

European Research Workshop in International Trade (ERWIT)

held jointly with the

2nd EFIGE Scientific Workshop and Policy Conference

Rome, 16-18 June 2010

Antidumping Hurts Exporters: Firm-level Evidence from France

Jozef Konings and Hylke Vandenbussche

The views expressed in this paper are those of the author(s) and not those of the funding organization(s), which take no institutional policy positions.

Antidumping Protection hurts Exporters: Firm-level evidence

by Jozef Konings¹ and Hylke Vandenbussche²

April 12, 2010

An earlier version appeared as CEPR discussion paper n° 5678 in 2009

¹ Department of Economics, Catholic University of Leuven and LICOS, Naamsestraat 69, 3000 Leuven, Belgium, jozef.konings@econ.kuleuven.be.

² Corresponding author, Department of Economics and CORE, Université catholique de Louvain, Place Montesquieu 3, 1348 Louvain-la-neuve, Belgium, T:+32(0)10 47 41 37; F:+32(0) 10 47 39 45; hylke.vandenbussche@uclouvain.be.

We thank Laura Alfaro, Andy Bernard, Chad Bown, Josh Ederington, Caroline Evans, Penny Goldberg, Doug Irwin, Wolfgang Keller, Ben Mandel, Jim Markusen, Nina Pavcnik, Tom Prusa, Bee Roberts for discussing the paper. We also thank participants at the Midwest International Economics Meetings-Penn State, EIIT-Colorado, FREIT-Tokyo and ETSG-Warshaw, CEPR-Rome meetings, Erasmus, Tilburg, Paris, Dartmouth, Rutgers, Kentucky, Geneva-HEI for comments.

Abstract

This paper documents that Antidumping (AD) law fails to protect domestic firms that are internationally oriented. Antidumping protection hurts exports and exporters' productivity of protected firms, especially those belonging to a global network. Using firm-level data we find that AD measures raise the domestic sales of non-exporting firms by about 5%, but lower the export sales of protected firms by almost 8% compared to a relevant control group of unprotected firms. Measured at the more detailed product-level, exports fall by as much as 36% following AD protection. This negative externality of trade policy on firms' exports, shows that an increase in contingent protection can prevent recovery of global exports resulting from the financial crisis. In a globalized world, exporters' success seems to positively depend on the free entry of imports rather than the other way round. More broadly, our results point at the need to better understand the interaction between trade policy and firm boundaries in heterogeneous firm models and political economy models of trade protection.

JEL-codes: F13, L 41, O30, C2

Keywords: Antidumping, firm-level exports, intensive margin, extensive margin, productivity

I. Introduction

The use of WTO contingent protection is on the rise and is characterized by two phenomena. First, the fast proliferation of antidumping (AD) laws amongst WTO members in recent years³, which has resulted in an increase in antidumping measures worldwide. Second, an increase in antidumping measures coinciding with the outbreak of the financial crisis in 2008. A further rise in protectionism is one of the greatest fears of the WTO. Despite the political will of the G20 leaders not to increase protectionism⁴, Figure 1 suggests the reverse for antidumping measures, which worldwide increased by about 20% in 2008 and 30% in 2009.⁵

Within the WTO agreement, antidumping duties are an instrument that countries can use against unfair imports. An importing country can “punish” a trade partner by levying duties if imported products are *dumped and causing injury to domestic import-competing industries* (WTO AD Agreement, article 3). However, there is a suspicion that antidumping measures are often aimed at fostering the interests of domestic producers (Blonigen, 2006). Therefore, an important question is how antidumping protection affects domestic import-competing firms. In this paper we analyze this question, in particular, we show that AD protection affects domestic firms differently, depending on their international orientation. Exporting firms suffer from AD protection, while those that sell domestically and do not export benefit. This negative externality of trade policy on firms’ exports has not been considered in any previous study, but it is important since an increase in AD protection may thus aggravate or prevent recovery of global exports resulting from the financial crisis. Hence, while current AD policy focuses mainly on the effects of dumped imports on domestic production, this paper documents that the international scope and heterogeneity of domestic firms may be an important dimension, which should be taken into account when evaluating the effects of AD policy.

Individual case evidence both in the US and the EU suggests that the international orientation of firms or the lack thereof is what divides the domestic import-competing industries protected by antidumping. Shapiro (2008) describes how in a recent US antidumping case on “enriched uranium”, opponents argued that if the Obama Commerce department would use antidumping laws to punish outsourcers this would raise costs

³ E.g. Vandenbussche and Zanardi (2008), for a more historical perspective of the rise of AD see Irwin (2005).

⁴ G20 leaders’ statement, London summit, April 2009: “We will not repeat the historic mistakes of protectionism of previous eras”.

⁵ The World Bank (2009), Bown (2009) and Baldwin and Evenett (2009) report in more detail how antidumping has been on the rise since the start of the financial crisis. For a more general discussion see Irwin (2009).

throughout global supply chains. Isakson (2007) describes how “globalized” shoe producers like the Danish Ecco firm opposed EU antidumping protection on shoes in 2006. When the AD duties on imported leather shoes from China and Vietnam were recently extended, the dumping complaint had been much supported by relatively small Italian shoe producers mainly selling locally, but was opposed by large and more export-oriented shoe producers in the EU. The European Commission decided eventually to impose a duty against China and Vietnam promising that the price of shoes to consumers in Europe would only go up at most by 1.5 euro a pair⁶. Our empirical findings based on a wide range of cases seem to confirm this individual case evidence, which indicates that antidumping protection is not beneficial to firms with international activities.

While most of the literature analyzed how imports are affected by AD policy (Blonigen and Prusa, 2003), we instead focus on how exports are affected by the policy. We document the effects of protection on the exports and domestic sales of import-competing firms and in doing so we contribute to the growing literature on the effects of trade policy on heterogeneous firms. To this end, we use AD initiations and match them with the income statements of firms that produce the product that is under an AD investigation. For reasons of data availability we turn to European *firm-level* data where income statements are reported annually. But differences exist among EU countries in terms of data availability. In countries like France and Belgium the reporting is particularly good since companies are required by law to submit full income statements to the Central Bank. In France, additional information on the fraction of exports in total turnover is provided at the firm-level and made public, which is why we focus our analysis on France. In addition, we supplement the data with more detailed *product-level* data on export values and volumes at the 8-digit product level with information on export destinations. This allows us to distinguish between intra-EU and extra-EU exports which is useful since EU AD policy is an EU wide policy. The firm-level analysis further allows us to decompose the effects of AD protection on the intensity of exports (intensive margin) and the entry and/or exit of firms in export markets (extensive margin). The firm-level analysis also allows us to study the protected firms’ domestic sales and to engage in a productivity analysis of exporters versus non-exporters.

We empirically evaluate the effect of EU wide AD policy on French firms and French exports using a control group of firms with comparable pre-treatment characteristics. We find that AD protection raises firm-level domestic sales of non-exporters by 5%. But for exporters

⁶ See Financial Times, 5 February 2010 and http://ec.europa.eu/trade/issues/respectrules/anti_dumping/pr230206_en.htm

we find that AD protection lowers their exports abroad by about 8% and this fall is not compensated by an increase in exporters' domestic sales which also fall by around 4%. At the product-level extra-EU French exports drop by 36% while total extra-EU exports fall by 21%.⁷

The empirical results presented in this paper do not correspond well with predictions by existing theories. In neo-classical models, imported goods are very different from exported goods and therefore these models are not well equipped to explain how protection of imported goods can explain a fall in exports of similar goods than the ones that are imported. An early oligopoly model by Krugman (1984) with a representative firm and increasing returns, suggests that import protection can act as an instrument in favor of export promotion, which is not what we find. More recent models that abandon the representative firm assumption in favor of heterogeneous firms where exporters differ from non-exporters, offer important new insights. But analysis of trade policy in such models is complex and do not generate predictions on the short-run effects of import-protection on firm-level exports shipped from the protected market (Melitz and Ottaviano, 2008). In contrast, our empirical findings clearly point at a drop in the exports by firms in the protected country which from the firm-level data we know is driven by a fall in the intensive margin. The positive correlation that we observe empirically in our data between exporters and global firms suggest a link between trade policy and the boundaries of the firm. While models by Antras and Helpman (2004) and Markusen (2004) have revealed interesting patterns of global sourcing by multinational firms, the interaction with trade policy still remains to be examined more closely.

