note: This figure reports the results obtained using control group 1, it reports time trends of the treatment and control groups separately. The reference line marks the year of final antidumping measures taken.

Figure 3: Time trends of the number of exporters



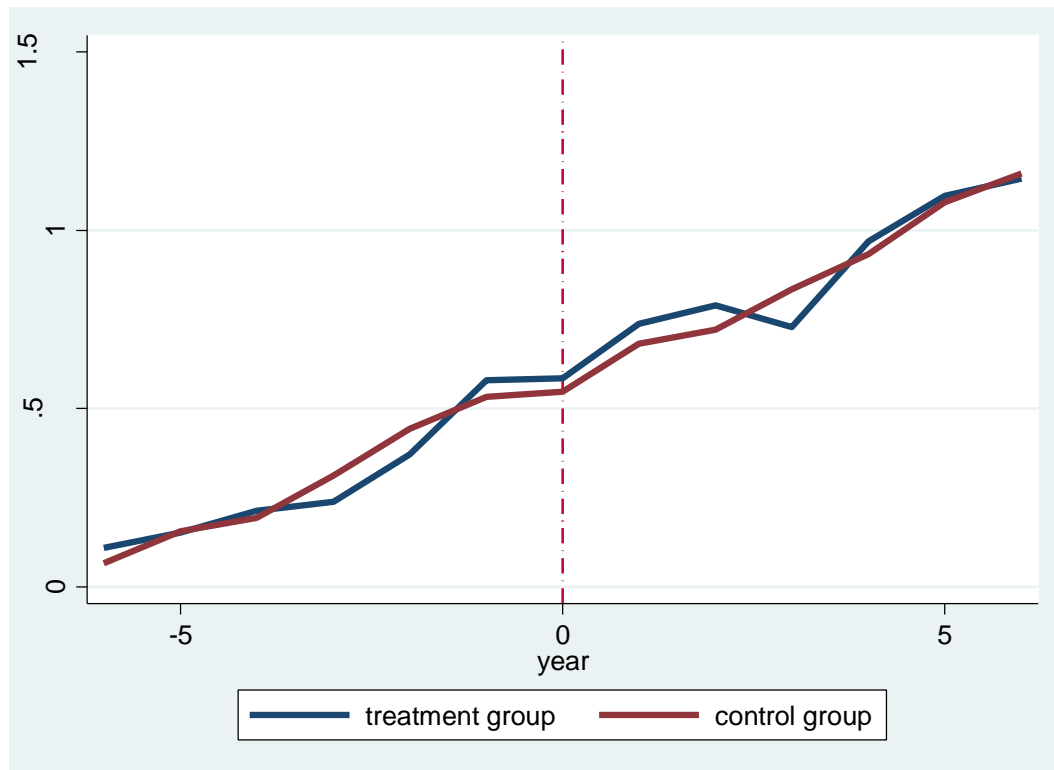
Note: This figure reports the results obtained using control group 1, it reports time trends of the treatment and control groups separately. The reference line marks the year of final antidumping measures taken.

Figure 4: Time trends of export volume, surviving exporters



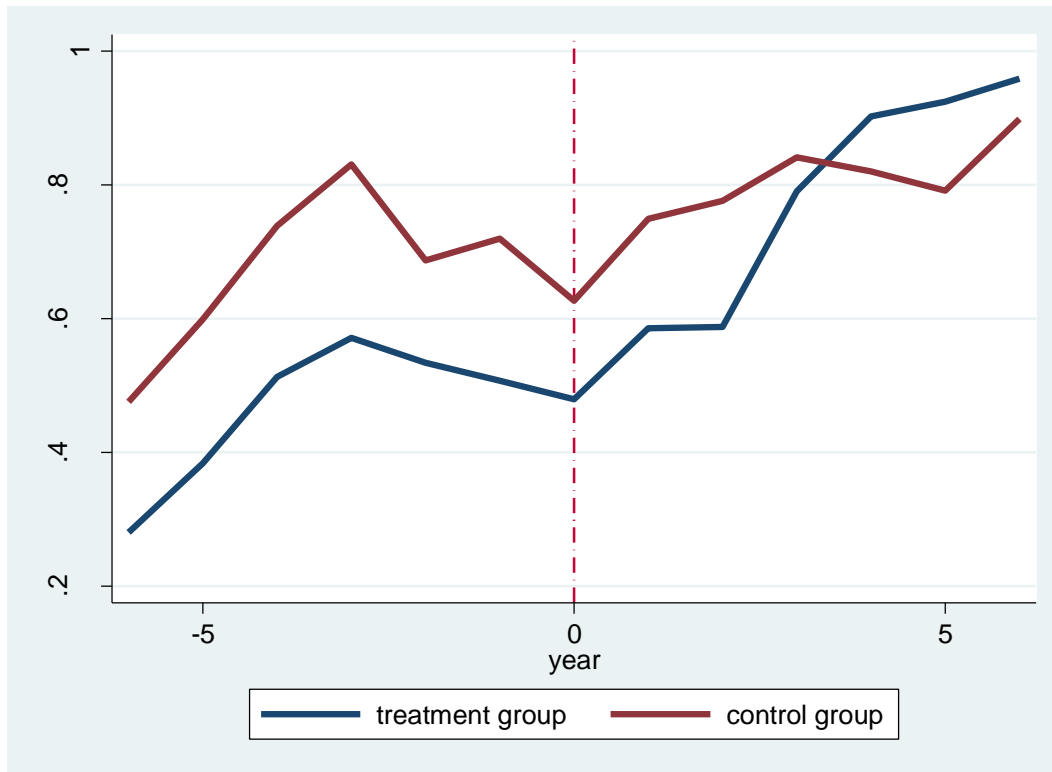
Note: This figure reports the results obtained using control group 1, it reports time trends of the treatment and control groups separately. The reference line marks the year of final antidumping measures taken.

