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THE GLOBAL CHILLING EFFECTS OF ANTIDUMPING PROLIFERATION

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The Global Chilling Effects of Antidumping Proliferation*

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Abstract

Advocates of antidumping (AD) laws downplay their effects by arguing that the trade flows that are subject to AD are small and their distortions negligible. This paper is the first to counter that notion by quantifying the worldwide effect of AD laws on *aggregate* trade flows. The recent proliferation of AD laws across countries provides us with a natural experiment to estimate the *trade effects* of adopting versus using AD laws; differences in the intensity of use among countries with older AD laws allow us to investigate *reputation effects*. For this purpose, we estimate worldwide trade flows using a gravity equation spanning 21 years (1980-2000) of annual observations. Our estimates confirm that AD effects are not small. Among other findings, new tough users have their aggregate imports depressed by 15.7 billion US$ a year (or 6.7%) as a result of the AD measures they have imposed. For a traditional user like the United States, current AD measures depress annual imports by almost 20 billion US$ on top of the cumulative negative effect of reputation. For some countries, the dampening effects of AD laws on trade flows are found to nearly offset the gains from trade liberalization.

Keywords: Antidumping, gravity equation, trade liberalization, trade flows
JEL Codes: F13, F14

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I. Introduction

In line with the growing opposition to globalization forces, the sentiment surrounding antidumping (AD) laws seems to be more favorable now than ever before. Advocates of these laws argue that the amount of trade affected by AD laws is small, and their effects on aggregate trade flows negligible. Indeed, estimates have shown that the trade flows directly affected by AD protection are rather small and in the range of 2-5% (Hindley and Messerlin, 1996; Anderson, 1993). This paper is the first to counter this popular view and to document the fact that the global effects of AD laws on aggregate trade flows are substantial.[1] Our results demonstrate than when countries adopt an AD law into their national legislation, their total imports of commodities from all trade partners and in all goods -- not just the dumped products -- become seriously depressed in the years after adoption of the law, provided it is used frequently. Indeed, our results show that it is not so much the adoption of AD laws that depresses trade, but the actual enforcement of the law following the adoption. The number of AD measures and, to a lesser extent, the number of initiations have a significant trade-depressing effect.

Many countries have adopted AD laws in the past decade. Zanardi (2004a) documents that while 49 countries had an AD law in 1989, this number increased to 93 countries by the end of 2000. This illustrates the extent of AD proliferation. Data from that paper can then be used to construct a dataset for 1980-2000 (a period featuring substantial variation in terms of countries adopting and using AD laws). This setting resembles a natural experiment to test whether the introduction of AD laws and their subsequent use has affected global shipments to the countries that adopted an AD law. Moreover, the heterogeneity in the intensity of AD use in countries with AD laws adopted before 1980 can be used to investigate reputation effects stemming from the sustained use of the law. Accordingly, depending on the time of adoption of the AD law, we distinguish between 'traditional users' (i.e., countries that adopted it before 1980) and 'new users' (i.e., countries that adopted it after 1980). Within each group, a further distinction is made between 'tough' and 'weak' users, depending on the extent of their enforcement (see Table 1). In what follows, we measure enforcement in terms of the annual number of AD initiations and measures.[2]

Our dataset consists of trade flows from 121 exporting countries to 58 importing countries. The empirical analysis employs a gravity equation to investigate whether the adoption of an AD law and its use by importing countries affect aggregate (i.e., across sectors) global (i.e., all bilateral flows) imports into the importing country. To date, studies on the trade effects of AD

[1] Of course, AD measures are less bad for trade than other non-tariff measures like technical barriers since the latter are less transparent and more permanent in nature.

measures have had a more partial equilibrium flavor, in the sense that the trade effects under consideration were limited to the product(s) subject to AD investigations or measures. Most of these studies have indicated that imports from countries named in an AD case decreased as a result of AD protection, but this decrease is to a large extent offset by an increase in the imports from other countries, resulting in a relatively small net effect on total imports of a particular product. In contrast, this paper shows that AD laws and their implementation also strongly affect aggregate imports (i.e., they cause a substantial depressing effect on total imports).

To summarize briefly, we find that the trade-depressing effects of AD are large for those countries that systematically use this protectionist tool. All of the new *tough* users (i.e., Brazil, India, Mexico, Taiwan and Turkey) register significant negative impacts of AD, with the largest effects reported in Mexico. Annual imports in that country are depressed by 7.4 billion US$, or 8.2%, compared to what they would have been in the absence of AD actions.[3] Overall, new tough users have their annual imports depressed by around 15.7 billion US$, or 6.7%, due to AD protection. Many new *weak* users did not impose any measure during the sample period. Among those who did use AD laws, China, Egypt and Venezuela registered the largest effects.

With respect to traditional users, we estimate two separate effects of AD on trade: a reputation effect and a direct effect. The distinction between traditional *tough* users and traditional *weak* users allows us to quantify a reputation effect accrued through the repetitive use of AD actions. A priori, such an effect is expected to be present for the traditional tough users but not for traditional weak users. The results confirm this hypothesis. In 2000, traditional tough users (i.e., Australia, Canada, EU, New Zealand and the US) experienced an extra trade loss over the previous period of 0.6%, or 9.5 billion US$, for having an AD law in place for an extra year. Current AD measures by traditional tough users also depress trade on top of the reputation effect. The AD measures they impose against all tough users result in an average trade loss of around 3% of their annual imports from other tough users, or 32 billion US$. The US bears the brunt of this trade loss (i.e., 20 billion US$). In contrast, the group of traditional weak users, which are all listed in Table 2, show little evidence of a reputation effect, although their current AD measures have trade-depressing effects between 0 and 11.5%, depending on the country under consideration.[4]

These trade effects are quite large. Their relevance can be better appreciated when one

[2] AD measures entail duties and other arrangements (e.g., price-undertakings, suspension agreements). As a sensitivity check, we also use AD intensity indexes that take into account the size of the trading sector.
[3] All monetary values in the paper are expressed in 1995 real prices.
[4] Such a wide variation is due to the substantial heterogeneity among the countries in this group. South Africa experiences the largest loss (i.e., 11.5% or 2.5 billion US$ a year).

considers that they refer to aggregate trade flows and not just to the 2-5% of trade flows directly affected by AD. In this sense, it is safe to say that AD has a substantial "chilling" effect on imports. For some countries, moreover, the trade losses resulting from AD actions seriously offset the gains from trade liberalization. India is a prime example. It started liberalizing in 1991, which led to an 11.9% growth in its imports. Although India has had an AD law in place since 1985, it imposed its first AD measure in 1993; the results of this paper imply that it experienced a 7.8% annual loss in imports as a result of AD actions. This confirms the notion that AD actions can substantially hinder the gains from trade liberalization -- in the case of India, lowering the overall gains from trade liberalization to only 4.1%.

While this paper does not engage in welfare analysis, our results suggest that existing studies underestimate the true welfare loss due to AD since they do not measure the aggregate trade-depressing effects. For example, Gallaway et al. (1999) use a CGE model to estimate that the annual welfare loss of affirmative AD and countervailing actions for the US are found to amount to 4 billion US$ a year.[5] This estimate, however, considers only the distortions due to the trade flows directly subject to AD measures. The US International Trade Commission (1995), DeVault (1996) and Anderson (1993) reach the same qualitative conclusions when analyzing specific US AD cases. Overall, the net effect of removing AD orders would greatly benefit the US economy, as AD duties result in a gain in producer welfare that is smaller than the loss to consumers. Although the existing literature focuses on the US, similar qualitative conclusions should hold for other AD users. However, our paper highlights the fact that also the distortions in aggregate trade flows, not just the trade flows that are subject to AD measures, should be taken into account when calculating welfare losses.

It is important to distinguish our research question from recent work evaluating AD laws as a safety valve. The "safety valve" is a popular argument used by AD advocates to defend their use. It argues that AD laws should be considered a 'small price to pay' since they enhance trade liberalization. While this may be true, this hypothesis still needs empirical verification.[6] The research question in this paper is different -- in the sense that we do not consider the relationship between AD laws and tariff concessions. Rather, we compare trade flows before and after the adoption of AD laws in importing countries, while at the same time controlling for their openness. The empirical analysis shows that while trade liberalization has resulted in significant growth of trade, AD actions seriously dampen this increase in imports in all new tough users.

[5] Countervailing duties are imposed on imports that receive illegal subsidies in their home country.
[6] Feinberg and Reynolds (2005) provide a first attempt in this direction by showing that countries that conceded larger tariff reductions at the Uruguay Round initiated relatively more AD cases later on.

The remainder of the paper is organized as follows. The next section provides a theoretical framework to explain the potential channels through which AD can reduce trade flows, and serves as a reference for the empirical analysis. Section III briefly illustrates the AD phenomenon and presents our AD dataset. Section IV discusses the empirical methodology, and section V reports the results, the robustness checks and an evaluation of the economic significance of our findings. Section VI concludes.

II. Channels through which antidumping can affect trade

Instead of singling out and presenting one particular theory, we discuss a number of different channels through which AD policy can affect trade flows. While some of these channels have already been well documented in the literature, others have received less exposure. In line with the partial equilibrium nature of these contributions, the empirical analyses of AD have always focused on the trade flows directly affected by AD laws. But since this paper takes a relatively more general equilibrium approach and analyzes the aggregate effects of AD, a mixture of effects and various theories may come into play. While some effects depend on the adoption of AD laws, others are derived from its use.

First, AD protection can give rise to trade diversion. This implies that AD protection leads to a shift in trade for the country of origin. Many studies (see Prusa, 2001; Konings et al., 2001; Niels, 2003) have documented cases in which an affirmative AD case against a named country results in depressed exports from that country to the benefit of exports from other non-named partners. Usually, the increased exports from non-named countries do not fully offset the lost exports from the named country. Therefore, net exports to the country imposing AD measures are likely to be smaller than they were before protection. Trade diversion studies are all carried out on products within the same sector. However, trade diversion may also occur in sectors not directly subject to AD duties because of a threatening effect. These spillover effects that may arise across products or sectors have not, however, been taken into account in the existing studies on trade diversion. Trade diversion leads us to expect a negative effect on aggregate exports to the countries imposing AD measures.