From a political economy point of view, the effects of trade policy in the face of heterogeneous firms are also not well understood as argued by important contributors to this field (Helpman, 2006; Bombardini, 2008; Rodrik, 1995). Currently, political economy models typically postulate that larger and more productive firms engage in lobbying activities in favor of trade protection (see Rodrik 1995 for a survey) Our empirical findings however point out that the larger and more productive firms, notably exporters, are the ones suffering from trade protection and therefore if anything are likely to lobby against protection.⁸ Our analysis points at the need to better understand the interaction between trade policy and firm boundaries in heterogeneous firm models and political economy models of trade protection.

⁷ In this paper we consider a European Union of 15 member countries which was the EU's constellation up to 2004.

⁸ G. Grossman (The Economist, 2009) argues that global sourcing has changed the political economy of protection.

While our contribution is an empirical one, we discuss a number of explanations for our findings at the end. One is that our results point at the importance of “global networks”. Exporters with affiliates abroad lose more exports. This suggests that international fragmentation of production and global sourcing are most likely to suffer from AD protection. Another explanation is that trade retaliation and trade deflection by countries adversely affected by the EU protection may also contribute to the decline in exports. And finally domestic market size effects as well as reduced ability for protected exporters to price aggressively abroad also provide possible explanations for our findings. In this paper we do not intend to pinpoint their individual importance but start by documenting the negative externality protection appears to have on the exports of domestic “like products” independent of the channel. In terms of productivity we find that non-exporters in our sample experience a modest increase in firm-level productivity during protection while exporters’ productivity falls during protection.

From a policy point of view our results are highly relevant. If future AD policy does not take into account the negative externality it has on protected firms’ exports, this is likely to have negative long-run consequences for any country using AD as an instrument to protect its domestic industry. Firms today no longer operate within the confines of one country or market but their operations increasingly become international. While import protection laws may have been an effective way to temporarily boost a country’s trade surplus and current account two decades ago where firms mainly sold domestically, it is no longer the case today. In a world that is increasingly globalized, exporters’ success seems to positively depend on the free entry of imports rather than the other way round. This paper shows that the use of contingent import protection as a beggar-thy-neighbor policy no longer holds when domestic firms operate in different markets.

In the next section we discuss our data, in section III we present the empirical methodology and results and section IV engages in a discussion of the results . Section V concludes.

II. Data

An AD case typically involves an investigation of the evolution of the volume of imports and of import prices from countries that are accused of dumping by the import-competing domestic industry. Our analysis focuses on European AD cases. The dumping complaint is

investigated by the European Commission and can result in ‘Protection’ or in ‘Termination’.⁹ Any dumping complaint must be supported by EU producers representing at least 50% of total EU production.¹⁰ During the investigation period, that can take up to a year, the European Commission usually imposes a temporary measure resulting in temporary import relief. If after the investigation period, the European Commission decides the complaint was justified, it imposes a final measure, usually an import tariff, which will remain in place for a period of 5 years. When the Commission decides to ‘terminate’ the AD case, the dumping complaint is rejected and the EU industry does not get further import relief.

For the purpose of analyzing the relationship between AD-protection and firm-level exports, we use annual income statements of unconsolidated firms¹¹, covering the period 1995-2005,¹² obtained from a commercial database named Amadeus. The coverage of number of companies and type of data, such as sales and employment, vary by country, depending on the national accounting legislation. In France information at the firm level on the fraction of exports of total turnover is also available. We therefore direct our attention to French data, where we identify 3,695 firms that operate in the same sector as the dumped products and that are affected by an AD investigation and hence can potentially receive protection. About 25% of all firms in our sample are exporters and their share of exports in total sales on average is about 26% with shares ranging between 0 and 100%.¹³ The frequency distribution of firm-level export shares of exporters at the start of our sample is illustrated in Figure 2. Less than one-third of the firms we consider and that are involved in AD cases, export. Of those that export, the sales from exports are on average almost one third of their total sales. In addition to information on exports, the data also provides information on the ownership structure of the firm, in particular whether it is part of a multinational group and whether it has affiliates elsewhere. This is information that we will use to identify the importance of being part of a global supply chain.

In Table 1 we give an overview of all the new AD cases¹⁴ that were initiated in 1997 and 1998 and for which we could retrieve all the variables from the income statements required for our analysis both before and during protection. In total, our dataset includes 20

⁹In the U.S. many cases end in “withdrawals” by the complaining industry as shown by Prusa (1992). In the EU there are few withdrawals. “Terminations” refer to a negative ruling by the EU Commission.

¹⁰Article 5 of the EU antidumping regulation..

¹¹Unconsolidated financial statements are similar to plant level information. In contrast, consolidated financial statements group together the information of several affiliates domestic and abroad.

¹²More details are given in the data appendix.

¹³After dropping firms with missing variables i.e. operating revenue, employment etc., the share of exporters rises to 33% suggesting that missing observations occur amongst the smaller non-exporters.

¹⁴‘New’ implies that these cases were not subject to protection when the case was initiated.

new¹⁵ AD investigations when we count by product group, which corresponds to 57 cases when we count cases by defending country. For each case, Table 1 lists the year of initiation, the corresponding 4 digit industry NACE revision 1, the average number of 8-digit CN codes involved, the year of decision, the average duty and the importing countries involved. We collect firm-level data for the firms in the French import-competing sector based on the 4-digit NACE sector the product under investigation was classified in.¹⁶ In 12 of the new cases (by product group), the outcome of the case was protection.¹⁷ Under the Sunset Clause, AD protection stays in place for five consecutive years. Duties range between 10% and 67%, with an average duty of 30%. In 8 other cases (by product group), the EU Commission did not grant import relief, after which the case was terminated. A minority of cases in Table 1 involved a French petitioning firm. We identify five French petitioning firms each of them in a different case. In the empirical analysis we verify results when excluding these cases to reduce potential endogeneity of trade policy on French firms.¹⁸

Table 2a provides summary statistics of exporters versus non-exporters which confirm earlier findings i.e. initial exporters are larger both in terms of number of employees, turnover and assets. Furthermore we observe that exporters are more productive (value added per worker) and have significantly more foreign subsidiaries than non-exporters. Table 2b compares summary statistics for firms in ‘Affirmative cases’, whose products received import relief through AD tariffs, to firms in ‘Termination cases’ where the European Commission decided against import relief. From this it can be noted that firms in termination cases appear to be similar to firms in protected cases. In our empirical approach we will apply a standard difference-in-difference methodology, where we will use firms in the ‘Termination Cases’ as a (natural) control group. To make correct inferences when using a difference-in-difference approach it is important that pre-policy characteristics that are thought to be associated with the outcome variables need to be comparable between a treated and an untreated group of firms (e.g. Abadie, 2005). The outcome variables we focus on in the remainder of our

¹⁵ Table 1 lists 22 AD cases but there are two overlaps. i.e. more than one AD case falls into the same NACE 4 digit sector. A first one is in sector 1720 and another one in sector 1752. We deal with overlaps in the following way i.e. in the case of 1720, both the first and the second case was initiated in 1997. In both cases the case was terminated so we classified both as Terminations. In the case of sector 1752, a first case was initiated in 1997 and a second one in 1998. In both cases a duty was imposed. This led us to consider the firms in this sector as being protected from the first year after the case was introduced in 1997 since the investigation usually takes about a year.

¹⁶ The NACE classification is a detailed industry classification used by the European Union with 400 different 4 digit NACE codes.

¹⁷ AD protection usually comes in the form of a duty but in some cases price-undertakings were imposed. A price-undertaking involves a voluntary price increase by the alleged dumpers to offset the injury to the import-competing industry (Tharakan et al, 1998).