Figure 5: Time trends of export prices, surviving exporters



Note: This figure reports the results obtained using control group 1, it reports time trends of the treatment and control groups separately. The reference line marks the year of final antidumping measures taken.

Figure 6: Time trends of export volume to other countries, product level



Note: This figure reports the results obtained using control group 1, it reports time trends of the treatment and control groups separately. The reference line marks the year of final antidumping measures taken.

Table 1 Number of cases, by country by year

1995-2015

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
ARG	All	20	12	13	23	25	33	26	10	1	12	8	10	7	20	28	14	7	12	19
	China	3	0	1	7	5	2	9	2	0	2	3	1	4	9	18	3	3	3	6
	Ratio	0.15	0.00	0.08	0.30	0.20	0.06	0.35	0.20	0.00	0.17	0.38	0.10	0.57	0.45	0.64	0.21	0.43	0.25	0.32
BRA	All	15	20	9	16	5	0	0	0	0	0	0	0	0	0	9	18	16	47	54
	China	0	3	3	2	0	0	0	0	0	0	0	0	0	0	4	4	5	13	15
	Ratio	0.00	0.15	0.33	0.13	0.00										0.44	0.22	0.31	0.28	0.28
COL	All	1	1	1	5	4	3	6	0	0	2	2	14	1	8	3	2	2	1	10
	China	0	1	0	0	0	0	0	0	0	2	1	11	1	6	3	0	1	1	8
	Ratio	0.00	1.00	0.00	0.00	0.00	0.00	0.00			1.00	0.50	0.79	1.00	0.75	1.00	0.00	0.50	1.00	0.80
MEX	All	4	4	6	10	10	5	5	12	13	5	7	6	3	1	2	2	6	4	6
	China	0	2	0	1	0	0	2	2	3	1	6	3	3	0	2	2	2	3	6
	Ratio	0.00	0.50	0.00	0.10	0.00	0.00	0.40	0.17	0.23	0.20	0.86	0.50	1.00	0.00	1.00	1.00	0.33	0.75	1.00
Total	All	40	37	29	54	44	41	37	22	14	19	17	30	11	29	42	36	31	64	89
	China	3	6	4	10	5	2	11	4	3	5	10	15	8	15	27	9	11	20	35
	Ratio	0.08	0.16	0.14	0.19	0.11	0.05	0.30	0.18	0.21	0.26	0.59	0.50	0.73	0.52	0.64	0.25	0.35	0.31	0.39

Table 2: The effect of antidumping investigation on export volume, product level

	(1)	(2)
Dependent variable	Log (export volume)	
Control group	1	2
Effect (β_1)	-0.538*** (0.129)	-0.559*** (0.128)
Industry time trend	yes	yes
Country fixed effects	yes	yes
Year fixed effects	yes	yes
Product fixed effects	yes	yes
Number of observations	7,595	6,317

Note: Standard errors, clustered at the product level, are reported in the bracket. *** represents statistical significance at the 1% level.

Table 3: The effect of antidumping investigation on export volume, product level, each country

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ARG		BRA		MEX		COL	
Dependent variable	Log (export volume)		Log (export volume)		Log (export volume)		Log (export volume)	
Control group	1	2	1	2	1	2	1	2
Effect (β_1)	-0.694***	-0.677***	-0.905***	-0.958***	-1.454***	-1.430***	0.367	0.361
	(0.209)	(0.209)	(0.230)	(0.240)	(0.253)	(0.249)	(0.231)	(0.235)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	2,868	2,405	1,827	1,608	1,001	672	1,899	1,632

Note: Standard errors, clustered at the product level, are reported in the bracket. *** represents statistical significance at the 1% level.

Table 4: The effect of antidumping investigation, extensive versus intensive margins

Specification	(1)	(2)	(3)	(4)
Dependent Variable	Extensive margin		Intensive margin	
Sample	Log (number of exporters)		Log(export volume)	
Control Group	Whole sample		Surviving firms	
	1	2	1	2
Effect (β_1)	-0.087 (0.060)	-0.101* (0.058)	-0.210*** (0.059)	-0.209*** (0.058)
Industry time trend	yes	yes	yes	yes
Country fixed effects	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes
Number of observations	7,595	6,317	92,124	87,755

Note: Standard errors, clustered at the product level, are reported in the bracket.. *and *** represent statistical significance at the 10% and 1% level, respectively.