Second, a number of papers have argued that in many cases, political and strategic considerations (in addition to economic motives) explain the use of AD laws. While the chief economic motive to adopt and use AD laws is to counter unfair trade, the strategic motive is related to retaliation, as shown by Blonigen and Bown (2003), Feinberg and Reynolds (forthcoming) and Prusa and Skeath (2002, 2005). In other words, the new generation of AD users today were the main targets of the tough users yesterday. This suggests that frequent AD

actions by one country trigger actions by other countries previously sighted by the former. This is illustrated in Figure 1, where the group of historically tough users is the major target of AD actions today. This figure shows that traditional tough users mainly target other tough users of AD actions (supporting the retaliation hypothesis). It also shows that new tough users use AD mainly towards traditional tough users and other new tough users. As a result of this retaliation aspect, the more countries that adopt AD laws over time, the more we expect global trade to become depressed. On this point, Figure 2 illustrates the strong proliferation of AD laws over recent decades.

Third, AD laws can involve reputation and learning effects. Trade partners are likely to be more prudent when shipping their exports to countries that have established themselves as frequent and tough users of AD. This is likely to result in higher prices or lower volumes (in order to avoid dumping complaints). Thus, although AD cases by traditional tough users may be decreasing (as illustrated in Figure 3), this may not be due to less protection but may simply be a result of their reputation and the fact that their trade partners have learned to behave. Studies that ignore reputation effects are therefore probably underestimating the true depressing effects of AD on exports to traditional tough users.

Different types of learning may also come into play. A recent paper by Blonigen (forthcoming) shows that the probability of filing an AD petition within a particular sector depends largely on how many previous filings there have been in the same sector. This suggests that there is learning behavior on the side of the importing market: the more it has been involved in filing in the past, the more likely it is to use that past knowledge to file again in the future.

Fourth, AD protection can give rise to AD jumping and inward foreign direct investment (FDI). Exporters may decide to set up a production plant within the protected market in order to avoid AD duties. This can be a profitable strategy, provided that the previously exporting firm has a firm-specific advantage that can be transferred across borders to overcome the fixed cost of setting up an extra plant, as shown theoretically by Belderbos et al. (2004) and Haaland and Wooton (1998). It should therefore hardly be surprising that predominantly Japanese firms have engaged in an AD jumping response, as shown empirically, among others, by Blonigen (2002) for the US and by Girma et al. (2002) for the UK. In this case, trade and FDI are substitutes. Therefore, AD-jumping FDI can have a trade-depressing effect.

Fifth, several theoretical contributions have shown that AD protection can result in the formation of international cartels and tacit collusion (e.g. Messerlin, 1990; Prusa, 1992; Veugelers and Vandenbussche, 1999; Zanardi, 2004b). This anticompetitive nature of AD laws

may also depress trade. Our aggregate approach will encompass this effect on aggregate trade flows.

Finally, a number of theoretical contributions have shown that the mere existence of AD laws can have trade-depressing effects even when no protection is enforced. This argument differs somewhat from the learning argument discussed above. It implies that as long as the probability of future protection is large enough, the threat of protection will depress trade (e.g., Ethier and Fischer, 1987; Pauwels et al., 2001). This theoretical result has important empirical implications because it suggests that the trade flows observed before the initiation of an AD case may differ from the trade flows that would materialize in the absence of AD laws. Related arguments have been made in the literature by Blonigen and Park (2004), Fischer (1992), Prusa (1994) and Staiger and Wolak (1989). In the empirical specification we will also allow for more dynamic versions of this 'threat' hypothesis. Specifically we will investigate the possibility that it is only some years after the adoption of an AD law that a country signals its type as a tough or a weak enforcer through the number of AD measures that it has taken.

This paper captures world trade flows by including all bilateral trade flows between a large set of importing countries and a large set of exporting countries. This allows us to take into account country heterogeneity in trade diversion, spillover effects between products and also retaliation effects, reputation, learning effects and FDI effects. The sign of the net effect of AD on aggregate exports is therefore difficult to predict.

III. Antidumping law proliferation

The recent proliferation of AD laws is illustrated in Figure 2. In 1904, Canada was the first country to adopt an AD law; almost a century later, in 2000, 93 countries had an AD law.[7] Figure 2 shows that especially the second half of the last century featured a strong increase in the number of countries adopting AD laws. Due to data limitations, however, only 58 of these countries are included as importers in the dataset, while 121 countries are present as exporters.[8] Table 2 lists all of the importers and the year in which they adopted the law. Even a casual look at this list illustrates the fact that AD has evolved from an instrument of protection wielded by industrialized countries into a common protectionist tool available to a broad range of countries.

[7] The member countries of the EU are counted individually.

[8] The explanation for the reduction in the number of importing countries is twofold. First, the EU is included as a unitary importer (i.e., intra-EU trade is not included) -- the EU definition that we use tracks the actual membership over time. Second low-income countries (as defined by the World Bank in 2002 but with the exception of India since it is a heavy AD user) have been excluded since they account for very little trade and the data show a lot of missing observations. See the Appendix for a list of countries.

The matrix in Table 1 summarizes the classifications used in this paper when distinguishing countries with respect to their AD law and the extent of their use. Countries that adopted their AD law before the start of our dataset (i.e., before 1980) are labeled as *traditional users* while other countries are defined as *new users*. With respect to the second dimension, AD users are *tough* if they have consistently enforced AD actions (i.e., initiations and measures), and *weak* otherwise. Therefore, what the literature generally defines as traditional users (i.e., Australia, Canada, EU, New Zealand and US) are called *traditional tough users* in this paper. Norway, in contrast, is an example of a *traditional weak user*, since it adopted an AD law in 1954 but never used it in the period of our analysis (and only rarely beforehand). Other countries in this group, like Argentina and South Africa, have become very frequent users in recent years. This explains why in some studies they are considered new users (e.g., Prusa, 2001). In this paper, however, we make a clear distinction between those countries that adopted the law in the sample period (1980-2000) and those that had the law before.[9]

Figure 3 shows the evolution of the number of AD initiations in the sample period by groups of users. Total initiations by new users are clearly increasing while traditional users present a relatively constant trend. The rise in global AD initiations during the sample period thus stems predominantly from the surge in AD activity from the group of countries that were basically absent in the 1980s.

To quantify the net effect of AD laws on aggregate trade flows, we constructed a comprehensive and detailed dataset on the adoption and use of AD laws, from which the above figures and tables are derived. This dataset is highly disaggregated, since it records with annual frequency the number of AD initiations and measures of each country against each exporter over the period 1980-2000. Moreover, it is not limited to GATT/WTO countries, and has been compiled from a variety of sources in order to overcome the limitations of each given source. In this sense, it is the most comprehensive dataset available on AD.[10] The cross-country and time series variations in AD law adoption and use are the building blocs for this paper. The panel structure of the dataset allows us to identify the net effect of AD on aggregate trade flows.

IV. Empirical methodology and data

The challenge of measuring the aggregate effects of AD is illustrated by the channels discussed in Section III. The versatility of the gravity equation offers a feasible solution to this problem. In its

[9] In the robustness section, we modify our definition of new tough users to include Argentina, South Africa, and South Korea, all of which adopted AD laws long before 1980 but recently became frequent users.
[10] See Zanardi (2004a) for more details and a broader overview of the global use of AD in 1980-2000. The

basic form, the gravity equation postulates that trade between two countries is determined by their relative size and the distance between them. While trade flows tend to increase with country size, they decrease with distance. The gravity equation has been widely employed in international trade since its first use in the 1960s. Its initial success was due to the remarkably good fit that it delivers in empirical applications; its use was often criticized, however, for the lack of theoretical underpinnings. This initial situation has been reversed. Starting from Anderson (1979), it has been shown that various theoretical models deliver a reduced-form equation like the gravity equation so that Frankel (1998, page 2) concludes that it has "gone from an embarrassment of poverty of theoretical foundations to an embarrassment of riches."[11] Theoretically founded and empirically successful, the gravity equation has been employed extensively to investigate the effects of borders, regional trade agreements, monetary unions, common languages, and various other institutional settings on trade flows.

Our empirical approach consists of applying a gravity equation and augmenting it with AD variables. In particular, we estimate the following gravity equation:

$$\begin{aligned}\ln(\text{exports}_{ijt}) = {} & \alpha_i + \alpha_j + \rho \ln(\text{exports}_{ijt-1}) + \gamma\, \text{AD adoption}_{jt} + \delta \ln(\text{AD use}_{jt}) + \\ & \beta_1 \ln(\text{GDP}_{it}) + \beta_2 \ln(\text{GDP}_{jt}) + \beta_3 \ln(\text{population}_{it}) + \\ & \beta_4 \ln(\text{population}_{jt}) + \beta_5 \ln(\text{distance}_{ij}) + \beta_6\, \text{border}_{ij} + \beta_7\, \text{language}_{ij} + \\ & \beta_8\, \text{colony}_{ij} + \beta_9 \ln(\text{RER}_{ijt}) + \beta_{10}\, \text{WTO}_{jt} + \beta_{11}\, \text{RTA}_{ijt} + \\ & \beta_{12} \ln(\text{openness index}_{jt}) + \text{year dummies} + \varepsilon_{ijt}\end{aligned} \qquad (1)$$

where the dependent variable is the natural log of the real value of exports from country *i* to country *j* in period *t*. Econometrically, we estimate a dynamic model by including the lagged value of the real exports, as it has been shown that lagged levels of trade affect current trade (Bun and Klaassen, 2002; De Grauwe and Skudelny, 2000; Eichengreen and Irwin, 1997). Eichengreen and Irwin (1997) clearly demonstrate the importance of historical factors on current trade decisions and advocated "never [to] run another gravity equation that excludes lagged trade flows." With a dynamic specification, the estimated coefficients can be interpreted as short-run elasticities and the values of the coefficients are in general smaller than in static gravity models (Disdier and Head, 2004). We cannot estimate (1) with OLS, since the possibility of serial correlation in the exports series implies that a least-squares estimation of (1) would result in inconsistent estimates. We therefore use an instrumental variable (IV) approach, where lagged

AD dataset by Bown (2005) contains more details, but a narrower coverage in terms of countries and years.