¹⁸ Cases with French petitioners involve NACE 2020, 2710, 2722, 2734,3542.

analysis are firm-level exports, productivity and global network status. When we compare the pre-treatment values of these variables for firms in ‘Termination cases’ to firms in ‘Affirmative cases’ as we do in Table 2b, we find export share in turnover, labor productivity and foreign subsidiaries to be very similar and statistically not different from each other as can be seen from the t-test in the last column. Another summary statistic that is useful to report for both Termination cases and Affirmative cases is the “sales growth” before protection to verify whether firms are in declining sectors to start off with. We report the sales growth in the year before case initiation and find it to be positive, thus reflecting an upward trend in sales in the period before protection. The growth rate is not significantly different between the two groups of firms. This similarity in pre-characteristics as shown in Table 2b makes firms in Termination cases a “natural counter-factual” to use as a control group in our further analysis. Another useful feature of terminations is that estimates of the trade policy effect on the protected firms will be more prudent than when using any other counterfactual. The reason is a common “filing effect” between protected and termination cases.¹⁹ If filing would already have a negative effect on firm-level exports, comparing exports of protected firms to unprotected firms is likely to yield a smaller effect than the true effect. Therefore using firms in termination cases is likely to yield a lower bound dif-in-dif estimate of the decrease in exports suffered by protected firms. We return to this when we discuss the potential endogeneity of AD policy in section III.

In what follows we first report results for the firm-level analysis (section III.1). But due to data limitations in the firm-level data involving the multi-product nature and the absence of export destination markets, we complement our approach with a product-level one (section III.2) where we turn to the 8-digit product level (CN) trade data available from EUROSTAT. The use of product-level data allows us to look at exports of products identical to the ones protected by AD measures on the importing side. The product-level data also has exports by destination country which allows us to further distinguish between French exports to the rest of the EU (intra-EU exports) and French exports to the rest of the world (extra-EU exports). Since AD protection applies to the whole EU market we would expect AD protection to predominantly affect exports outside the EU i.e. on extra-EU exports.

¹⁹ Staiger and Wolak (1994) have shown that “filing” can already impact trade even if protection does not follow in a later stage.

III. Results

III.1. Firm-level analysis of export flows

The Intensive Margin of firm level exports

To evaluate the effects of AD protection on firm-level exports, we pursue a difference-in-difference approach on the exports of protected versus unprotected firms as given by the following specification:

$$\ln Exports_{it} = \alpha_i + \alpha_1 AD_Effect_{it} + YEAR_Dummies + \varepsilon_{it} \quad (1)$$

Where $\ln(Exports)$ is the log of real export turnover and refers to firm-level exports out of France, α_i is a firm-level fixed effect; AD_EFFECT is a dummy that takes a value of 0 for the years before AD protection and 1 in the years during AD protection but only for the protected firms. In addition we also include a set of year dummies to control for common time effects and business cycle effects that may affect the exports of both the protected and the unprotected exporters. One concern is that AD policy may be endogenous. One way to address endogeneity is to ensure that pre-treatment characteristics especially of outcome variables (Abadie, 2005) of the control group are similar to the treated group. The firms in Termination cases appear to satisfy this criterium as shown in Table 2b which suggests that the termination group is a good counterfactual that controls for potential endogeneity of AD.

A second feature of our analysis that reduces endogeneity further is that AD is an *EU policy* and we study its effect on *French* firm-level exports where simultaneity is arguably less likely to occur than if the policy were French. And finally to exclude the potential influence of French firms on EU trade policy even further we verify our results when we exclude French firms that were involved in the petitioning²⁰ and the cases that these petitioning firms belong to.

We start in Table 3 by estimating the dif-in-dif regression in specification (1) on the total set of initial exporters i.e. we only include firms that prior to the protection period were involved in exporting activity. Column 1 in Table 3 shows the results when using the log of

²⁰ Petitioning firms are firms that publicly support the dumping complaint but typically only represent a small number relative to the total number of EU producers.

real export turnover as a dependent variable where we deflated exports with a simple four digit producer price deflator. Ideally, we should use an export price deflator, but then we would require destination markets at the firm level, which is not available in our firm-level data²¹. From column 1 we note that AD protection results in a significant decrease in export turnover of about 7.7% on average over the protected sectors. When we limit the data to the “global firms” i.e. firms that have one or more affiliates abroad, we can observe their exports fall more drastically. The coefficient reported in column 2 of Table 3 shows that exports of “global firms” fall by as much as 17%. While we have no direct information of firm-level outsourcing activities, “global firms” are natural candidates for these type of activities. Our data allows us to distinguish between the location of the affiliates in terms of intra- or extra-EU. When we consider “global firms” with only affiliates outside the EU, we find the effect of AD protection on exports to be much more negative which can be seen from column 3. This is what one would expect since AD policy is an EU wide policy and mainly affects firms that outsource outside the EU.

In order to know whether the global status of a firm solely explains the drop in exports, in column 4 of Table 3 we only include the non-global firms. The effect of AD protection on firm-level exports is still negative and significant. This suggests that even those exporting firms that do not have affiliates abroad suffer from AD protection in terms of their sales abroad.

When we exclude French petitioners and the five AD cases they belong to from the analysis to reduce potential policy endogeneity, the results reported in Table 3 are reinforced. For example the coefficient in column 1 drops further to -0.12 suggesting a 12% fall in exports of initial exporters resulting from AD import protection.²²

The next step is to analyze whether the drop in exports documented in Table 3, was compensated by an increase in domestic sales. If protection increases the domestic market size, firms that were previously exporting may suddenly find it more profitable to increase their sales at home especially since by selling locally they would save on transport costs. We fail to find such substitution effect. In Table 4 we report the results of a similar specification as in (1) but now focus on the effect of AD protection on domestic sales in France. Our results indicate that after AD protection sets in, domestic sales in France significantly drop for firms that are initial exporters (column 1, 2 and 3 in Table 4). The average drop in

²¹ We also experimented with using the export share in total sales instead as a dependent variable, which avoids the deflation problem. Export shares also declined after AD protection.

²² The number of French petitioners and the cases they belong to is too small for a separate analysis on petitioners. Moreover such an analysis is more likely to suffer from endogenous policy effects.

domestic sales for all initial-exporters is around 4%. But for initial-exporters that are “global firms”, the drop in domestic sales is as much as 22% as shown in column 2 whereas the drop in domestic sales for initial-exporting firms without affiliates abroad (non-global exporters) lies around 3%.

In contrast, for firms that do not export and that do not have affiliates abroad, domestic sales significantly increase with about 5% during AD protection which can be seen from columns 4 and 6 in Table 4. Put differently, for firms with most of their sales on the domestic market, AD protection appears to be an effective way to increase their market size and their sales. But for exporting firms, both exports and domestic sales decline especially when they belong to a global network.

At this point it is important to point out some of the limitations of our *firm-level* analysis. First, the firm-level data available to us are multi-product in nature but do not entail a breakdown of exports by products which makes the product correspondence with the protected product less than perfect. Ideally we want to identify exported products that are directly comparable to the imported product. For this reason we turn to *product-level* trade in section III.2.

The Extensive Margin of firm-level exports

Thus far we have focused on the effects of AD protection on exporters’ intensive margin. But a related question is whether import-competing protection alters the number of exporters referred to as the extensive margin. Without the use of firm-level data this distinction cannot be made. In the first column of Table 5 we report the results of a dif-in-dif analysis where the dependent variable is dummy with a value of zero if a firm does not export and a value of 1 when a firm starts exporting. Since including firm-level fixed effects in a probit equation can bias estimates (Wooldridge, 2002, p. 483) we include instead a dummy equal to 1 for all firms that ever received protection (Ever_protection dummy) and equal to 0 for all other firms i.e. those in the control group. AD protection has a small but significantly positive effect on the probability to start exporting for those firms that were not initial exporters before the protection. AD protection raises the exporting probability by 3% compared to the unprotected firms. The expansion in domestic market size for the non-exporters resulting from the AD protection is a likely explanation for this observation. Domestic firms benefit from protection and can increase their domestic sales. This allows firms to spread their fixed costs of production over more units than before thereby reducing

their average cost per unit and possibly also lowering their marginal costs. This increase in productivity brought about by the protection may be such as to allow them to incur a fixed cost of entering export markets after which they become exporters which was not possible to them before.

In the second column of Table 5 we look at the opposite question i.e. whether AD protection affects the probability of exporters to quit exporting. We report the results of a dif-in-dif analysis where the dependent variable is a dummy with a value of zero if a firm continues to export and a value of 1 when a firm quits exporting. The results indicate that there is no statistically significant effect of AD protection on the probability of exporters to quit exporting. The effect of AD protection on the extensive margin is small especially when compared to the effect AD protection has on the intensive margin of trade documented in the previous section. Several reasons may account for that. Hysteresis in export activity is one possible explanation. Since protection is in principle limited to 5 years, exporters may “hang in” there and despite lower volumes being shipped out still continue their exporting activity. Given that exporting initially requires a fixed cost to enter the export market, this explanation would be in line with the real option theory (Dixit and Pindyck, 1994) observed whenever activities require a substantial amount of sunk cost outlays. Empirical evidence to date on exporting activity supports the hysteresis argument (Roberts and Tybout, 1997). AD protection at best only seems to have a limited effect on the extensive margin.