Table 5: The effect of antidumping investigation, extensive versus intensive margins, each country

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ARG		BRA		MEX		COL	
Dependent variable	Extensive margin	Intensive margin	Extensive margin	Intensive margin	Extensive margin	Intensive margin	Extensive margin	Intensive margin
Control group	1	1	1	1	1	1	1	1
Effect (β_1)	-0.135 (0.090)	-0.174** (0.071)	-0.253** (0.100)	-0.275** (0.122)	-0.524*** (0.117)	-0.512*** (0.128)	0.284** (0.125)	-0.190 (0.159)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	2,868	37,652	1,827	31,704	1,001	10,050	1,899	12,718

Note: Standard errors, clustered at the product level, are reported in the bracket. *** represents statistical significance at the 1% level.

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	ARG		BRA		MEX		COL	
Dependent variable	Extensive margin	Intensive margin	Extensive margin	Intensive margin	Extensive margin	Intensive margin	Extensive margin	Intensive margin
Control group	2	2	2	2	2	2	2	2
Effect (β_1)	-0.115 (0.087)	-0.174** (0.073)	-0.274*** (0.101)	-0.278** (0.123)	-0.515*** (0.106)	-0.552*** (0.123)	0.238* (0.127)	-0.173 (0.161)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	2,405	36,219	1,608	31,129	672	8,296	1,632	12,111

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1% , 5% and 10% level, respectively.

Table 6: The effect of antidumping investigation on the likelihood of exit, trade intermediaries versus direct exporters, single-products firms versus multiple-product firms

Dependent Variable	1	2	3	4	5
			exit		
Trade intermediaries		0.622*** (0.044)	0.657*** (0.044)		
Single-product firms				-0.034 (0.061)	-0.010 (0.061)
Log (export volume)	-0.146*** 0.012		-0.154*** (0.012)		-0.146*** (0.012)
Product fixed effects	yes	yes	yes	yes	yes
Number of observations	13,002	13,018	13,002	12,726	12,711
Pseudo R2	0.098	0.100	0.113	0.085	0.097

Note: Standard errors, clustered at the product level, are reported in the bracket. *** represent statistical significance at the 1% level.

Table 7: The effect of antidumping investigation on the likelihood of exit, trade intermediaries versus direct exporters, single-products firms versus multiple-product firms, each country

	1	2	3	4	5	6	7	8	9	10
Dependent Variable	ARG Exit					BRA Exit				
Trade intermediaries		0.635*** (0.061)	0.670*** (0.062)				0.749*** (0.071)	0.793*** (0.071)		
Single-product firms				0.046 (0.088)	0.059 (0.088)				0.018 (0.096)	0.032 (0.096)
Log (export volume)	-0.129*** (0.018)		-0.140*** (0.019)		-0.127*** (0.018)	-0.145*** (0.019)		-0.158*** (0.019)		-0.149*** (0.019)
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	6,234	6,234	6,226	6,065	6,057	5,537	5,539	5,537	5,428	5,427
Pseudo R2	0.099	0.099	0.109	0.081	0.089	0.109	0.116	0.129	0.097	0.109

Note: Standard errors, clustered at the product level, are reported in the bracket. *** represent statistical significance at the 1% level.

	1	2	3	4	5	6	7	8	9	10
Dependent Variable	COL Exit					MEX Exit				
Trade intermediaries		0.619*** (0.137)	0.607*** (0.139)				0.484*** (0.154)	0.510*** (0.155)		
Single-product firms				-0.113 (0.175)	-0.036 (0.178)				-0.065 (0.255)	-0.005 (0.257)
Log (export volume)	-0.211*** (0.043)		-0.206*** (0.043)		-0.211*** (0.043)	-0.084*** (0.035)		-0.092*** (0.035)		-0.077*** (0.035)
Product fixed effects	yes	yes	yes	yes	yes	yes				
Number of observations	1,238	1,238	1,237	1,235	1,234	847	852	847	843	838
Pseudo R2	0.082	0.082	0.103	0.068	0.089	0.043	0.046	0.053	0.038	0.044

Note: Standard errors, clustered at the product level, are reported in the bracket. *** represent statistical significance at the 1% level.

Table 8: The effect of antidumping investigation, consumer goods versus industrial goods

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Specification	Quantity response		Extensive margin		Intensive margin		Price response	
Dependent Variable	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)	
Sample	Whole sample		Whole sample		Surviving firms		Surviving firms	
Control Group	1	2	1	2	1	2	1	2
Effect (β_1)*consumer goods	0.012 (0.248)	0.027 (0.249)	0.013 (0.134)	0.015 (0.131)	-0.222** (0.109)	-0.214** (0.109)	0.106 (0.088)	0.100 (0.088)
Effect (β_1)	-0.541*** (0.167)	-0.567*** (0.165)	-0.091 (0.069)	-0.106 (0.067)	-0.129 (0.079)	-0.130* (0.078)	-0.030 (0.060)	-0.031 (0.060)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes
Country fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	7,595	6,317	7,595	6,317	92,124	87,755	91,534	87,208

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1% , 5% and 10% level, respectively.