[11] See Evenett and Keller (2002) for a review of the theoretical foundations of the gravity equation and its usefulness in testing alternative models of trade.

exports are instrumented with exports lagged by two periods (i.e., Tables 3, 4 and 6).[12] For robustness, we also report (i.e., Table 5) the estimates obtained when using the system generalized method of moments (GMM) estimator proposed by Arellano and Bover (AB, 1995), where we allow the lagged dependent variable, GDP and AD measures to be endogenous. The system AB estimator improves upon the standard differenced Arellano and Bond (1991) estimator in the case of persistent time series, which is our case for trade and gross domestic product (GDP). The downside of using the Arellano and Bover estimator in Table 5 however is that it imposes further statistical restrictions and all time invariant variables are dropped since it is based on first differences.

Along with the usual set of variables that enter the gravity equation (and that will be discussed below), the focus of this paper is on the AD variables in specification (1).[13] First, a dummy variable (AD adoption) takes a value of 1 if an importing country has an AD law in a given year. This dummy varies over time only for the new users; this provides us with a natural experiment, since their global trade flows before and after the adoption of the AD law are included in the dataset. Second, a variable capturing the use of AD (AD use) is included.[14] We have information on the number of AD initiations and measures that were imposed in each year from each importing country against its trade partners. However, the inclusion of these regressors may lead to an endogeneity problem, since AD initiations or measures in a given year against a particular country are likely to be a function of the imports from that country. To address that endogeneity problem, instead of the number of initiations and number of AD measures against a particular country, we instead use the *total* number of AD initiations and the *total* number of AD measures that any particular importer imposes against *all* other countries worldwide in a particular year. From an economics point of view, we can justify the use of the total number of initiations and measures by the fact that the use of AD against some trade partners can be regarded as a warning to other trade partners. Furthermore, the total number of initiations is lagged by one year, since the effect of AD initiations on aggregate trade flows may take some time to materialize -- thereby reducing even further the possible endogeneity. The total number of measures is not lagged, however, since there is a substantial time gap between the initiation of a case and the final decision on AD measures, making this variable also less likely to suffer from an endogeneity problem. For traditional users, the age of their AD law is included (instead of the AD dummy) and taken as a proxy of reputation effects.

[12] Since the serial correlation can be of a higher order than just the first order, we also experimented with exports lagged by more than two periods. The results do not change and are not reported, to save on space.
[13] A detailed description of all variables and their sources is provided in the Appendix.
[14] We specify these explanatory variables as ln(1+ AD measures) and similarly for AD initiations to address the issue that some countries in some years do not take AD measures which would result in missing

The other regressors in equation (1) are standard for a gravity equation. The importing country's GDP controls for demand aspects, while the exporter's GDP controls for supply effects. Populations are expected to enter with positive signs (since larger countries generally trade more), while the distance between the trading pair impairs the flow of goods and should have a negative coefficient. The dummy variable for countries sharing a border is expected to have a positive coefficient (since neighboring countries trade more). Similarly, common language and colonial ties should positively affect trade. Given the long span of the sample and the large set of countries, the only feasible way to control for price changes is to introduce, similarly to Rose (2000), the bilateral real exchange rate (RER), which is expected to have a negative sign (since a depreciation of the importing country's currency should reduce its imports). Year dummies control for any time variation common to all trade relationships (e.g., business cycle effects, globalization trends, etc.). Importer (α_j) and exporter fixed effects (α_i) address the critique by Anderson and van Wincoop (2003) on the use of the gravity equation.[15] Also they control for institutional differences that may exist between importers and exporters in terms of differences in AD laws.

Another set of regressors is used to control for trade policy aspects. The WTO dummy variable takes a value of 1 if a country is a member of the WTO (formerly GATT). The inclusion of this variable is motivated by the close relationship between membership of the GATT/WTO and adoption of AD laws (see Figure 2), and this relationship is investigated further in the robustness section to control for correlation between WTO membership and AD adoption. Regional trade agreements should have a positive impact on trade if both trading partners are members (and the dummy variable RTA should provide evidence in this regard).[16] In order to isolate the effects of AD from the other trade policy instruments, we need a time varying control for the stance of the trade policy in each country. It is inherently difficult, however, to find a measure of trade policy that is available for many countries over a long period of time. Considering the trade-off between cross-country and time dimension, we use the 'Freedom to Trade with Foreigners' index (openness index) published by the Fraser Institute (Canada). This is a composite index of data on tariffs, hidden administrative restraints, exchange rate policies and international capital market controls.[17] It varies between zero and ten, with higher values

observations when taking the log. We also experimented with ln(0.1+ AD measures) which yielded the same qualitative results.

[15] While the correction proposed by Anderson and van Wincoop (2003) is cumbersome to incorporate, Feenstra (2002) argues that importer and exporter fixed effects provide a simpler way to address the problem.

[16] Various regional trade agreements may have quantitatively different effects on trade among members. Since the focus of the paper is on AD, such differences are not specifically addressed.

[17] The administrative restraints and the capital market controls components in the index are based on survey data from the *Global competitiveness report*. Tariffs and exchange rate controls could be quantified objectively. This index does not include AD measures (see Gwartney and Lawson (2003) for more details).

indicating more open countries.

V. Discussion of results

V.1. Natural experiment: does the adoption of an AD law depress global trade?

Arguably, if there is a worldwide effect of AD laws, it should manifest itself when an importing country switches from not having an AD law to adopting and frequently using such a law. To verify this, we estimate the specification in (1) allowing for differential effects on different groups of importers. Initially, we include only new users as importers, and all available countries as exporters. The IV results are reported in the first two columns of Table 3. The lagged number of total AD initiations is used in column (1), while this variable is replaced by the total number of AD measures in column (2). While the other regressors will be discussed later, we first focus on the AD variables.

The results in Table 3 show that the AD adoption dummy is not significant, and that the number of AD initiations in column (1) and the number of AD measures in column (2) have negative and significant effects on trade flows. At first, an insignificant AD dummy could be expected in a regression in which the group of importers includes both countries that never or rarely used their AD law as well as heavy users of AD. In this sense, the dummy variable may not be able to distinguish between the different uses of the law by new users. As for the variables capturing AD actions, the number of measures has a stronger effect in depressing trade than the number of initiations. This suggests that although the overall number of initiations depresses trade, it is the extent of actual enforcement of AD duties that depresses trade the most.

While some new users have used their AD law rarely, others (i.e., new tough users) have used them frequently. In columns (3) and (4) of Table 3, the AD regressors are interacted with a dummy variable distinguishing the group of new weak users from the group of new tough users. The AD adoption dummy is marginally significant and positive for the new weak users and not significant for the new tough users. Overall, this result confirms that adoption of an AD law does not affect trade. Interestingly, also the AD initiations lose their significance. This may be due to the reduced variance that remains in each group (once allowance is made for different effects). However, column (4) shows that the enforcement of AD measures has clear negative effects on trade flows, especially for new tough users, while for the new weak users the effect is smaller and only significant at 10%. The difference between weak and tough new users can no doubt be traced to the fact that the former countries did not use AD enough to discourage exports or that the negative impact of AD is confined to the specific goods under investigation. Overall, the results in columns (1) and (2) seem to be driven by the AD activity of the new tough users. These

results suggest that the decision 'to adopt or not to adopt an AD law' does not have an impact on trade. But what is highly significant is the number of AD measures that a country imposes.

Figure 1 shows that most of the AD initiations by traditional tough users are directed towards other tough users and also that most of the AD initiations by new tough users are directed towards other tough users of AD. To investigate this, we run an experiment in the last two columns of Table 3 (where only tough users are included as exporters) to see whether the adoption of AD laws and their use by new users significantly affect exports from the most targeted trade partners. A priori, it is not clear what to expect. Although these exporters are the ones most intensively targeted by the new users of AD, the size of the traditional tough users among them may make their exporters (and the overall export levels) less sensitive to AD actions from new users (since they are smaller in economic terms). Columns (5) and (6) show that, as before, the AD adoption dummy is not significant, and that AD measures depress overall exports from all other tough users. The point estimate for AD measures is actually smaller for this restricted set of exporters (i.e., -0.023 in column (6) versus -0.039 in the fourth column), which is consistent with the idea that large exporters suffer less from AD actions (although they are heavily targeted).

The other variables in the gravity equation present the expected sign, and their significance is in line with the results obtained in other gravity studies. However, it is important to note that the dynamic specification that we use results in smaller point estimates for all coefficients compared to static gravity models. As for the dynamics, lagged exports are always highly significant -- confirming that the exports series are quite persistent over time. Distance always has a negative and significant coefficient -- confirming the well-known result that the further away the importing country is from the exporting country, the smaller the trade that flows between them. The openness index is always positive and significant, suggesting that the more open the importing country is, the higher the worldwide exports that flow towards that country. The GDP of the importing country is positive and has a significant effect on the total exports directed towards the importing country. In contrast, the GDP level of the exporting country does not have much explanatory power. In terms of population, the results tend to differ across specifications. A possible explanation for the mixed results for GDP and population may be the inclusion of the lagged dependent variable that takes over the size effect.