III.2. Product-level analysis of export flows

To overcome some of the limitations of our firm-level data which typically involves their multi-product nature and the absence of export destination markets, we complement our approach with a product-level one where we turn to the 8-digit product level (CN) trade data available from EUROSTAT. The use of product-level data allows us to look at exports of products identical to the ones protected by AD measures on the importing side. The product-level data also has exports by destination country which allows us to distinguish between intra-EU and extra-EU exports. Since AD protection applies to the whole EU market we would expect AD protection to predominantly affect exports outside the EU i.e. on extra-EU exports.

The results of the effect of AD protection are listed in Table 6 where we show the results of the following dif-in-dif estimation

$$\ln Exports_{kt} = \beta_k + \beta_1 AD_EFFECT_{kt} + YEAR_Dummies + \varepsilon_{kt} \quad (2)$$

where subscript k refers to the product(s) in the AD cases and where we use products in termination cases as a control group. The inclusion of year dummies control for business cycle effects on exports. From the results in Table 6 we clearly see that AD protection has a strong negative effect of about 36% on the volume of extra-EU exports while intra-EU exports go down by 28%. This is in line with what we expected i.e. the fall in exports' volume seems to be predominantly driven by exports shipped to destinations outside the EU. When we do the same exercise, not just for French extra-EU exports, but for all EU countries' extra-EU trade in the same products we find exports to fall by 21% and imports by 12%. The larger number found when we only look at French exports instead of total EU exports, could reflect France's relatively larger share of import-competing production in some of the products affected by AD. These *product-level* results indicate that the AD-effect measured earlier at the *firm-level*, with estimates ranging between 8 to 24%, can be regarded as "lower bound" estimates due to the multi-product nature of firms. The true export depressing effects of AD measured at the product-level obtained here are substantially higher. But interestingly, from the firm-level analysis we know that the fall in exports is predominantly driven by the intensive margin of trade, an observation we could not obtain by limiting ourselves to a product-level analysis.

From Table 6 it can also be noted that when interacting the AD-Effect with year dummies, the effects on extra-EU product-level export volumes tend to kick in especially in the first three years during protection. Table 6 also documents the AD effect on prices, proxied by the unit values as in Trefler (2004). It can be noted that internal EU prices proxied by intra-EU unit values as well as export prices do not seem to be significantly affected during the protection period but remain stable over time. One possible explanation for the moderate effect that European AD policy has on domestic EU prices is the "Public interest" clause. In principle this clause prevents the EU from imposing AD protection if consumer interests - in the form of rising prices - would be hurt by it.²³ Interestingly Liebman (2006) for the US, using disaggregated product-level monthly panel data for steel, also fails to find a significant increase in U.S. steel prices after a safeguard was put in place by the US

²³ The EU argued that antidumping duties on shoes from China and Vietnam were justified given that the price of European shoes would at most go up by 1.5 Euros a pair (http://ec.europa.eu/trade/issues/respectrules/anti_dumping/pr230206_en.htm)

government but concludes that prices were more affected by business cycle conditions and industry rationalization than by the safeguard protection.

In table 7 we limit our attention to target countries involved in the AD cases by looking more closely at France's product-level exports, as well as imports, to and from these countries. The estimated coefficient of AD on exports to target countries appears very large with exports falling as much as 66% as a result of protection. Despite the high magnitude and statistical significance of the drop in exports to target countries following protection, economically this export flow represent only 1% of the total export value of products in our AD cases. This suggests that target countries alone are unlikely to drive the overall fall in exports that we find. We will return to this when we discuss in section IV retaliation as one of the potential explanations for our findings. Finally, from table 7 we can also note that imports from the target countries drop, which is what we would expect when they get duties imposed.

III.3. Firm Productivity, exports and antidumping

AD protection is supposed to keep "unfair imports" out, but a number of authors have documented that the policy is often aimed at fostering the interests of domestic producers²⁴. Therefore, an important question is how AD import protection affects the productivity of domestic import-competing firms. This has been explored in Konings and Vandenbussche (2008), where it is shown that the effects of trade protection depend on the initial productivity distribution of firms. In particular, protection seems to help mainly laggard firms to restructure and catch up with productivity, while the more efficient firms suffer from AD protection. We are now in a position to explore this argument further by introducing the export status of firms. In particular, we can analyze what happens to the productivity of exporters compared to non-exporters after AD protection. There is by now a large literature showing that exporters are typically more productive than non-exporters and for some countries at least, there also seem to be learning effects from exporting.

We start by first documenting the productivity ranking of exporters versus non-exporters and use a simple measure of labor productivity to test this by running the specification below:

²⁴ For instance, Konings and Vandenbussche (2005) show that antidumping protection increases the price-cost margins of protected firms.

$$\ln \text{real labor productivity}_{it} = \alpha_i + \alpha_1 \text{Cap_Intensity}_{it} + \alpha_2 \text{Export_Status}_i + \alpha_3 \text{Year_dummies} + \varepsilon_{it} \quad (3)$$

We regress the log of real labor productivity (value added per worker) on Capital Intensity (Cap_Intensity) measured by the log ratio of Fixed Tangible assets over firm-level employment, where we deflate capital by a country specific capital deflator²⁵, and an export dummy taking a value 1 when the firm is an exporter and 0 otherwise and year dummies. We check the robustness of our results by adding firm-level or sector-level fixed effects. Results are reported in Table 8. In line with Melitz (2003) and Bernard and Jensen (1999) we find that the productivity of exporters on average is higher than the productivity of non-exporters. This can be seen by the positive and highly significant coefficient on the Export-dummy which is an indication of the export status of a firm over time.

Since exporters are typically more productive, they are more likely to belong to the group of highly productive frontier firms. Here we expect that the effect of AD protection on productivity to be negative for the initial exporters. For this purpose we estimate the effect of AD protection on total factor productivity (TFP) using the following specification:

$$\ln TFP_{it} = \alpha_i + \alpha_1 AD_EFFECT_{it} + \alpha_2 AD_EFFECT \times Initial_Exporter + Year_dummies + \varepsilon_{it} \quad (4)$$

Where α_i controls for firm-level fixed effects and again the AD_EFFECT gives the average effect of protection across all firms. The interaction effect indicates whether the productivity effect of AD protection for initial exporters is different than for purely domestic firms. Year dummies control for business cycle effects. In what follows we use several productivity estimates ranging from a simple measure of labor productivity to the more sophisticated Olley and Pakes (1996) productivity measure to verify our results.

In Table 9 the first two columns report results when using a simple metric of labor productivity. The third column uses total factor productivity computed from estimating a Cobb-Douglas production function with input factors labor, capital and material costs using OLS, while the fourth column uses the Olley-Pakes method to compute TFP. For these two last measures of TFP we first estimate the relevant coefficients of the production function for each NACE sector separately to take into account differences in technology between sectors

²⁵ Ameco data base, European Commission

before computing TFP at the firm level using these coefficients. For the specifications using labor productivity we also included the capital intensity as an additional control. In all specifications we find similar results, which can be regarded as an extension of the findings of Konings and Vandenbussche (2008). The effect of AD protection on measured productivity is on average positive and statistically significant. However, this is only so for non-exporting firms. The interaction of the AD effect with initial exporter status is always negative and larger than the direct effect of AD protection. This suggests that exporters' productivity decreases during protection. This result is unlikely to be driven by price-effects as prices, proxied by unit values, did not change much after AD protection as shown in table 6. A more likely explanation for the fall in measured productivity is that the drop in output on the export markets documented in the previous section occurs faster than the adjustment in input factors, such as physical capital, which is confirmed by our data.