Table 9: The effect of antidumping investigation, consumer goods versus industrial goods, each country

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	Quantity response		Extensive margin		Intensive margin		Price response	
Sample	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)	
Country	Whole sample		Whole sample		Surviving firms		Surviving firms	
	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA
Effect (β_1)*consumer goods	-0.009 (0.368)	0.659 (0.446)	-0.227 (0.170)	0.390* (0.205)	-0.359*** (0.132)	-0.218 (0.248)	0.150 (0.098)	0.293 (0.233)
Effect (β_1)	-0.691** (0.289)	-1.136*** (0.296)	-0.046 (0.115)	-0.390*** (0.117)	-0.044 (0.073)	-0.173 (0.196)	-0.027 (0.058)	-0.168 (0.195)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	2,868	1,827	2,868	1,827	37,652	31,704	37,360	31,535

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	Quantity response		Extensive margin		Intensive margin		Price response	
Sample	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)	
Control Group	Whole sample		Whole sample		Surviving firms		Surviving firms	
	MEX	COL	MEX	COL	MEX	COL	MEX	COL
Effect (β_1)*consumer goods	0.018 (0.573)	-0.236 (0.530)	-0.367 (0.233)	0.367 (0.272)	0.471*** (0.150)	0.127 (0.267)	-0.204** (0.101)	-0.273** (0.121)
Effect (β_1)	-1.458*** (0.297)	0.428* (0.258)	-0.443*** (0.138)	0.188 (0.140)	-0.660*** (0.106)	-0.227 (0.211)	0.171** (0.072)	0.065 (0.040)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	1,001	1,899	1,001	1,899	10,050	12,718	9,955	12,684

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1% , 5% and 10% level, respectively.

Table 10: The effect of antidumping investigation on export prices

Specification	(1)	(2)
Dependent Variable	Surviving firms Log (export price)	
Control Group	1	2
Antidumping Effect (β_1)	0.009 (0.042)	0.006 (0.041)
Industry time trend	yes	yes
Country fixed effects	yes	yes
Year fixed effects	yes	yes
Product fixed effects	yes	yes
Number of observations	91,534	87,208

Note: Standard errors, clustered at the product level, are reported in the bracket.

Table 11: The effect of antidumping investigation on export prices, each country

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ARG		BRA		MEX		COL	
Dependent variable	Log (export price)		Log (export price)		Log (export price)		Log (export price)	
Control group	1	2	1	2	1	2	1	2
Effect (β_1)	0.027 (0.050)	0.026 (0.050)	-0.031 (0.112)	-0.030 (0.113)	0.106* (0.061)	0.124* (0.065)	-0.015 (0.054)	-0.018 (0.056)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	37,360	35,933	31,535	30,973	9,955	8,225	12,684	12,077

Note: Standard errors, clustered at the product level, are reported in the bracket. * represents statistical significance at the 10% level.

Table 12: The effect of antidumping investigation on trade deflection

	All other countries		US	
Dependent variable	(1)	(2)	(3)	(4)
Control group	Log (export volume)		Log (export volume)	
	1	2	1	2
Effect (β_1)	0.128*	0.076	-0.052	-0.045
	(0.072)	(0.069)	(0.103)	(0.102)
Industry time trend	yes	yes	yes	yes
Country fixed effects	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes
Number of observations	7,898	5,811	7,518	5,674

Note: Standard errors, clustered at the product level, are reported in the bracket. * represents statistical significance at the 10% level.

Table 13: The effect of antidumping investigation on trade deflection, each country

Panel A: All other countries	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ARG		BRA		MEX		COL	
Dependent variable	Log (export volume)		Log (export volume)		Log (export volume)		Log (export volume)	
Control group	1	2	1	2	1	2	1	2
Effect (β_1)	0.005 (0.110)	0.000 (0.108)	0.013 (0.082)	0.013 (0.078)	-0.056 (0.213)	-0.116 (0.149)	0.036 (0.133)	0.025 (0.134)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	3,946	2,927	6,234	4,475	1,287	742	2,991	2,199

Note: Standard errors, clustered at the product level, are reported in the bracket.

Panel B: US	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ARG		BRA		MEX		COL	
Dependent variable	Log (export volume)		Log (export volume)		Log (export volume)		Log (export volume)	
Control group	1	2	1	2	1	2	1	2
Effect (β_1)	-0.056 (0.122)	-0.059 (0.119)	-0.045 (0.177)	-0.005 (0.191)	-0.007 (0.302)	-0.207 (0.225)	-0.050 (0.252)	-0.022 (0.250)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	3,838	2,900	2,227	1,815	1,167	725	2,854	2,153

Note: Standard errors, clustered at the product level, are reported in the bracket.

Robustness Check

Table A.1 General trade sample, LAC

	(1)	(2)	(3)	(4)	(5)
Specification	Quantity response	Extensive margin	Intensive margin	Price response	Trade deflection
Dependent Variable	Log (export volume)	Log (number of exporters)	Log(export volume)	Log (export price)	Log(export volume)
Sample	Whole sample	Whole sample	Surviving firms	Surviving firms	Whole sample
Effect (β_1)	-0.563*** (0.141)	-0.128** (0.063)	-0.207*** (0.059)	0.011 (0.031)	0.535 (0.011)
Industry time trend	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes
Country fixed effect	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes
Number of observations	7,332	7,335	73,142	72,690	6,531

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively.