Common border, common language and colonial ties are important explanatory variables in most specifications of Table 3, as has already been established in the literature. The real exchange rate shows the expected negative sign in most specifications. Belonging to the same regional trade agreement has a positive effect, as does GATT/WTO membership. Whereas the

WTO dummy is positive and significant in the first four columns of Table 3, it is insignificant in the restricted set of exporters in the last two columns.[18]

In sum, Table 3 shows that trade depression is mainly caused by the extent to which an importing country uses AD against trade partners and not by whether or not that country has an AD law. To put it differently, in a cross-section of countries where some have an AD law while others do not, the mere existence of the law is not a critical factor in explaining the overall level of exports directed towards that country. What is critical is the extent to which importing countries take action when they have an AD law in place. And even in this case, trade is not depressed merely because a country initiates AD petitions; rather, the extent of final affirmative findings affects trade flows.

V.2. Traditional users and reputation effects

So far, we have not explicitly examined the effects of the AD laws on traditional users (since we do not observe the magnitude of their trade flows before the introduction of their AD law). For traditional users, trade may therefore be depressed throughout our period of analysis compared to what it would have been in the absence of AD laws -- but we cannot test for this in the same way as we can for the new users.

As an alternative, the age of the AD law of traditional users is taken as a proxy of a potential reputation effect. The hypothesis is that the longer a country has had an AD law, the more likely it will be that it has established a reputation through its use. Table 4 reports the IV results where (1) is estimated by restricting importers either to traditional tough users or to traditional weak users and where the AD adoption dummy is replaced by the age of the AD law. This regressor should not be significant for traditional weak users, since these countries never or rarely used AD. Instead, there should be evidence of a reputation effect for traditional tough users. In other words, the age variable should be negative and significant if a negative reputation effect is at work, suggesting that the longer an AD law exists, the higher will be the trade-depressing effect.

The first two columns of Table 4 analyze all exports to traditional tough users. In contrast, columns (3) and (4) feature exports only to tough users (in view of the fact that AD actions by the traditional tough users are mainly targeting other tough users, as illustrated in

[18] Our methodology of importer and exporter fixed effects and exports (instead of total trade) as the dependent variable is very close to Subramanian and Wei (2005), who also find a positive effect of GATT/WTO membership. Rose (2004) uses a different approach and does not find a significant effect.

Figure 1). Finally, the last two columns consider all export flows going to traditional weak users. Note that in all these regressions the WTO dummy is dropped (since all traditional users joined the GATT/WTO before the start of our sample period).

The empirical findings presented in Table 4 confirm our hypothesis regarding the age variable. In columns (1) to (4), where importers are traditional tough users, the AD age is statistically significant and negative. In contrast, in analyses of trade flows to traditional weak users, the age variable is not significant.

Regarding the actual use of AD, initiations are not a significant factor in depressing trade -- at least not on the overall imports of traditional tough users. Instead, they do seem to depress imports to the traditional weak users. In terms of AD measures, there is a negative effect for trade flows between tough users of AD, as indicated by the coefficient on AD measures in column (4). Also for trade flowing to traditional weak users, AD measures have a significant trade-depressing effect. Interestingly, the trade-depressing effect of one additional measure for a traditional weak user of AD seems greater than the trade-depressing effect of one additional measure for a traditional tough user (i.e., see coefficients on total AD measures in columns (6) and (4)). This result is consistent with the different effect of the age variable in the two specifications, and it has a natural interpretation. For a traditional user of AD that has established its status as a tough user, trade is depressed mostly because of reputation. Then, one additional measure is going to have less of an effect on trade than for a weak user that hardly ever uses AD. When a traditional weak user takes AD action (initiations or measures), it surprises trade partners and thus generates a larger negative response.

In terms of the other regressors, some changes can be noted relative to the results in Table 3. The explanation lies in the limited set of importers. The border dummy is no longer significant, possibly because the most important trade partners of traditional tough users are not bordering countries. For example, the US is the most important importer of EU products (and vice versa), whereas the countries bordering the EU, like the Eastern European countries, import only a very small share of EU total exports. A similar argument holds for traditional weak users, since some of these countries do not have land borders (e.g., Barbados, Cyprus, Jamaica, Japan). The same explanation can be put forward for the negative or insignificant sign on the common language variable. Colonial ties continue to be important in explaining total world exports to traditional tough users, but not to traditional weak users. The openness index is not significant -- perhaps because it does not vary that much for traditional users, which were already relatively quite open (especially tough users) at the beginning of the sample.

V.3. Robustness and sensitivity checks

In view of the potential endogeneity of a number of variables in (1), we now turn to the Arellano and Bover (AB) system GMM approach, where lagged exports and, GDPs and total AD measures are treated as endogenous. The GMM method may use all available lags of the variables from *t-2* onwards as instruments. Our time dimension is quite long, and we limit the number of lags to ten.[19]

Table 5 reports the results of the AB estimates. The first three columns can be compared to Table 3 (which investigates the trade effects of the adoption and use of AD laws by new users), while the last three columns serve as a robustness check of Table 4 (which focuses on the reputation effect for traditional users.

The conclusions with respect to the new users do not change. Again, the adoption dummy is not significant, while the number of AD measures is highly significant and negative.[20] The point estimates are actually higher than those in Table 3, and are significant for both types of new users. However, the test statistics reported at the bottom of Table 5 suggest the presence of second-order autocorrelation. Moreover, the Hansen test of overidentifying restrictions is rejected, and the same holds even with a smaller number of lags for the instruments. This may be due to the heterogeneous set of importers. When restricting the set of importers to the more homogenous set of traditional users (i.e., the last three columns of Table 5), the Hansen test is always satisfied.[21]

For traditional tough users, the AD age presents a negative and significant coefficient (i.e., columns (4) and (5)). As in Table 4, AD measures have a trade-depressing effect on imports -- but only on imports coming from other tough AD users. The AB results for traditional weak users are reported in the last column of Table 5. The AD age variable is now positive and significant, suggesting that no reputation has been accrued by these weak users. One way to interpret this positive effect on AD age for weak users is that once importing countries 'reveal their type' of being weak enforcers, trade partners start exporting more, no longer refrained by the threat of affirmative AD action. Interestingly the coefficient on AD measures for traditional weak users is highly significant and even more negative than in the case of tough users. One interpretation for this is that when weak AD enforcers suddenly take affirmative AD measures, this comes as a "surprise" to their trade partners and consequently trade gets more depressed. This

[19] The choice of the number of lags is not particularly inspired by economic reasons, although from an econometric point of view ten lags is generally regarded as a high number of instruments.
[20] The results for AD initiations are very similar and available upon request.
[21] By homogeneous, we mean countries with similar size, level of development and trade flows.

surprise effect of AD measures by weak users is also present in Table 4 when comparing columns (6) and (4).

Finally, two sensitivity checks relate to the group of new users. First, Figure 2 shows a close relationship between adoption of an AD law and GATT/WTO membership. Although the AD dummy is never significant, its true effect may be masked by the WTO dummy. Therefore, the first column of Table 6 reports the results for the same specification as in column (4) of Table 3, but drops the WTO dummy (the correlation between AD adoption and WTO membership is 0.41). The qualitative results on the trade-depressing effects of AD laws are unchanged (thus excluding any misinterpretation of the AD dummy, which is still insignificant).

Second, different definitions of new tough users are tested. One possibility is to define them based on the number of AD investigations initiated per year (see column (4) in Table 2). Selecting those countries that adopted the AD law at some point during our sample period and that initiated at least four AD cases on average per year, this alternative definition of new tough users encompasses the original five countries (i.e., Brazil, Mexico, India, Taiwan and Turkey) plus China, Egypt, Indonesia, Lithuania and Poland. Column (2) of Table 6 shows the estimates when using this definition of new tough users. In this case, AD measures have a trade-depressing effect on the worldwide imports of all new users, irrespective of whether AD measures are interacted with weak or tough users. With respect to Table 3, the estimate for new weak users is more significant and even larger (in absolute value) than the one for new tough users, although the two coefficients are not statistically different. Moreover, the result on the new tough users becomes somewhat smaller compared to the case with the original definition of new tough users. This finding can be explained by noting that AD measures have less of a trade-depressing effect for new weak users when China (whose growth in trade over time has been phenomenal) is included among them. Likewise, the inclusion of China mitigates the trade-depressing effects of AD measures for new tough users when it is classified as such (i.e., column (2) of Table 6).

Yet another alternative definition of new tough users can be based on the number of AD initiations per US$ of imports (see column (5) of Table 2). In this case, new tough users are defined as those countries that adopted an AD law during our sample and have an AD intensity larger than 300.[22] Accordingly, Brazil, Columbia, Egypt, India, Lithuania, Nicaragua, Peru, Trinidad & Tobago, Turkey and Venezuela are now labeled as new tough users. While these are relatively small countries with few AD initiations, their AD intensities are quite large because of

[22] This index, introduced by Finger et al. (2002), has received special attention ever since. The index takes the US as the benchmark and sets it equal to 100. Therefore, these countries initiated at least three times as many investigations per US$ of imports as the US.

their relatively low import values. The estimates using this definition are presented in column (3) of Table 6. Our earlier conclusions are reinforced -- in the sense that the AD measures imposed by these new tough users clearly reduce trade flows, while imports of the remaining new weak users do not exhibit any effect for the AD measures they impose.

As a final check, the last column of Table 6 identifies new tough users as the original five plus three countries (i.e., Argentina, South Africa and South Korea) that adopted an AD law before 1980 and have been quite active in the use of AD during our sample period. Qualitatively, the estimates are identical to the results in column (4) of Table 3, although the point estimate for the AD measures is much larger because of the high number of AD measures imposed by the additional three countries.

In conclusion, the AB analysis confirms the robustness of the results presented earlier, suggesting that AD measures have a significant trade-depressing effect on aggregate imports. The evidence of a reputation effect for traditional tough users is also confirmed. Although alternative definitions of new tough users serve to illustrate differences across groups of users, they do not change the conclusion that the use of AD measures hinders global trade flows into new (tough) users of AD.