While the results in table 9 seem robust with respect to various measures of productivity, there may be some problems with hidden dynamics inherent to productivity. In particular, as Bertrand et al. (2004) point out if there is serial correlation in the error term then the estimated standard errors may be deflated. We therefore report in table 10 a number of robustness checks in order to deal with this potential problem. As in Trefler (2004) we report in the first three columns results based on difference equations. By differencing we implicitly control for the unobserved firm-level fixed effects. Furthermore, when differences are taken we avoid potential biases arising from first order serial correlation. We report second and third difference specifications in columns 1 and 2 respectively. The results in Table 10 remain in line with the results reported in earlier tables. When we interact instead of an initial exporter dummy, with the initial share of exports in turnover in column (3) of Table 10 we notice again that the interaction effect is negative and significant and larger than the effect of the AD protection dummy. In fact, column (3) suggests that the effect of AD protection on firm-level productivity is especially negative for firms that are intensive exporters. The AD effect on productivity turns negative when the initial share of exports in turnover is 60%.

IV. Discussion

We have documented that AD protection is hurting exporters while helping non-exporters. The fall in exports and domestic sales of exporting firms and the fall in productivity after protection are consistent with a number of explanations. We do not aim to test their relative importance which exceeds the scope of this paper but engage in a discussion of a number of possible channels involved.

Retaliation

A first explanation for the fall in exports could be that French exporters experience reduced market access abroad. This could result from retaliatory action of targeted trade partners outside the EU (Prusa, 2001). Such retaliatory actions are difficult to capture empirically since they may or may not occur in the same sector and may take some time to materialize (Blonigen and Bown, 2003).²⁶ We find that exports to target countries outside Europe fall by as much as 66% as shown in Table 7.²⁷ But despite the statistical significance, the economic significance of exports going to targeted countries is low. Exports to target countries represent only 1% of the total export value of products in our AD cases. This suggests that while retaliation adds to the fall in exports, it is unlikely to account for the majority of the decrease in exports. While retaliation or retaliatory threats by a foreign trade partner can have a negative effect on some domestic variables such as the returns to shareholders of domestic firms as shown by Liebman and Tomlin (2008), it is more difficult to see why retaliation would negatively impact local sales of domestic firms.

Trade Deflection

Trade protection in Europe may force foreign trade partners to redirect some of their exports previously going to Europe to other destination markets. This implies that French exports of similar products are now likely to face tougher competition in export markets outside Europe where the redirected goods are also present. Empirically we find imports into the EU from countries targeted by AD protection to be depressed substantially (Table 7). This finding suggest that foreign trade partners accused of dumping ship smaller quantities to the

²⁶ Retaliation can take the form of petition against an industry in a specific country that has filed against the petitioning industry in the past. This is the most transparent form of retaliation. But it can also entail the filing against an industry in a country that has other industries that have filed petitions against industries in the home country previously.

²⁷ For the products in the AD protection cases, there is a strong positive correlation between product-level imports and exports of 79%.

EU after the trade protection which is a finding similar to Prusa (1997) and others. To establish whether these lost imports are redirected to third export markets is not an easy thing to do. Bown and Crowley (2007) is currently the only study documenting this type of trade deflection. They show how the fall in Japanese exports to the US as a result of US import protection coincided with an increase of Japanese exports of the same products to third markets. They identified trade deflection by focusing on one US foreign trade partner notably Japan and on one type of products notably steel. To quantify the extent of trade deflection for the multiple cases involved in our paper would prove to be much more difficult if only because of the large number of different products and different trade partners involved as shown in Table 1. But despite existing measurement difficulties, trade deflection is likely to be an important explanation for why we observe exports of France to third markets to fall, although it does not offer a particularly good reason for why we observe a drastic fall in the domestic sales of exporters.

Global Firms

Exporters are more likely to be “global firms” and to belong to a network with affiliates abroad. These are typically firms that engage more in the fragmentation of production through imports and outsourcing (Bernard et al., 2009). There is some recent case evidence to suggest that firms that engage in international fragmentation of production are hurt by this type of trade policy.²⁸ At this point however, we do not understand well the global organization of production, the mechanisms at work and the interaction with trade policy. But increasingly new and richer datasets are emerging that should allow future research to study the interaction between trade, trade policy and firm boundaries.

Interesting to note is that when we take the ratio of the average unit value for the exported products (extra-EU) in our data and relate that to the average unit value of imported products across all products involved in AD cases in our sample, we get a ratio of 1.6 in the period before protection with a standard error of 0.08. This suggests that unit values for exported products in the same 8 digit products are substantially higher than on the import side. Prices proxied by unit values are typically considered as an indication of quality or perceived quality. This suggests that European exports are of higher quality than the comparable imported products from target countries accused of dumping. In the light of this price difference, one potential explanation for the observed fall in exports could be one where

²⁸ Isakson (2007), Shapiro (2009)

global firms outsource the most labor intensive parts of the production while keeping the high value adding activities in the domestic country.²⁹ If these value adding activities involve say quality controls, they typically would not change the 8 digit CN product code classification.³⁰ Hence the exported product would enter the same 8 digit classification as the imported product. But the value-adding activities pursued inside the EU before re-exporting in such an instance would lead to an increase in quality which would explain the higher price of exported goods than of the imported goods prior to protection which we observe. Ma, Van Assche and Hong (2009) model a global production network to analyze patterns in China's processing trade that are consistent with our sourcing explanation i.e. where EU firms outsource the production of "raw products" and after re-imports add value in a way that does not alter the nature of the product (quality inspection, elimination of defaults, protective coatings etc) but that increase the products' value.

Limited Pricing Policy for extra-EU exporters

Finally it is also possible that the fall in exports is driven by the fact that AD limits French exporting firms' and more in general EU firms' ability to lower their prices on extra-EU export markets if they do not want to be accused of dumping themselves. Trade protection usually keeps prices of domestically produced import-competing varieties high (Prusa, 1997)³¹. High domestic prices resulting from protection reduce the ability of exporters to price-discriminate abroad which is likely to reduce exporters' competitiveness in export markets and to lower exports.

Each of the explanations discussed above is likely to contribute to the reduction in exports that we observe as a result of AD protection. Which of the explanations applies is likely to differ case by case and would require a higher degree of detail than the data currently at our disposal but should be the subject in future research.

²⁹ We refer to the "enriched uranium" protection case in the US which was heavily opposed by US outsourcers.

³⁰ EU manual on product classification section 4.2. stipulates that "Industrial Treatments" do not necessarily change the product classification.

³¹ Theoretically, it has been shown that AD can act as a collusive device aimed at aligning the low price of foreign goods on higher domestic prices (Zanardi, 2004 and Veugelers & Vandenbussche, 1999).

V. Conclusion

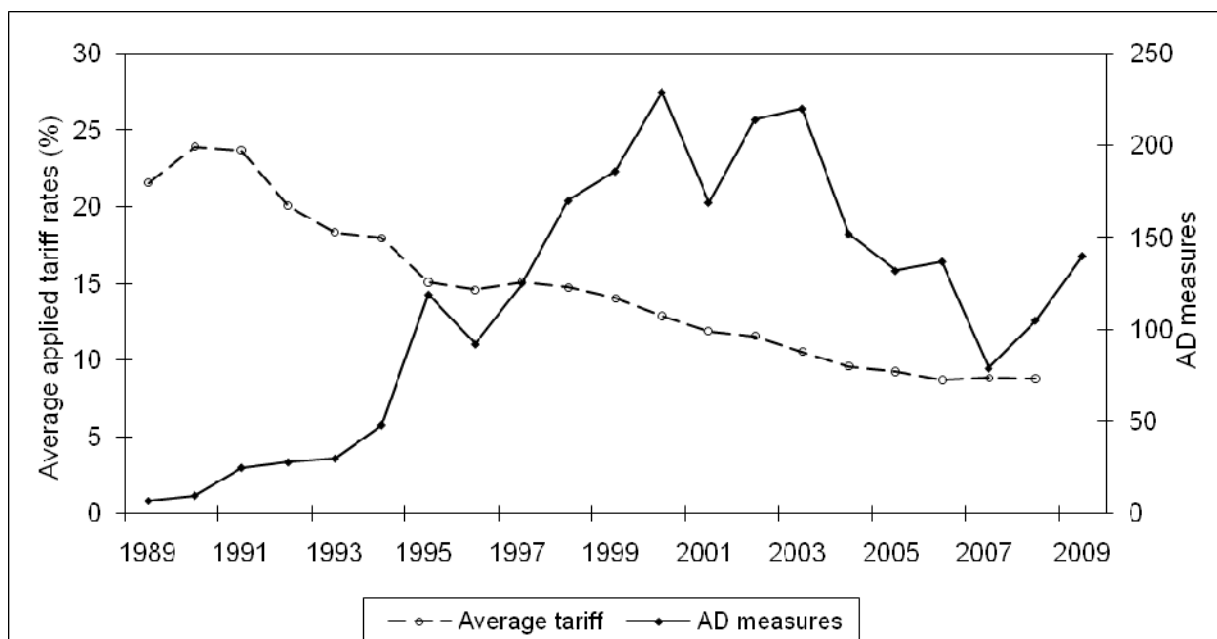
The purpose of this paper is to document the negative effect that AD protection has on the exports of “like products” shipped from the protected market. We find that AD protection negatively affects the intensive margin of exports i.e. the amount of exports but leaves the extensive margin i.e. the number of exporters in the protected sector, relatively intact. The fixed cost necessary for entering the export market may explain why despite a drastic fall in the volume of exports during protection, exporting firms do not massively exit the export markets. The fall in exports is especially evident on French exports to destinations outside the EU. This fall in exports is not compensated by a rise in domestic sales since for exporting firms, domestic sales go down. The empirical evidence further suggests that AD protection benefits non-exporters. Their domestic sales go up significantly during protection and their average firm-level productivity increases. In terms of productivity we observe a fall in productivity of exporters during AD protection.