Table A.2 General trade sample, each country (ARG and BRA)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Specification	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Dependent Variable	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Sample	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
Country	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA
Effect (β_1)	-0.751*** (0.205)	-0.764*** (0.257)	-0.193** (0.095)	-0.266** (0.111)	-0.101 (0.068)	-0.241** (0.107)	-0.024 (0.053)	-0.001 (0.052)	0.016 (0.077)	0.389 (0.227)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	2,747	1,753	2,748	1,755	30,846	22,622	30,599	22,487	3,382	1,774

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.3 General trade sample, each country (COL and MEX)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Specification	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Dependent Variable	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Sample	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
Country	COL	MEX	COL	MEX	COL	MEX	COL	MEX	COL	MEX
Effect (β_1)	0.399 (0.246)	-1.566*** (0.249)	0.259** (0.117)	-0.551*** (0.120)	-0.235 (0.163)	-0.590*** (0.131)	0.005 (0.056)	0.154*** (0.050)	-0.076 (0.115)	-0.074 (0.372)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	1,863	969	1,863	969	10,850	8,824	10,827	8,777	24,852	2,767

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.4 Drop outliers, LAC

	(1)	(2)	(3)	(4)	(5)
Specification	Quantity response	Extensive margin	Intensive margin	Price response	Trade deflection
Dependent Variable	Log (export volume)	Log (number of exporters)	Log(export volume)	Log (export price)	Log(export volume)
Sample	Whole sample	Whole sample	Surviving firms	Surviving firms	Whole sample
Control Group	1	1	1	1	1
Effect (β_1)	-0.554*** (0.123)	-0.107* (0.063)	-0.171*** (0.050)	0.017 (0.039)	0.078 (0.066)
Industry time trend	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes
Country fixed effect	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes
Number of observations	6,244	6,244	86,962	86,962	6,478

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.5 Drop outliers, each country (ARG and BRA)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Specification	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Dependent Variable	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Sample	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
Country	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA
Effect (β_1)	-0.705***	-0.850***	-0.174*	-0.200*	-0.138**	-0.204*	0.016	-0.036	-0.048	0.088
	(0.197)	(0.225)	(0.095)	(0.114)	(0.060)	(0.108)	(0.047)	(0.107)	(0.105)	(0.120)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	2,198	1,439	2,198	1,439	35,430	29,959	35,430	29,959	3,268	1,943

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.6 Drop outliers, each country (COL and MEX)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent Variable	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Sample	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Country	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
	COL	MEX	COL	MEX	COL	MEX	COL	MEX	COL	MEX
Effect (β_1)	0.151	-1.386***	0.209*	-0.535***	-0.209	-0.342***	0.014	0.098*	0.021	-0.069
	(0.198)	(0.255)	(0.121)	(0.119)	(0.157)	(0.099)	(0.049)	(0.051)	(0.125)	(0.204)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	1,428	799	1,428	799	11,950	9,465	11,950	9,465	2,479	1,066

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.7 Exclusion of antidumping cases investigated by other countries, LAC

	(1)	(2)	(3)	(4)	(5)
Specification	Quantity response	Extensive margin	Intensive margin	Price response	Trade deflection
Dependent Variable	Log (export volume)	Log (number of exporters)	Log(export volume)	Log (export price)	Log(export volume)
Sample	Whole sample	Whole sample	Surviving firms	Surviving firms	Whole sample
Control Group	1	1	1	1	1
Effect (β_1)	-0.507*** (0.130)	-0.081 (0.061)	-0.203*** (0.059)	0.003 (0.042)	0.131* (0.073)
Industry time trend	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes
Country fixed effect	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes
Number of observations	7,499	7,499	91,286	90,696	7,753

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.8 Exclusion of antidumping cases investigated by other countries, each country (ARG and BRA)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent Variable	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Sample	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Country	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA
Effect (β_1)	-0.689***	-0.810***	-0.117	-0.268***	-0.166**	-0.262**	0.015	-0.030	0.028	0.031
	(0.213)	(0.226)	(0.092)	(0.102)	(0.072)	(0.123)	(0.050)	(0.113)	(0.072)	(0.072)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	2,829	1,770	2,829	1,770	36,966	31,552	36,674	31,383	7,747	7,747

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.9 Exclusion of antidumping cases investigated by other countries, each country (COL and MEX)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Specification	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Dependent Variable	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Sample	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
Country	COL	MEX	COL	MEX	COL	MEX	COL	MEX	COL	MEX
Effect (β_1)	0.367	-1.454***	0.284**	-0.524***	-0.190	-0.512***	-0.015	0.106*	0.026	0.028
	(0.231)	(0.253)	(0.125)	(0.117)	(0.159)	(0.128)	(0.054)	(0.061)	(0.072)	(0.071)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	1,899	1,001	1,899	1,001	12,718	10,050	12,684	9,955	7,747	7,747