V.4. Economic significance

The estimated coefficients from the previous section can be used in an attempt to put a dollar value on the extent to which trade flows are depressed as a result of AD laws.

Using the coefficient in column (4) of Table 3, together with the fact that new tough users impose on average five AD measures a year after adoption of the AD law, we conclude that the annual reduction of global imports to the new tough users is 6.7%.[23] Using average values of total annual imports to new tough users from 1995-2000, this percentage implies that annual imports to new tough users are depressed by around 15.7 billion US$ (in 1995 prices). Table 7 reports detailed figures for each of the new tough users, and discloses a large heterogeneity. For example, Mexico's AD caseload leads to a 8.2% reduction in imports, while Taiwan's AD actions imply only a 2.7% reduction.

As for the new weak users, many of these countries did not impose any measure during

[23] The effect of five AD measures is given by $\frac{6^{-0.039}-1^{-0.039}}{1^{-0.039}} \approx 6.7\%$, since the regressor takes the form of $\ln(1+\text{AD measures}_{jt})$. In what follows, similar calculations are used.

the sample period. Table 7 shows the trade-depressing effects of AD for China, Egypt and Venezuela, which are the most active countries in this group (i.e., on average at least two AD measures during the sample). Their AD measures lead to a reduction of their imports in the order of 5.5%, 3.1% and 3.1%, respectively.

In order to put these numbers into perspective, it is worth comparing them with the trade gains accomplished during the same period as a result of trade liberalization. Toward this end, we exploit the fact that the openness index is always positive and highly significant in the regressions for new users. We then calculate the gains in trade due to trade liberalization by using the change in the openness index for the years from the beginning of their trade liberalization process until the end of the sample period.[24] For instance, Mexico's trade liberalization began essentially in 1985. A calculation based on the change of Mexico's openness index from 1985 up to 2000 shows an increase in imports of 18.9% over this period.[25] Interestingly, Mexico first imposed an AD measure in 1987, and its AD policy resulted in trade losses of 8.2%, thereby undoing an important part of what had been accomplished with the liberalization reforms. Other new tough users also face similar situations; India, in particular, eliminated most of its gains from liberalization.[26] It is interesting to note that for most of the new tough users, the AD measures that were first imposed occur during the liberalization period, possibly suggesting that AD may function as a safety valve. But when we compare the percentage loss in imports due to AD measures and the gains in imports due to trade liberalization, the true chilling effects of AD are both apparent and too large to be dismissed as a 'small price to pay for further trade liberalization'. The situations of the new weak users reported in Table 7 are very similar, with the trade gains for Venezuela being essentially cancelled out by the country's use of AD.

Table 7 also shows similar calculations for three countries that are often considered as new users of AD because they became active users in recent years (while in fact they all adopted AD laws well before the 1980s): Argentina, South Africa and South Korea. The effects of AD measures are substantial. In fact, except for Argentina, the trade-depressing effects of AD measures are larger than the benefits of trade reforms. However, it is important to recognize that both South Africa and South Korea already had quite high trade indices before the liberalization process.

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[24] Trade liberalization dates from Jonsson and Subramanian (2001), Li (2004), Liu (2002) and Refaat (2000).

[25] Trade gains as a result of liberalization are calculated as $\frac{7.85^{0.285}-4.28^{0.285}}{4.28^{0.285}} \approx 18.9\%$, where 7.85 and 4.28 are the values of the openness index in 2000 and 1985, respectively. Since trade liberalization has been a cumulative process, the value of the index in 2000 summarizes the total liberalization process over the period.

[26] According to Table 7, also Taiwan neutralized most of the gains. However, in 1986 its openness index

When quantifying the trade-depressing effects of AD for traditional users, we must distinguish between direct and indirect effects. First, the indirect effect is due to reputation and is measured through the AD age variable, which is highly significant for traditional tough users (i.e., Table 4). This reputation effect suggests that imports each year are depressed as a result of the reputation that these countries have built regarding the use of AD. This effect is independent of the current use of AD but depends on past behavior. For the last year in our sample period (i.e., 2000), the average age of AD laws in traditional tough users is 76 years. Therefore, considering the coefficient from column (1) in Table 4 (i.e., -0.487), it follows that in 2000 the existence of the AD regime depressed total imports into traditional tough users by an extra 0.6%, compared to the previous year. Although this percentage seems small, it is worth emphasizing that it represents only the *extra* one-year depressing effect of AD policy over the previous year due to the reputation of these users. Since the average aggregate imports in the traditional tough users in recent years (i.e., 1995-2000) amounted to 1,540 billion US$, this trade-depressing effect amounts to 9.5 billion US$.

Second, the current use of AD measures seems to have a trade-depressing effect for the imports of traditional tough users from other tough users. Based on the coefficient in column (4) of Table 4 (i.e., –0.017, albeit significant only at the 10% level), annual exports from (traditional and new) tough users to traditional tough users are 32 billion US$ lower than they would have been in the absence of AD actions by the traditional tough users. Together, indirect and direct AD effects have a total trade depression on the imports of all traditional tough users of 41.5 billion US$. Of course, there is some heterogeneity amongst the traditional tough users. For example, when focusing on the US and the EU, our estimates show that the direct effect of AD measures result in an annual depression of 20 and 5.5 billion US$, respectively. As for the reputation effect, the extra cost for the US and the EU for the year 2000 amounts to 2.8 and 2.7 billion US$, respectively.[27]

In contrast, there is no evidence of a reputation effect for traditional weak users (i.e., the AD age is not significant in columns (5) and (6) of Table 4), but they do experience the trade depressing effects of current AD measures. As a result of the large heterogeneity among the countries in this group, trade depression varies between zero and 11.9%. Table 7 shows the figures for the three most active users in this group. South Africa tops the list with a reduction in trade of 11.9%, or 2.5 billion US$. Argentina and South Korea track it closely with losses of 10.5% (2.3 billion US$) and 6.4% (6.5 billion US$), respectively.

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was very high already (i.e., 7.12 out of 10).

[27] The different import values for these two countries explain why these last two figures are so similar, while the age of the AD law in these countries is very different.

Overall, these numbers illustrate the chilling effects that AD policy can have (since they measure the depressing effects on aggregate trade flows when, instead, the share of trade directly affected by AD actions is on average in the range of 2 to 5%). This observation, together with the evidence on the proliferation of AD regimes, should sound an alarm in opposition to the rhetoric asserting that the effects of AD protection are small and insignificant.

VI. Conclusions

This paper shows that AD laws can have trade-depressing effects worldwide. This study thus complements the existing literature that has examined the trade effects of AD in a partial equilibrium framework.

The fact that many countries have adopted AD laws in recent years provides us with a natural experiment in time to study worldwide trade flows towards these new users before and after the adoption of AD laws. To exploit this time variation, we constructed a detailed dataset that includes information on both the date of AD law adoption as well as various variables capturing the use of AD laws. Based on a panel data analysis with time- and cross-country variation, our results from an augmented gravity equation show that what depresses exports is not so much the adoption of AD laws but the extent to which AD measures are used to punish exporters. Although we do not observe the situation of traditional users before the adoption of the AD law, our analysis still allows us to conclude that the AD regimes of these countries harm trade flows. We thus establish the presence of a reputation effect for those traditional users that have made frequent use of AD (i.e., traditional tough users), while there is no such evidence for traditional users that rarely used it (i.e., traditional weak users). The current AD caseload, however, always depresses trade in traditional weak users, and some evidence suggests that it also reduces imports for traditional tough users for those imports coming from all tough users.

The results presented here refute the notion that AD is merely a small price to pay. They clearly indicate that the trade-depressing effects of AD on worldwide trade are non-negligible. The new tough users of AD laws have their annual imports reduced by around 6.7%, which corresponds to 15.7 billion US$ -- all because of their AD measures. Among the new weak users, China, Egypt and Venezuela also register significant losses in a range from 3.1 to 5.5%. The AD policy of traditional tough users depresses their annual imports from other tough users by around 41.5 billion US$. Although comparable figures for traditional weak users vary quite a bit because of the heterogeneity of these countries, they still amount to large shares for some of these users. For example, both Argentina and South Africa register annual losses in excess of 10% of their total imports.

Overall, it is clear that the trade-depressing effects of AD are not confined only to the specific goods subject to AD measures (since the effects on aggregate flows are non-negligible and provide an overall chilling effect). This conclusion is reinforced when the size of the diminished trade flows is compared to the changes due to trade liberalization (approximated by the change in the openness index). When the trade losses are compared to the trade gains achieved through trade reforms, our results confirm that the "benefits from trade liberalization have been considerably neutralized by the (…) use of anti-dumping measures", as claimed by India in a WTO communication (1999). It is probably no coincidence that this statement comes from the country whose trade gains have been neutralized most by the subsequent use of AD.

These conclusions are even more worrisome given the recent proliferation of AD regimes and the possibility that the list of active AD users will soon expand substantially. In this respect, this paper casts a new light on AD and its use, and shows that AD is less innocuous than its advocates would like us to believe.

Table 1: Classification of AD law adopters and users

		ENFORCEMENT	
INSTITUTION	**USE** / **ADOPTION**	***Tough* users**	***Weak* users**
	Traditional users (i.e., before 1980)	Traditional *tough* users	Traditional *weak* users
	New users (i.e., after 1980)	New *tough* users	New *weak* users

Notes: i) Traditional tough users are defined as those countries that often used their AD laws before 1980 (i.e. Australia, Canada, EU, New Zealand, US); See also Prusa (2001); ii) Traditional weak users are all other countries with an AD law adopted before 1980; iii) New tough users are defined as those countries where the sum of total initiations and total measures over the period 1980-2000 is at least 50% higher than for other new users (see Table 2).