Several explanations may account for the loss in exports. First, exporters may face retaliation abroad when exporting to targeted countries. We find some evidence in support of this retaliation hypothesis. Second, trade deflection resulting from the EU AD protection may result in intensified competition for EU exporters on third export markets. In particular, imports that can no longer enter the EU because of the AD protection, may be re-directed to other destination markets resulting in tougher competition there. Third, exporters that belong to a global network and engage in the fragmentation of production can be subject to AD measures which raise their production costs and lowers exports. Future research should focus on the mechanisms at work to better understand the reasons underlying the drop in exports which lies beyond the scope of this paper. And finally, AD may limit exporters in their price-discrimination abroad if they do not themselves want to be accused of dumping.

The results presented here shed a different light on the benefits of AD protection. In general, AD policy is felt to be a mechanism fostering the interests of domestic producers. This paper is the first to show that while this is true for firms that predominantly sell locally, it is not true for exporters. Not taking the interests of exporters into account when deciding to protect a particular industry is bound to have detrimental long run effects which need to be considered before imposing protection. These considerations are particularly relevant given the recent steep surge in the number of new AD investigations. In 2009, this figure was 30% higher than in the previous year. Expectations for the future are that countries will be tempted to use temporary protection even more to shelter their firms from the adverse affects of the

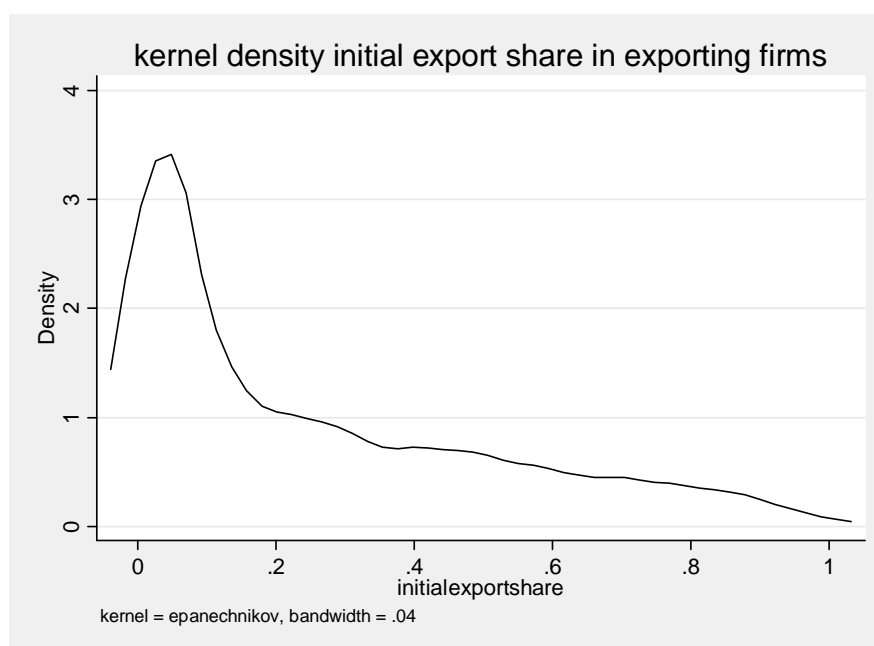
global financial crisis that started end of 2008. Based on this paper it is safe to conjecture that that this would result in a substantial contraction of exports adding to the already loss in exports. This paper should clearly temper policy makers enthusiasm to use AD as an easy way to improve domestic conditions.

Figure 1: Evolution of Tariffs versus Antidumping Measures



Source: The tariff data for 1980-2007 from UNCTAD TRAINS (WITS, 2009) which runs to 2008.
 The AD data are from the WTO and the Bown database and refer to the total number of AD measures that are decided in a given year by both developed and developing countries.

Figure 2: Initial Export Shares of Exporters



Source: AMADEUS, French firm-level data

Table 1: New Antidumping Cases Initiated by the EU between 1997-98

Year of AD Initiation	Product	# CN per case	NACE rev.1	Decision (Duty/Undertak/Termination)	Year of AD Decision	Average Duty ^(a) (%)	Defendants
1997	Fax machines	1	3220	D	1998	43	China, Japan, S-Korea, Malaysia, Singapore, Taiwan, Thailand
	Potassium permanganate	1	2413	D	1998	21	India, Ukraine
	Polysulphide polymers	1	2417	D	1998	13	USA
	Synthetic fibre ropes	4	1752	D	1998	82	India
	Monosodium glutamate	1	2441	T	1998	0	Brazil, USA, Vietnam
	Cotton fabrics	15	1720	T	1998	0	China, Egypt, India, Indonesia, Pakistan, Turkey
	Strips of iron or non-alloy steel	4	2732	T	1998	0	Russia
	Synthetic fibre ropes	4	1752	T	1998	0	S-Korea
	Unwrought magnesium	2	2745	D	1998	32	China
	Stainless steel bright bars	4	2731	D	1998	25	India
	Thiourea dioxide	2	2414	T	1998	0	China
	Hardboard	10	2020	D/U	1999	16	Japan, Korea, Malaysia, China, Taiwan
	Bicycles	2	3542	D	1999	18	Brazil, Bulgaria, Estonia, Latvia, Lithuania, Poland, Russia
	Electrolytic alumin. Capacitors	3	3210	T	1999	0	Taiwan
	Woven glass fibre	1	1720	T	1998	0	USA, Thailand
1998	Polypropylene binder	1	1752	D /U	1999	26	Japan
	Steel stranded rope & cables	1	2873	D/U	1999	45	Poland, Czech. Republic, Hungary
	Stainless steel wire	4	2734	D/U	1999	56	China, India, South Africa, Ukraine
	Steel stranded rope & cables	1	2873	D/U	1999	44	India, Korea
	Polyester filament yarn	4	2470	T	1999	0	Hungary, Mexico, Poland
	Stainless steel heavy plates	1	2710	T	1999	0	Korea, India
	Seamless pipes and tubes	2	2722	D /U	2000	31	Slovenia, South Africa

Source: Bown, Global Antidumping Database.

- (a) The average duty is the country wide duty that applies to “all other exporting producers”. Exporters that co-operate in the EU antidumping (AD) investigation often get a lower duty.
(b) A price-undertaking (U) involves a voluntary price increase by the alleged dumpers to offset the injury to the import-competing industry.

Table 2a: Summary Statistics on Exporters and Non-Exporters

	Non-Initial Exporters (1)	Initial Exporters (2)	t-test on the difference in means of (1) and (2)
Operating revenue (in 1000 €)	5860 (188.02))	15516 (393.41)	-22.14***
Employees (number of full-time equivalents)	41 (1.12)	92 (2.29)	-20.20***
Labor productivity (in 1000€)	52 (0.85)	57 (1.23)	-3.06***
Tangible fixed assets (in 1000€)	876 (38.06)	2892 (104.12)	-18.12***
Foreign subsidiary dummy	0.02 (0.01)	0.094 (0.03)	-20.40***

Source: Amadeus, French firm-level data

Notes: 1) standard errors in brackets, *** denotes statistically significant at the 1% level

2) In the original data set, initial-exporters represent 25% of all firms, but when dropping those firms with missing observations on operating revenue and employment, the number of initial exporters rises to 33%, which means that especially small non-exporters do not report all variables.