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.10 Inclusion of product-specific time trends, LAC

	(1)	(2)	(3)	(4)	(5)
Specification	Quantity response	Extensive margin	Intensive margin	Price response	Trade deflection
Dependent Variable	Log (export volume)	Log (number of exporters)	Log(export volume)	Log (export price)	Log(export volume)
Sample	Whole sample	Whole sample	Surviving firms	Surviving firms	Whole sample
Control Group	1	1	1	1	1
Effect (β_1)	-0.599*** (0.145)	-0.142** (0.069)	-0.214*** (0.066)	0.016 (0.048)	0.035 (0.065)
Product time trend	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes
Country fixed effect	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes
Number of observations	7,595	7,595	92,124	91,534	7,898

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.11 Inclusion of product-specific time trends, each country (ARG and BRA)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Specification	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Dependent Variable	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Sample	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
Country	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA
Effect (β_1)	-0.483*	-0.743***	-0.113	-0.266*	-0.214***	-0.209	0.024	-0.026	0.047	0.005
	(0.248)	(0.239)	(0.101)	(0.145)	(0.079)	(0.144)	(0.053)	(0.160)	(0.107)	(0.142)
Product time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	2,868	1,827	2,868	1,827	37,652	31,704	37,360	31,535	3,946	2,347

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.12 Inclusion of product-specific time trends, each country (COL and MEX)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Specification	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Dependent Variable	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Sample	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
Country	COL	MEX	COL	MEX	COL	MEX	COL	MEX	COL	MEX
Effect (β_1)	-0.387	-1.318***	0.132	-0.649***	-0.468**	-0.185	-0.031	0.023	-0.105	0.058
	(0.306)	(0.364)	(0.171)	(0.169)	(0.219)	(0.140)	(0.056)	(0.071)	(0.113)	(0.126)
Product time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	1,899	1,001	1,899	1,001	12,718	10,050	12,684	9,955	2,991	1,287

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.13 Inclusion of China's import tariff rates, LAC

	(1)	(2)	(3)	(4)	(5)
Specification	Quantity response	Extensive margin	Intensive margin	Price response	Trade deflection
Dependent Variable	Log (export volume)	Log (number of exporters)	Log(export volume)	Log (export price)	Log(export volume)
Sample	Whole sample	Whole sample	Surviving firms	Surviving firms	Whole sample
Control Group	1	1	1	1	1
Effect (β_1)	-0.572*** (0.122)	-0.121** (0.061)	-0.174*** (0.054)	0.001 (0.041)	0.105 (0.066)
Tariff	0.008 (0.016)	0.003 (0.007)	0.021** (0.010)	-0.005 (0.008)	0.010 (0.008)
Industry time trend	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes
Country fixed effect	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes
Number of observations	5,800	5,800	72,318	71,915	6,098

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.14 Inclusion of China's import tariff rates, each country (ARG and BRA)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent Variable	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Sample	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Country	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA
Effect (β_1)	-0.624***	-0.785***	-0.171*	-0.243**	-0.142*	-0.110	0.017	-0.110	-0.026	0.059
	(0.197)	(0.220)	(0.092)	(0.095)	(0.074)	(0.115)	(0.050)	(0.115)	(0.092)	(0.121)
Tariff	0.001	0.030	0.010	0.004	0.013	0.023	-0.009	-0.000	-0.026	0.059
	(0.023)	(0.035)	(0.010)	(0.012)	(0.012)	(0.017)	(0.009)	(0.014)	(0.092)	(0.121)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	2,166	1,389	2,166	1,389	29,766	24,960	29,554	24,852	3,042	1,810

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.15 Inclusion of China's import tariff rates, each country (COL and MEX)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent Variable	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Sample	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Country	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
	COL	MEX	COL	MEX	COL	MEX	COL	MEX	COL	MEX
Effect (β_1)	0.071	-1.592***	0.208	-0.589***	-0.338**	-0.411***	-0.006	0.122**	-0.009	-0.013
	(0.232)	(0.294)	(0.130)	(0.135)	(0.162)	(0.121)	(0.051)	(0.051)	(0.127)	(0.218)
Tariff	0.000	0.136*	-0.021*	0.055*	0.029	-0.051	-0.011*	0.031	-0.009	0.137*
	(0.028)	(0.070)	(0.012)	(0.033)	(0.020)	(0.048)	(0.005)	(0.032)	(0.127)	(0.079)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	1,468	777	1,468	777	9,798	7,794	9,781	7,728	2,312	997

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.16 Inclusion of interaction with number of products in the same HS6-digit, LAC

Specification	(1)	(2)	(3)	(4)	(5)
Dependent Variable	Quantity response Log (export volume)	Extensive margin Log (number of exporters)	Intensive margin Log (export volume)	Price response Log (export price)	Trade deflection Log (export volume)
Sample	Whole sample	Whole sample	Surviving firms	Surviving firms	Whole sample
Control Group	1	1	1	1	1
Effect (β_1)	-0.472*** (0.596)	-1.274** (0.516)	-0.204 (0.328)	0.000 (0.078)	-0.351 (0.285)
$\beta_1 * hs$	0.051 (0.042)	0.433 (0.042)	-0.015* (0.022)	0.055* (0.031)	-0.054 (0.013)
Industry time trend	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes
Country fixed effect	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes
Number of observations	7,595	7,595	92,124	91,534	7,898