Table 2: Global adoption and use of AD laws (1980-2000)

Country	Year of AD law adoption (1)	Total AD initiations (2)	Total AD measures (3)	AD initiations per year (4)	Intensity of AD initiations[i] (5)
Traditional *tough* users					
Australia	1906	829	340	39.48	1,290
Canada	1904	478	279	22.76	250
EU	1968	784	578	37.33	109
New Zealand	1921	85	41	4.05	630
United States	1916	856	508	40.76	100
Traditional *weak* users					
Argentina	1972	201	91	9.57	1,417
Austria	1971	9	0	0.00	26
Barbados	1959	0	0	0.00	0
Cyprus	1956	0	0	0.00	0
Finland	1958	16	11	1.07	86
Jamaica	1959	1	1	0.05	34
Japan	1920	10	5	0.48	3
Malaysia	1959	15	10	0.71	45
Norway	1954	0	0	0.00	0
South Africa	1914	230	118	10.95	1,406
South Korea	1963	66	43	3.14	67
Uruguay	1980	3	0	0.15	191
New *tough* users					
Brazil	1987	143	71	9.53	381
India	1985	192	138	11.29	578
Mexico	1986	180	112	12.00	226
Taiwan	1984	73	20	4.29	96
Turkey	1989	94	49	7.83	344
New *weak* users					
Albania	1999	0	0	0.00	0
Bolivia	1992	0	0	0.00	0
Bulgaria	1993	0	0	0.00	0
Chile	1986	17	7	1.13	197
China	1997	22	9	5.50	50
Columbia	1990	27	15	2.45	337
Costa Rica	1996	6	1	1.20	277
Croatia	1999	0	0	0.00	0
Czech Republic	1997	3	1	0.75	29
Ecuador	1991	1	0	0.10	59
Egypt	1998	25	17	5.00	510
El Salvador	1995	0	0	0.00	0
Fiji	1998	0	0	0.00	0
Guatemala	1996	1	1	0.20	62
Honduras	1995	0	0	0.00	0
Hungary	1994	0	0	0.00	0
Iceland	1987	0	0	0.00	0
Israel	1991	25	12	2.50	176
Latvia	2000	0	0	0.00	0
Lithuania	1998	14	0	4.66	1,267
Morocco	1997	0	0	0.00	0
Panama	1996	2	0	0.4	160
Paraguay	1996	2	1	0.4	231
Peru	1991	36	15	3.60	699
Philippines	1994	19	12	2.71	128
Poland	1997	28	7	4.67	181
Romania	1992	0	0	0.00	0
Russia	1998	2	0	0.66	32
Singapore	1985	2	2	0.13	2
Slovak Republic	1997	0	0	0.00	0
Slovenia	1993	1	0	0.12	23
Spain	1982	1	1	0.25	8
Thailand	1994	7	6	1.00	23
Trinidad and Tobago	1992	8	4	0.88	698
Tunisia	1994	0	0	0.00	0
Venezuela	1992	31	20	3.10	351

Notes: i) Intensity is calculated by dividing total initiations per year by the average value of imports per year and then normalizing the index of the US to 100 and expressing all countries relative to the US.
Sources: Zanardi (2004a and forthcoming).

Table 3: Global trade effects of *adopting* and *using* AD laws in new users

	All exports to new users				Exports of tough users to new users	
Regressors	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Real exports$_{ijt-1}$	0.882***	0.881***	0.882***	0.881***	0.900***	0.903***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.011)	(0.011)
AD adoption$_{jt}$	0.032	0.016				
	(0.020)	(0.020)				
AD adoption$_{jt}$ *weak*			0.043*	0.018	0.018	-0.007
			(0.022)	(0.023)	(0.020)	(0.020)
AD adoption$_{jt}$ *tough*			-0.020	-0.001	-0.043	-0.032
			(0.043)	(0.041)	(0.040)	(0.039)
Total AD initiations$_{jt-1}$	-0.021**					
	(0.010)					
Total AD init$_{jt-1}$ *weak*			-0.023		-0.002	
			(0.016)		(0.013)	
Total AD init$_{jt-1}$ *tough*			-0.012		-0.005	
			(0.014)		(0.010)	
Total AD measures$_{jt}$		-0.037***				
		(0.011)				
Total AD meas$_{jt}$ *weak*				-0.029*		-0.021
				(0.018)		(0.013)
Total AD meas$_{jt}$ *tough*				-0.039***		-0.023**
				(0.015)		(0.012)
Openness index$_{jt}$	0.269***	0.279***	0.280***	0.285***	0.236***	0.247***
	(0.043)	(0.044)	(0.043)	(0.044)	(0.040)	(0.041)
Real GDP$_{jt}$	0.040*	0.044*	0.047**	0.048**	0.058**	0.056**
	(0.023)	(0.023)	(0.023)	(0.024)	(0.028)	(0.028)
Real GDP$_{it}$	0.033	0.037	0.033	0.036	0.041	0.039
	(0.032)	(0.032)	(0.032)	(0.032)	(0.039)	(0.039)
Population$_{jt}$	0.165	0.215*	0.167	0.206*	-0.006	0.036
	(0.123)	(0.122)	(0.124)	(0.123)	(0.120)	(0.119)
Population$_{it}$	0.186*	0.201*	0.188*	0.203*	-0.028	-0.024
	(0.116)	(0.117)	(0.116)	(0.117)	(0.129)	(0.130)
Distance$_{ij}$	-0.165***	-0.167***	-0.165***	-0.167***	-0.129***	-0.129***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.016)	(0.016)
Border$_{ij}$	0.073***	0.068***	0.073***	0.067***	0.038	0.027
	(0.025)	(0.025)	(0.025)	(0.025)	(0.030)	(0.030)
Language$_{ij}$	0.065***	0.070***	0.065***	0.070***	0.083***	0.082***
	(0.022)	(0.023)	(0.022)	(0.023)	(0.021)	(0.021)
Colony$_{ij}$	0.068**	0.071**	0.068**	0.071**	0.032	0.035
	(0.029)	(0.029)	(0.029)	(0.029)	(0.024)	(0.024)
RER$_{ijt}$	-0.016**	-0.017**	-0.016**	-0.016**	-0.007	-0.007
	(0.007)	(0.007)	(0.007)	(0.007)	(0.005)	(0.005)
RTA$_{ijt}$	0.094***	0.095***	0.094***	0.095***	0.071**	0.070**
	(0.025)	(0.025)	(0.025)	(0.025)	(0.035)	(0.035)
WTO$_{jt}$	0.058**	0.060**	0.058**	0.061***	0.030	0.030
	(0.024)	(0.024)	(0.024)	(0.024)	(0.025)	(0.025)
R^2	0.89	0.89	0.89	0.89	0.91	0.91
F	1,929.16***	1,925.65***	1,910.20***	1,906.78***	2,127.66***	2,137.32***
Observations	33,404	33,222	33,404	33,222	11,858	11,769

Notes: i) All variables, except dummies, are in logs; ii) Importer and exporter fixed effects as well as year dummies included in all specifications; iii) Robust standard errors in parenthesis. * denotes significance at the 10% level, ** 5% level, and *** 1% level; iv) In these regressions, real exports$_{ijt-1}$ are instrumented with a two-period lagged value of the exports; v) Total AD initiations refer to initiations against all other countries lagged by one year; vi) Total AD measures refer to measures against all other countries.

Table 4: Global trade effects of *existing* AD laws in traditional users

	All exports to traditional tough users		Exports of tough users to traditional tough users		All exports to traditional weak users	
Regressors	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Real exports$_{ijt-2}$	0.868***	0.868***	0.921***	0.921***	0.899***	0.895***
	(0.020)	(0.020)	(0.018)	(0.018)	(0.018)	(0.017)
AD age$_{jt}$	-0.487***	-0.493***	-0.358***	-0.327***	-0.191	-0.275
	(0.169)	(0.169)	(0.103)	(0.104)	(0.229)	(0.211)
Total AD initiations$_{jt-1}$	-0.009		-0.014		-0.042*	
	(0.024)		(0.0005)		(.026)	
Total AD measures$_{jt}$		-0.003		-0.017*		-0.062**
		(0.018)		(0.011)		(.026)
Openness index$_{jt}$	0.168	0.110	0.190	0.103	0.254	0.375*
	(0.429)	(0.414)	(0.212)	(0.232)	(0.242)	(0.227)
Real GDP$_{jt}$	0.303***	0.301***	0.270***	0.285***	0.232***	0.268***
	(0.115)	(0.117)	(0.074)	(0.075)	(0.089)	(0.089)
Real GDP$_{it}$	-0.006	-0.006	-0.022	-0.022	-0.073	-0.058
	(0.046)	(0.046)	(0.037)	(0.037)	(0.069)	(0.068)
Population$_{jt}$	0.432	0.468	0.385	0.314	-1.619*	-1.990**
	(0.503)	(0.488)	(0.301)	(0.308)	(1.005)	(0.950)
Population$_{it}$	0.208	0.208	0.130	0.131	0.175	0.173
	(0.134)	(0.134)	(0.155)	(0.155)	(0.211)	(0.209)
Distance$_{ij}$	-0.181***	-0.181***	-0.039**	-0.039**	-0.125***	-0.133***
	(0.029)	(0.029)	(0.018)	(0.018)	(0.029)	(0.028)
Border$_{ij}$	-0.061	-0.061	0.080	0.080	-0.019	-0.029
	(0.043)	(0.043)	(0.052)	(0.052)	(0.049)	(0.047)
Language$_{ij}$	-0.185***	-0.184***	-0.001	-0.002	0.063	0.073
	(0.064)	(0.064)	(0.040)	(0.040)	(0.046)	(0.044)
Colony	0.225**	0.225**			0.052	0.067
	(0.094)	(0.094)			(0.045)	(0.045)
RER$_{ijt}$	-0.015	-0.014	-0.014*	-0.014*	0.008	0.009
	(0.014)	(0.014)	(0.008)	(0.007)	(0.014)	(0.015)
RTA$_{ijt}$	0.084**	0.084**	0.143***	0.143***	0.040	0.049
	(0.034)	(0.033)	(0.053)	(0.053)	(0.043)	(0.041)
R^2	0.95	0.95	0.99	0.99	0.91	0.91
F	2,357.95***	2,358.86***	4,749.47***	4,732.92***	1,099.34***	1,131.44***
Observations	7,207	7,207	1,680	1,680	8,965	9,257

Notes: i) All variables, except dummies, are in logs; ii) Importer and exporter fixed effects as well as year dummies included in all specifications; iii) Robust standard errors in parenthesis. * denotes significance at the 10% level, ** 5% level, and *** 1% level; iv) In these regressions, real exports$_{ijt-1}$ are instrumented with a two-period lagged value of the exports; v) Total AD initiations refer to initiations against all other countries lagged by one year; vi) Total AD measures refer to measures against all other countries.