3) Initial Exporter is defined as a firm exporting in the year of the AD case initiation

Table 2b: Summary Statistics on Terminations and Affirmative EU Antidumping Cases in year before Case Initiation

	Terminations (1)	Affirmative cases (2)	t-test on the difference in means of (1) and (2)
Sales growth	0.11 (0.015)	0.13(0.016)	-1.012
Labor productivity (in 1000€)	46(3.13)	48(3.61)	-0.465
Av. Export Share in Turnover	0.11(0.01)	0.11(0.007)	-0.317
Foreign Subsidiary Dummy	0.07(0.01)	0.06(0.008)	1.296

Notes 1) The comparison is executed in the year before the case initiation

2) standard errors in brackets

3) Terminations represent 44% of firm-level observations and Affirmative cases represent the remaining 56%.

Table 3: Antidumping Protection and the Intensive Margin of Exports

	EXPORT Turnover of Initial Exporters (1)	EXPORT Turnover of Global firms (2)	EXPORT Turnover of global firms with only affiliates outside the EU (3)	EXPORT Turnover of non-Global firms (4)
AD-Effect	-0.077*** (0.035)	-0.166** (0.09)	-0.248** (0.125)	-0.070** (0.037)
Year dummies	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
N° Obs.	6,893	546	305	6,347

Source: Amadeus, French firm-level data

Notes: 1) Export Turnover is the log of real export turnover. The results shown in this Table represent the loss in exports conditional on continuing export status since those whose exports fall to zero (log not defined) are dropped from the analysis.
2) standard errors in brackets.
3) ***/**/* indicate significance at the 10, 5 and 1% level respectively
4) Control group are firms in Termination firms
5) AD_EFFECT takes a value of 0 before AD protection and a value of 1 for the 5 years after protection but only for the protected firms
6) Initial_Exporter are firms that are exporting in the year of case initiation. "Global firms" are those firms that have foreign subsidiaries

Table 4: The Effect of antidumping protection on Domestic Sales in France

	Initial_Exporters			Non-Exporters		
	(1) All Initial Exporters	(2) Global firms	(3) Non-Global	(4) Non-exporters	(5) Global firms	(6) Non-Global
AD-Effect	-0.044*** (0.018)	-0.228*** (0.080)	-0.030** (0.018)	0.050*** (0.016)	0.08 (0.126)	0.049*** (0.164)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	yes	Yes	Yes
N° Obs.	6893	546	6,347	15,180	282	14,898

Source: Amadeus, French firm-level data

Notes:

- 1) Domestic sales is the log or real domestic sales
- 2) Standard errors in brackets*; /**/*** indicate significance at the 10, 5 and 1% level respectively
- 3) Control group in the dif-in-difs are Termination firms
- 4) Initial_Exporter is an exporter in the year of case initiation
- 5) Global firms'' are those firms that have foreign subsidiaries

Table 5: Antidumping Protection and the Extensive Margin

	(1) Start to export	(2) Quit to export
AD-effect	0.030*** (0.006)	0.001 (0.004)
Ever_Protection	-0.034*** (0.004)	-0.002 (0.004)
Trend	0.008*** (0.0006)	-0.002*** (0.0007)
Initial productivity	-	-
Log likelihood	-3045	-1040
# observations	15,188	8,237

Source: Amadeus, French firm-level data

Notes:

- 1) The dependent variable in columns (1) and (2) is a dummy taking a value of 0 for a non-exporting firm in the years it does not export and a value of 1 for an exporting firm in exporting years
- 2) The dependent variable in columns (3) and (4) is a dummy taking a value of 0 in the years if the firm is an initial exporter and a value of 1 in the years exporting stops

Table 6: Antidumping Protection and Intra- versus Extra EU Product level Exports from France

	Intra-EU Exports				Extra-EU Exports			
	Volume		Prices		Volume		Prices	
AD-EFFECT	-0.284** (0.133)	-	-0.037 (0.087)	-	-0.369*** (0.1215)	-	0.003 (0.052)	-
AD-EFFECT x year1		-0.104 (0.253)		-0.017 (0.166)		-0.506*** (0.235)		0.021 (0.099)
AD-EFFECT x year 2		-0.282 (0.232)		-0.061 (0.152)		-0.344* (0.215)		-0.137* (0.092)
AD-Effect x year 3		-0.250 (0.238)		0.053 (0.156)		-0.298* (0.220)		-0.034 (0.094)
AD-EFFECT x year 4		-0.339 (0.237)		0.0147 (0.155)		-0.243 (0.211)		0.0006 (0.092)
AD-EFFECT x year 5		-0.325 (0.228)		0.018 (0.150)		-0.177 (0.211)		-0.064 (0.081)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# observations	690	690	690	690	724	724	724	724

Source, EUROSTAT trade statistics, product-level data at 8 digit CN level

Notes: (1) Products in Termination cases serve as a control group in the dif-in-dif regressions reported in the Table; (2) standard errors in parentheses; (3) intra-EU and extra-EU trade refers to the French trade in the protected products

Table 7: Antidumping Protection and Product level Exports to and Imports from targeted countries

	Exports to target countries				Imports from target countries			
	Volumes		Prices		Volumes		Prices	
AD-effect	-0.666** (0.286)		0.131 (0.137)		-0.801*** (0.211)		0.046 (0.074)	-
AD-EFFECT x year1	-	-1.05** (0.272)	-	0.269 (0.272)	-	-0.747** (0.39)		-0.050 (0.137)
AD-EFFECT x year 2	-	-0.475 (0.483)	-	-0.150 (0.230)	-	-0.700** (0.38)	-	0.061 (0.132)
AD-Effect x year 3	-	-0.738* (0.458)	-	0.046 (0.218)	-	-1.13** (0.367)	-	0.094 (0.128)
AD-EFFECT x year 4	-	-0.417 (0.481)	-	0.393* (0.22)	-	-1.261*** (0.390)	-	0.432** (0.136)
AD-EFFECT x year 5	-	-0.656 (0.504)	-	0.109 (0.240)	-	-0.540* (0.373)	-	-0.165 (0.130)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Product Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# observations	363	363	363	363	506	506	506	506

Source: EUROSTAT trade statistics, product- level trade data at 8 digit CN level

Note: the estimates above involve export and import volumes to target countries as reported in last column of Table 1 on a case-by-case basis where we only consider target countries outside the EU.

Table 8: Are Exporters more Productive?
Dependent variable: Log real labor productivity

	(1)	(2)
Capital Intensity ratio	0.13*** (0.008)	0.074*** (0.007)
Exporter_status	0.070*** (0.015)	0.026** (0.12)
Year Dummies	YES	YES
Sector Fixed effects	YES	-
Firm fixed effects	-	YES
N° of Observations	11,720	11,720

Source: AMADEUS, French firm-level data

Notes: 1) Export_status takes a value of 1 in case the firm ever exports during the period of analysis
2) Capital Intensity Ratio is the log of Fixed Tangible Assets over Employment
3) Robust standard errors in parentheses

Table 9: Antidumping Protection and the Productivity of Exporters

	(1)	(2)	(3)	(4)
<i>Dependent variable</i>	<i>log labor productivity</i>	<i>log labor productivity</i>	<i>TFP-OLS</i>	<i>TFP-OP</i>
Capital intensity	0.071*** (0.006)	0.071*** (0.006)	-	-
AD_EFFECT	0.018** (0.012)	0.056*** (0.017)	0.045*** (0.010)	0.046*** (0.010)
AD_EFFECT x Initial_Exporter	-	-0.069*** (0.021)	-0.063*** (0.012)	-0.066*** (0.012)
Year Dummies	YES	YES	YES	YES
Firm Fixed Effects	YES	YES	YES	YES
N° Observations	11,720	11,720	11,720	11,720

Source: AMADEUS, French firm-level data

Notes: 1) Capital Intensity Ratio is the log of Fixed Tangible Assets over Employment
2) Robust standard errors
3) Clustering for firm-level observations

Table 10: Robustness Checks: Dependent variable TFP (Olley-Pakes)