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.17 Inclusion of interaction with number of products in the same HS6-digit, each country (ARG and BRA)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Specification	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Dependent Variable	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Sample	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
Country	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA
Effect (β_1)	-0.654***	-0.925	-0.692***	-0.283***	-0.100	-0.615	0.066	0.128	-0.210	-0.204
	(0.433)	(2.281)	(0.234)	(0.421)	(0.304)	(0.561)	(0.087)	(0.066)	(0.285)	(0.284)
$\beta_1 * hs$	0.012	0.015	0.020	0.003	0.022	0.033	-0.015	-0.003	-0.026	0.055
	(0.025)	(0.005)	(0.012)	(0.015)	(0.012)	(0.021)	(0.009)	(0.014)	(0.042)	(0.121)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	2,868	1,827	2,868	1,827	37,652	31,704	37,360	31,535	3,946	2,347

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.18 Inclusion of interaction with number of products in the same HS6-digit, each country (COL and MEX)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent Variable	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Sample	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Country	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
	COL	MEX	COL	MEX	COL	MEX	COL	MEX	COL	MEX
Effect (β_1)	-0.283***	-0.837***	-0.725***	-0.498***	-0.327	-0.580**	-0.051	-0.051	-0.209	-0.204
	(0.421)	(0.444)	(0.367)	(0.099)	(0.106)	(0.259)	(0.028)	(0.107)	(0.286)	(0.283)
$\beta_1 * hs$	0.016	0.123*	-0.061*	0.061*	0.015	-0.034	-0.014*	0.044	-0.069	0.121*
	(0.027)	(0.051)	(0.013)	(0.034)	(0.045)	(0.042)	(0.032)	(0.012)	(0.132)	(0.041)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	1,899	1,001	1,899	1,001	12,718	10,050	12,684	9,955	2,991	1,287

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.19 Differential time trends before the antidumping investigation, LAC

	(1)	(2)	(3)	(4)	(5)
Specification	Quantity response	Extensive margin	Intensive margin	Price response	Trade deflection
Dependent Variable	Log (export volume)	Log (number of exporters)	Log(export volume)	Log (export price)	Log(export volume)
Sample	Whole sample	Whole sample	Surviving firms	Surviving firms	Whole sample
Control Group	1	1	1	1	1
Previous 1 year	0.116 (0.113)	0.055 (0.054)	-0.090 (0.072)	0.114** (0.046)	0.086 (0.055)
Effect (β_1)	-0.512*** (0.136)	-0.075 (0.064)	-0.240*** (0.072)	0.046 (0.046)	0.148* (0.080)
Industry time trend	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes
Country fixed effect	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes
Number of observations	7,595	7,595	92,124	91,534	7,898

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.20 Differential time trends before the antidumping investigation, each country (ARG and BRA)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent Variable	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Sample	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Country	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA
Previous 1 year	-0.027 (0.188)	-0.008 (0.209)	0.034 (0.093)	-0.010 (0.092)	-0.012 (0.075)	-0.223** (0.094)	0.055 (0.052)	0.236** (0.091)	0.132 (0.086)	-0.063 (0.121)
Effect (β_1)	-0.702*** (0.225)	-0.906*** (0.251)	-0.124 (0.106)	-0.255** (0.110)	-0.180** (0.086)	-0.361*** (0.133)	0.052 (0.061)	0.061 (0.109)	0.047 (0.124)	0.122 (0.143)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	2,868	1,827	2,868	1,827	37,652	31,704	37,360	31,535	3,946	2,347

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.21 Differential time trends before the antidumping investigation, each country (COL and MEX)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent Variable	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Sample	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Country	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
	COL	MEX	COL	MEX	COL	MEX	COL	MEX	COL	MEX
Previous 1 year	-0.148	0.071	-0.141	0.033	0.062	-0.515***	0.094**	0.030	0.071	0.135
	(0.303)	(0.179)	(0.132)	(0.120)	(0.092)	(0.137)	(0.045)	(0.058)	(0.080)	(0.141)
Effect (β_1)	0.339	-1.431***	0.257*	-0.513***	-0.169	-0.722***	0.017	0.118	0.048	-0.014
	(0.249)	(0.299)	(0.140)	(0.129)	(0.158)	(0.166)	(0.059)	(0.077)	(0.141)	(0.241)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	1,899	1,001	1,899	1,001	12,718	10,050	12,684	9,955	2,991	1,287

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.22 Inclusion of interaction with the import demand elasticity