Table 5: Robustness check: Arellano-Bover (system GMM)

	Exports to new users			Exports to traditional users		
Exporters	All	All	Tough users	All	Tough users	All
Importers	New users	New users	New users	Traditional tough users	Traditional tough users	Traditional weak users
Regressors	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Real exports$_{ijt-1}$	0.486***	0.501***	0.717***	0.660***	0.964***	0.478***
	(0.019)	(0.019)	(0.025)	(0.036)	(0.011)	(0.036)
AD age$_{jt}$				-0.223***	-0.060***	0.249***
				(0.067)	(0.020)	(0.080)
AD adoption$_{jt}$	-0.008					
	(0.030)					
AD adoption$_{jt}$ *weak*		-0.005	-0.043*			
		(0.030)	(0.022)			
AD adoption$_{jt}$ *tough*		0.034	0.014			
		(0.066)	(0.044)			
Total AD measures$_{jt}$	-0.128***			-0.006	-0.019**	-0.145***
	(0.020)			(0.021)	(0.009)	(0.035)
Total AD meas$_{jt}$ *weak*		-0.125***	-0.067***			
		(0.029)	(0.019)			
Total AD meas$_{jt}$ *tough*		-0.145***	-0.080***			
		(0.025)	(0.015)			
Openness index$_{jt}$	0.809***	0.704***	0.439***	-0.021	-0.016	-0.273
	(0.095)	(0.085)	(0.060)	(0.521)	(0.121)	(0.255)
Real GDP$_{jt}$	0.285***	0.289***	0.259***	0.192	0.263***	0.192***
	(0.037)	(0.036)	(0.030)	(0.141)	(0.045)	(0.055)
Real GDP$_{it}$	0.474***	0.465***	0.339***	0.451***	0.028	0.613***
	(0.035)	(0.034)	(0.046)	(0.063)	(0.019)	(0.071)
Population$_{jt}$	0.144***	0.103***	-0.003	0.192	-0.252***	0.205***
	(0.038)	(0.034)	(0.020)	(0.165)	(0.056)	(0.057)
Population$_{it}$	0.094**	0.087**	-0.073***	-0.142***	0.004	0.030
	(0.043)	(0.042)	(0.024)	(0.047)	(0.008)	(0.080)
RER$_{ijt}$	-0.004	-0.003	-0.007	-0.007	-0.004*	0.036**
	(0.005)	(0.005)	(0.004)	(0.011)	(0.002)	(0.014)
RTA$_{ijt}$	1.619***	1.568***	0.392**	0.625***	0.127***	1.427***
	(0.119)	(0.116)	(0.194)	(0.130)	(0.028)	(0.182)
WTO$_{jt}$	0.082**	0.073**	0.074			
	(0.031)	(0.036)	(0.026)			
Hansen test	1,063.73***	1,024.44***	749.41***	560.51	87.47	706.22
AR1	-23.51***	-23.66***	-12.08***	-7.77***	-4.02***	-11.14***
AR2	2.34**	2.44**	2.78***	1.82*	0.42	0.66
F	184.05***	183.94***	41.76***	448.88***	21,212.71***	97.72***
Observations	37,030	37,030	12,489	7,863	1,772	10,135

Notes: i) All variables, except dummies, are in logs; ii) Year dummies included in all specifications; iii) Robust standard errors in parenthesis. * denotes significance at the 10% level, ** 5% level, and *** 1% level; iii) Total AD measures refer to measures against all other countries; iv) In these regressions, real exports$_{ijjt-1,}$ both real GDP$_t$ and AD measures$_{jt}$ are instrumented with ten lags of these variables (eight lags in columns (2) and (3) because of computational constraints); v) The Hansen test is a test of overidentifying restrictions; 5) AR1 and AR2 are tests for first-order and second-order serial correlation.

Table 6: Robustness check: GATT/WTO and definition of new *tough* users

	All exports to new users			
	WTO effect?	**Different definitions of new users**		
Regressors	**(1)**	**(2)[a]**	**(3)[b]**	**(4)[c]**
Real exports$_{ijt-1}$	0.881***	0.881***	0.881***	0.879***
	(0.008)	(0.008)	(0.008)	(0.008)
AD adoption$_{jt}$ *weak*	0.026	0.019	0.009	0.020
	(0.022)	(0.023)	(0.023)	(0.022)
AD adoption$_{jt}$ *tough*	0.007	0.013	0.018	0.008
	(0.040)	(0.032)	(0.030)	(0.040)
Total AD measures$_{jt}$ *weak*	-0.038**	-0.044**	-0.002	-0.030*
	(0.018)	(0.021)	(0.019)	(0.018)
Total AD measures$_{jt}$ *tough*	-0.041***	-0.034***	-0.056***	-0.048***
	(0.015)	(0.013)	(0.014)	(0.013)
Openness index$_{it}$	0.272***	0.279***	0.287***	0.294***
	(0.044)	(0.044)	(0.045)	(0.043)
Real GDP$_{jt}$	0.035	0.044*	0.039**	0.057**
	(0.023)	(0.024)	(0.023)	(0.023)
Real GDP$_{it}$	0.036	0.037	0.037	0.020
	(0.032)	(0.032)	(0.032)	(0.031)
Population$_{jt}$	0.244**	0.222*	0.242*	0.208*
	(0.121)	(0.125)	(0.126)	(0.121)
Population$_{it}$	0.197*	0.200*	0.201*	0.208*
	(0.117)	(0.117)	(0.117)	(0.113)
Distance$_{ij}$	-0.167***	-0.167***	-0.167***	-0.169***
	(0.015)	(0.015)	(0.015)	(0.014)
Border$_{ij}$	0.068***	0.068***	0.067***	0.073***
	(0.025)	(0.025)	(0.025)	(0.024)
Language$_{ij}$	0.070***	0.070**	0.070***	0.071**
	(0.023)	(0.023)	(0.023)	(0.021)
Colony$_{ij}$	0.070**	0.071**	0.071**	0.076***
	(0.029)	(0.029)	(0.029)	(0.028)
RER$_{ijt}$	-0.017**	-0.018**	-0.018**	-0.017**
	(0.007)	(0.007)	(0.007)	(0.007)
RTA$_{ijt}$	0.096***	0.095***	0.095***	0.088***
	(0.025)	(0.025)	(0.025)	(0.024)
WTO$_{jt}$		0.059**	0.058**	0.063***
		(0.024)	(0.024)	(0.024)
Corr(WTO, AD)	0.41			
R^2	0.89	0.89	0.89	0.89
F	1,918.15***	1,907.76***	1,906.22***	2,051.12***
Observations	33,222	33,222	33,222	35,452

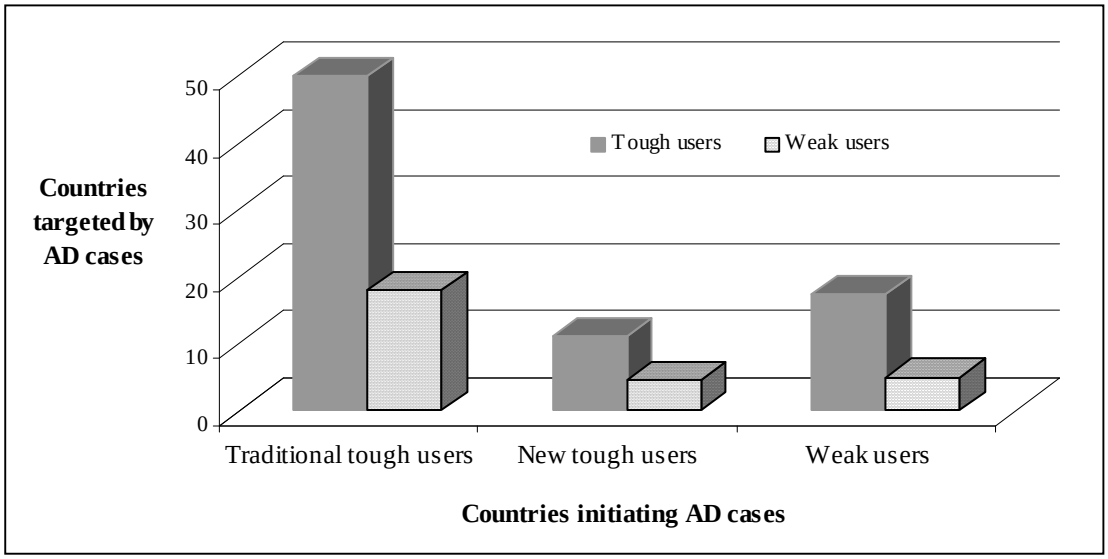
Notes: a) Tough new users defined as new users that initiated on average four AD cases per year; b) Tough new users defined as new users with an AD intensity index higher than 300; c) Tough new users defined as for previous tables plus Argentina, South Africa and South Korea; i) All variables, except dummies, are in logs; ii) Importer and exporter fixed effects as well as year dummies included in all specifications; iii) Robust standard errors in parenthesis. * denotes significance at the 10% level, ** 5% level, and *** 1% level; iv) In these regressions, real exports$_{ijt-1}$ are instrumented with a two-period lagged value of the exports; v) Total AD initiations refer to initiations against all other countries lagged by one year; vi) Total AD measures refer to measures against all other countries.