	(1)	(2)	(3)
	Second Differences	Third Differences	First Differences (using export share instead)
AD_EFFECT	0.024*** (0.013)	0.036** (0.016)	0.020*** (0.008)
AD_EFFECT x Initial_Exporter	-0.028** (0.015)	-0.034** (0.019)	-0.034*** (0.020)
Year Dummies	Yes	Yes	Yes
Firm Fixed Effects	No	No	No
N° Observations	5,665	4,009	7,937

Source: AMADEUS, French firm-level data

References

- Amiti, M., Konings, J., 2007. Trade Liberalization, Intermediate Inputs and Productivity: Evidence from Indonesia. *American Economic Review* 97 (5), 1611--1638.
- Antras, P. and E., Helpman (2004), Global Sourcing, *Journal of Political Economy*, vol. 112, 552-80, June.
- Baldwin, R. and S.J. Evenett (2009), The collapse of Global Trade, murky Protectionism and the crisis, VoxEU.org Publication.
- Bernard, A.B., S. Redding and P. Schott (2009), Multi-product firms and Trade Liberalization, revised version of Tuck School of Business *working paper* n° 2008-44.
- Bernard, A.B. and B. Jensen (1999), Exceptional Export Performance: cause, effect or both?, *Journal of International Economics*, 47, 1-25.
- Bertrand., M., Duflo., E. and Mullainathan, 2004, How much should we trust Difference-in-Difference Estimates, *Quarterly Journal of Economics*, February.
- Blonigen, B. A. (2006), Evolving Discretionary Practices of U.S. Antidumping Activity. *Canadian Journal of Economics*, Vol. 39, pp. 874-900.
- Blonigen, B. A. and C. Bown., 2003, Antidumping and Retaliation Threats, *Journal of International Economics*, Vol. 60, August, pp. 249-273.
- Blonigen, B.A. and T. Prusa (2003), Antidumping, *Handbook of International Economics*, edited by E. Kwan Choi and James Harrigan, Blackwell Publishing, pp. 251-284.
- Bown, C. (2009), A Monitoring Update to the Global Antidumping Database, May.
- Bown, C. P. and M. A. Crowley, 2007, "Trade Deflection and Trade Depression," *Journal of International Economics*, vol. 72, n1, May: 176-201.
- Dixit, A.K., Pindyck, R.S., 1994. Investment Under Uncertainty. Princeton University Press, Princeton, NJ.
- Helpman, E., 2006. Trade, FDI and the Organization of the firm. *Journal of Economic Literature*, vol. XLIV (3), 589--630.
- Irwin, D. (2005). The Rise of U.S. Antidumping Activity in Historical Perspective, *The World Economy*, Vol. 28., 651-668.
- Irwin, D. (2009). *Free Trade Under Fire*, Princeton University Press, third edition.
- Isakson, H., (2007), *Adding Value to the European Economy. How anti-dumping can damage the supply chains of globalised European Companies*, Swedish National Board of Trade.

- Konings, J and H. Vandenbussche (2005), Antidumping Protection and Markups of Domestic Firms: Evidence from firm level data, *Journal of International Economics*, 65, pp. 151-165.
- Konings, J., Vandenbussche, H., 2008. Heterogeneous Responses of Firms to Trade Protection. *Journal of International Economics*, 76, 371-383.
- Krugman, P. (1984), Import Protection as Export Promotion: International Competition in the Presence of Oligopoly and Economies of Scale. In *Monopolistic Competition and International Trade*, ed. H. Kierzkowski, 180–193. New York: Oxford University Press.
- Liebman, B.H. (2006), “Safeguards, China and the Price of Steel”, *Review of World Economics/Weltwirtschaftliches Archiv*, Vol. 142 (2), pp.354-373.
- Liebman, B.H. and K.M. Tomlin, 2008. Safeguards and Retaliatory Threats, *Journal of Law and Economics*, University of Chicago Press, vol. 51(2), pages 351-376, 05.
- Ma, Alyson, Van Assche, A. and Hong, C. (2009). “Global Production Networks and China’s Processing Trade”, *Journal of Asian Economics*, Vol. 20, pp. 640-654.
- Markusen, J. (2004), *Multinational Firms and the Theory of International Trade*, MIT press.
- Melitz, M., 2003. The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity. *Econometrica* 71(6), 1695--1725.
- Melitz, M. and G. Ottaviano (2008), Market Size, Trade and Productivity, *Review of Economic Studies*, Blackwell Publishing, vol. 75(1), pages 295-316, 01.
- Prusa, T., 1992. Why are so many antidumping petitions withdrawn? *Journal of International Economics* 33, 1--20.
- Prusa, T., 1997. The Trade Effects of US Antidumping Actions, in Feenstra, R. (Ed.), *The Effects of US Trade Protection and Promotion Policies*. NBER volume. The University of Chicago Press, 191--214.
- Roberts M, Tybout J. 1997. The decision to export in Columbia: an empirical model of sunk costs and the decision to export. *American Economic Review* 87(4):545–564.
- Rodrik, D., 1995, Political economy of trade policy. In: G.M. Grossman and K.E. Rogoff, Editors, *Handbook of international economics* vol. 3, Elsevier (1995), pp. 1457–1494
- Shapiro, I. (2008), “Don’t dump on Free Trade”, *Legal Times*, November, 17th.
- Tharakan, P.K.M., D. Greenaway and J. Tharakan (1998), “Cumulation and Injury

- determination of the EU in Antidumping cases”, *Weltwirtschaftliches Archiv*, vol. 134, p. 320-39
- Staiger, R. and F. Wolak .1994.” "Trade Effects of Antidumping Investigations: Theory and Evidence", in Alan Deardorff and Robert Stern (eds.) *Analytical and Negotiating Issues in the Global Trading System*, University of Michigan Press, 1994.
- Trefler, D., 2004. The Long and Short of the Canadian-U.S. Free Trade Agreement. *American Economic Review* 94(4), 870--895.
- Vandenbussche, H., and M. Zanardi, (2008) , What Explains The Proliferation of Antidumping Laws?, *Economic Policy*, January, pp.93-138.
- Wooldridge, J. (2002), *Econometric Analysis of cross-section and panel data*, MIT Press, Cambridge.
- World Bank (2009), "Trade Protection: Incipient but Worrisome Trends", by E. Gamberoni and R. Newfarmer. International Trade Department. Trade Note 37, March.
- Zanardi, M. (2004), "Antidumping Law as a Collusive Device", *Canadian Journal of Economics* 37(1), 95-122.

Data Appendix

European Antidumping cases:

European Antidumping initiations and decisions are published in the Official Journal of the European Commission which is available online: <http://eur-lex.europa.eu/JOIndex.do>. A notice of case initiation typically lists the name and 8 digit CN code of the dumped product, a handful of European petitioning firms publicly supporting the dumping complaint and the professional association that the petitioning firms belong to (i.e. CEFIC for the Chemical industry). Petitioning firms only represent a small fraction of the total number of EU producers in the import-competing industry. It is typically the professional association that assembles support for the complaint that needs to exceed 50% of total EU production in order to be eligible for further investigation.

Firm Level data

For the firm-level data we use AMADEUS data. This is a pan-European data set of firm-level company accounts, which is collected and commercialized by Bureau Van Dijck (BvD, Brussels). BvD does not allow to make the data available to users who have not purchased the data. The coverage varies between countries depending on the local accounting legislation. For France all incorporated firms have to submit their company accounts to the Central Bank for fiscal purposes. Apart from financial and operational information, the company accounts data for France also involve an indication of export revenue in total revenue, which is not available for other countries. We retrieve data for the period 1995-2005. Each firm is characterized by a four digit NACE industry code that corresponds to its primary activity. The NACE codes are comparable to the 5 digit SIC codes in terms of the degree of detail. There are 644 different four-digit NACE codes. The European Antidumping initiations in the years 1997 and 1998 are matched with the income statements of firms that produce the product that is under an Antidumping investigation. This matching is done on the basis of the corresponding four-digit NACE code the firm is operating in and the product which is linked to the four-digit NACE code that is subject of an AD investigation.

Product level data

For the product-level data we use EUROSTAT external trade statistics. This provides values and weights of exported and imported products at the 8 digit CN (HS) level by country of destination and country of origin respectively. We retrieve export values and volumes as well as import values and import volumes for each 8-digit CN product which is subject of an AD investigation initiated in 1997 or 1998 and retrieve data for the period 1995-2008.