	(1)	(2)	(3)	(4)	(5)
Specification	Quantity response	Extensive margin	Intensive margin	Price response	Trade deflection
Dependent Variable	Log (export volume)	Log (number of exporters)	Log(export volume)	Log (export price)	Log(export volume)
Sample	Whole sample	Whole sample	Surviving firms	Surviving firms	Whole sample
Control Group	1	1	1	1	1
Effect (β_1)	-0.597** (0.249)	-0.045 (0.114)	-0.365*** (0.089)	0.053 (0.058)	0.040 (0.173)
$\beta_1 * \text{Elas}$	0.015 (0.055)	-0.011 (0.024)	0.036*** (0.012)	-0.010 (0.007)	0.024 (0.045)
Industry time trend	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes
Country fixed effect	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes
Number of observations	7,595	7,595	92,124	91,534	7,898

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.23 Inclusion of interaction with the import demand elasticity, each country (ARG and BRA)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent Variable	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Sample	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Country	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA	ARG	BRA
Effect (β_1)	-0.756**	-1.519***	-0.165	0.368*	-0.356***	-0.632**	0.119	0.173	-0.062	-0.080
	(0.377)	(0.540)	(0.179)	(0.215)	(0.102)	(0.278)	(0.077)	(0.219)	(0.214)	(0.265)
$\beta_1 * \text{Elas}$	0.015	0.157	0.007	-0.097**	0.036***	0.087*	-0.018**	-0.050	0.016	0.056
	(0.074)	(0.134)	(0.039)	(0.042)	(0.012)	(0.051)	(0.008)	(0.039)	(0.042)	(0.046)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	2,868	1,827	2,868	1,825	37,652	31,704	37,360	31,535	3,946	2,347

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.24 Inclusion of interaction with the import demand elasticity, each country (COL and MEX)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent Variable	Quantity response		Extensive margin		Intensive margin		Price response		Trade deflection	
Sample	Log (export volume)		Log (number of exporters)		Log(export volume)		Log (export price)		Log(export volume)	
Country	Whole sample		Whole sample		Surviving firms		Surviving firms		Whole sample	
	COL	MEX	COL	MEX	COL	MEX	COL	MEX	COL	MEX
Effect (β_1)	-0.371	-1.104***	0.663*	-0.330**	-0.877*	-0.578***	-0.125	0.042	0.553	-0.347
	(0.687)	(0.290)	(0.352)	(0.131)	(0.451)	(0.152)	(0.188)	(0.060)	(0.381)	(0.254)
β_1 *Elas	0.207	-0.087**	-0.106	-0.048***	0.195*	0.022	0.031	0.021**	-0.143	0.065
	(0.172)	(0.036)	(0.093)	(0.009)	(0.100)	(0.024)	(0.042)	(0.010)	(0.103)	(0.062)
Industry time trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	1,899	1,001	1,899	1,001	12,718	10,050	12,684	9,955	2,991	1,287

Note: Standard errors, clustered at the product level, are reported in the bracket. ***, ** and * represents statistical significance at the 1%, 5% and 10% level, respectively

Table A.25: The effect of antidumping investigation on the likelihood of exit, trade intermediaries versus direct exporters, single-products firms versus multiple-product firms

Dependent Variable	1	2	3	4	5
			exit		
Trade intermediaries		0.105*** (0.007)	0.109*** (0.007)		
Single-product firms				-0.006 (0.011)	-0.001 (0.010)
Log (export volume)	-0.025*** 0.002		-0.026*** (0.002)		-0.025*** (0.002)
Product fixed effects	yes	yes	yes	yes	yes
Number of observations	13,265	13,281	13,265	12,984	12,969

Note: Standard errors, clustered at the product level, are reported in the bracket. *** represent statistical significance at the 1% level.

Table A.26: The effect of antidumping investigation on the likelihood of exit, trade intermediaries versus direct exporters, single-products firms versus multiple-product firms, each country

	1	2	3	4	5	6	7	8	9	10
Dependent Variable	ARG Exit					BRA Exit				
Trade intermediaries		0.111*** (0.011)	0.114*** (0.010)				0.121*** (0.011)	0.128*** (0.011)		
Single-product firms				0.008 (0.015)	0.012 (0.015)				0.003 (0.017)	0.006 (0.016)
Log (export volume)	-0.024*** (0.003)		-0.025*** (0.003)		-0.023*** (0.003)	-0.023*** (0.003)		-0.025*** (0.003)		-0.024*** (0.003)
Product fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of observations	6,478	6,486	6,478	6,312	6,304	5,547	5,549	5,547	5,438	5,437

Note: Standard errors, clustered at the product level, are reported in the bracket. *** represent statistical significance at the 1% level.

	1	2	3	4	5	6	7	8	9	10
Dependent Variable	COL Exit					MEX Exit				
Trade intermediaries		0.116*** (0.025)	0.111*** (0.025)				0.099*** (0.032)	0.104*** (0.032)		
Single-product firms				-0.022 (0.035)	-0.006 (0.035)				-0.014 (0.054)	-0.002 (0.054)
Log (export volume)	-0.039*** (0.007)		-0.038*** (0.007)		- 0.039*** (0.007)	-0.018** (0.007)		-0.019*** (0.007)		-0.016** (0.007)
Product fixed effects	yes	yes	yes	yes	yes	yes				
Number of observations	1,243	1,244	1,243	1,241	1,240	847	852	847	843	838

Note: Standard errors, clustered at the product level, are reported in the bracket. ** *represent statistical significance at the 1% level.