Table 7: Are gains from trade liberalization offset by AD measures?

	First year of trade liberalization	First AD measure	%Δ in annual imports due to AD	%Δ in annual imports due to liberalization	Δ annual imports due to AD (billion US$)	Δ annual imports due to liberalization (billion US$)
	(1)	(2)	(3)	(4)	(5)	(6)
New *tough* users:						
Brazil	1988	1989	-6.7%	23.0%	-3.28	11.27
India	1991	1993	-7.8%	11.9%	-2.11	3.21
Mexico	1985	1987	-8.2%	18.9%	-7.38	17.01
Taiwan	1986	1986	-2.7%	3.4%	-1.46	1.84
Turkey	1980	1990	-6.1%	34.3%	-1.46	8.23
New *weak* users:[i]						
China	1992	1999	-3.1%	9.3%	-4.74	14.14
Egypt	1991	1998	-5.5%	21.1%	-0.75	2.87
Venezuela	1989	1994	-3.1%	4.0%	-0.38	0.49
Other recent frequent users:						
Argentina	1988	1995[ii]	-10.5%	30.1%	-2.31	6.62
South Africa	1990	1995[ii]	-11.5%	5.2%	-2.50	1.08
South Korea	1981	1987[ii]	-6.4%	5.6%	-6.53	5.68

Notes: i) New weak users are included in this table if they have an average of at least two AD measures imposed during the sample; ii) First year given the available data, which cover a period shorter than the sample; ii) Trade liberalization episodes from Jonsson and Subramanian (2001), Li (2004), Liu (2002) and Refaat (2000); iii) Percentage changes calculated using the coefficients from column (4) of Table 3 for new users and from column (4) of Table 6 for other recent frequent users; iv) Figures in columns (5) and (6) are in 1995 real prices.

Figure 1: Intensity of AD initiations by group of users (1980-2000)



Notes: i) Intensities calculated by dividing the total number of initiations against group of countries by the number of countries in each group.

Figure 2: The proliferation of AD laws

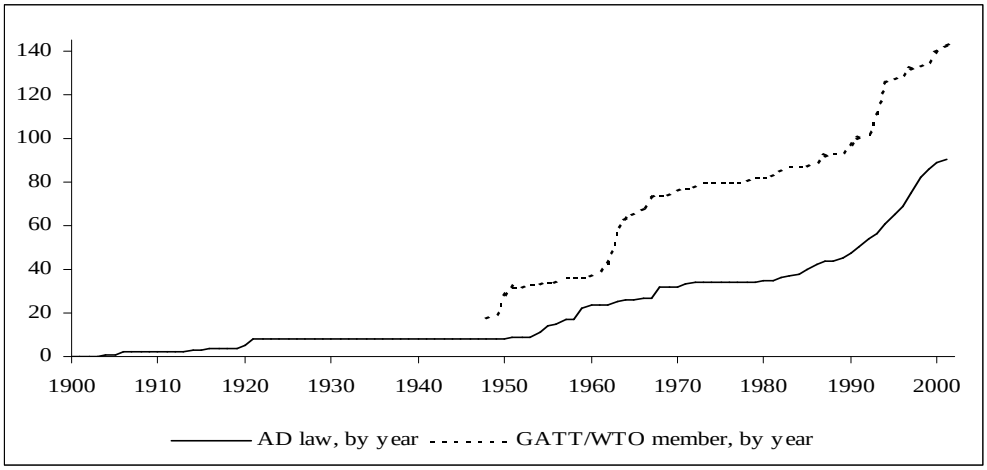
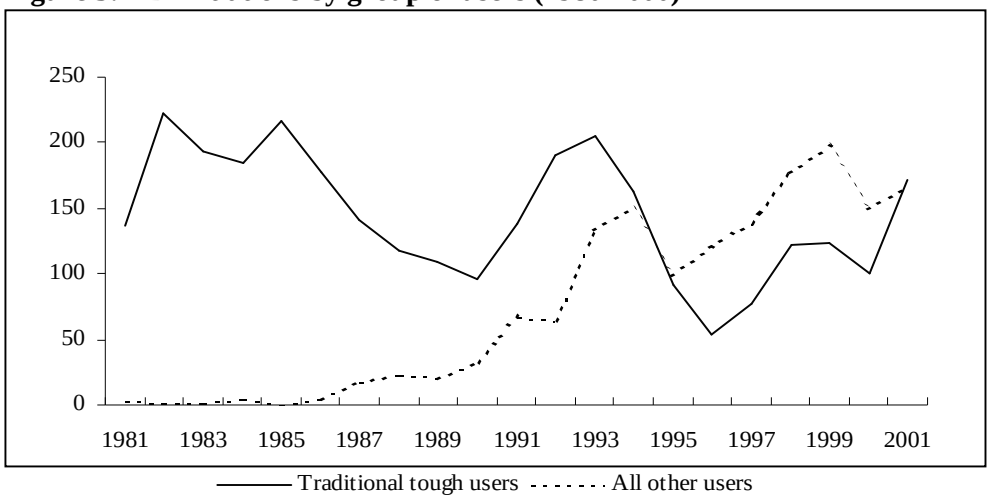


Figure 3: AD initiations by group of users (1980-2000)



Data appendix: sources

Variables	Description	Sources
AD dummy	Dummy variable equals 1 in the year when a country has an AD law	Zanardi (2004a)
AD initiations	The number of AD initiations in a particular year against all other countries	Zanardi (2004a)
AD measures	The number of AD measures in a particular year against all other countries	Zanardi (2004a)
AD age	The number of years since an AD law was adopted	Zanardi (2004a)
Border	Dummy variable equal to 1 when countries share a land border	CIA World Factbook
Colony	Dummy variable equal to 1 when countries had colonial ties	CIA World Factbook
Distance	Great circle distance in km between capitals	Author's calculation
Openness index	Freedom to Trade with Foreigners index from the Economic Freedom Index	Fraser Institute, Canada
Exports	Real value of exports deflated by US GDP deflator	International Financial Statistics (IFS) and CHELEM
GDP	Real value of GDP deflated by US GDP deflator	IFS and CHELEM
Language	Dummy variable equal to 1 when countries share an official language	CIA World Factbook
Population	Population in millions	IFS and CHELEM
RER	Real exchange rate	IFS and CHELEM
RTA	Regional Trade Agreements: EU, NAFTA, MERCOSUR, U.S-Israel, EEA, CEFTA, EFTA, COMESA, Australia-New Zealand	WTO
WTO	Dummy variable equal to 1 in the years a country is member of the GATT/WTO	WTO

Notes: CHELEM: This dataset is made available by CEPII, Paris, France.

Data appendix: list of countries in the dataset

Albania	Dominica*	Latvia	Slovak Republic
Algeria*	Dominican Republic	Lebanon*	Slovenia
Antigua and Barbuda*	Ecuador	Libya*	South Africa
Argentina	European Union**	Lithuania	South Korea
Aruba*	Egypt	Luxemburg*	Spain
Australia	El Salvador	Macao*	Sri Lanka
Austria	Equatorial Guinea*	Macedonia, FYR*	St. Kitts and Nevis*
Bahamas*	Estonia	Malaysia	St. Lucia*
Bahrain	Fiji	Maldives*	St. Vincent and Grenadines*
Barbados	Finland	Malta	Suriname*
Belarus*	France*	Mauritius	Sweden*
Belgium*	Gabon*	Mexico	Switzerland
Belize*	Germany*	Morocco	Syrian Arab Republic*
Bermuda*	Greece	Netherlands*	Taiwan, Province of China
Bolivia	Grenada*	Netherlands Antilles*	Thailand
Bosnia and Herzegovina*	Guatemala	New Zealand	Tonga*
Brazil	Guyana*	Norway	Trinidad and Tobago
Brunei Darussalam*	Honduras	Oman	Tunisia
Bulgaria	Hungary	Panama	Turkey
Canada	Iceland	Papua New Guinea	Turkmenistan*
Cape Verde*	India	Paraguay	United Arab Emirates
Chile	Iran*	Peru	United Kingdom*
China	Iraq*	Philippines	United States
China, Hong Kong	Ireland*	Poland	Uruguay
Colombia	Israel	Portugal	Vanuatu*
Costa Rica	Italy*	Qatar*	Venezuela
Croatia	Jamaica	Romania	
Cuba*	Japan	Russia	
Cyprus	Jordan	Samoa*	
Czech Republic	Kazakhstan*	Saudi Arabia*	
Denmark*	Kiribati*	Seychelles*	
Djibouti*	Kuwait*	Singapore	

Notes: i) A * means that the country is included only as an exporter because of data limitation (especially the economic freedom index) to allow its inclusion as an importer; individual EU countries are not included as importers since the EU is included as a single importing entity; ii) A ** means that the country is only included as an importer.

Reference list

Anderson, J.E., 1979. "A Theoretical Foundation for the Gravity Equation", *American Economic Review*, 63: 881-892.

Anderson, J.E., Van Wincoop, E., 2003. "Gravity with Gravitas: A Solution to the Border Puzzle", *American Economic Review*, 93: 170-192.

Anderson, K., 1993. "Antidumping Laws in the US; Use and Welfare Consequences", *Journal of World Trade*, 27: 99-117.

Arellano, M., Bond, S., 1991. "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations", *Review of Economic Studies*, 58: 277-297.

Arellano, M., Bover, O., 1995. "Another Look at the Instrumental-Variable Estimation of Error-Components Models", *Journal of Econometrics*, 68: 29-52.

Belderbos, R., Vandenbussche, H., Veugelers, R., 2004. "Price-Takings and Anti-Dumping Jumping FDI in the European Union", *European Economic Review*, 48: 429-453.

Blonigen, B.A., forthcoming. "Working the System: Firm Learning and the Antidumping Process", *European Journal of Political Economy*.

Blonigen, B.A., 2002. "Tariff-Jumping Antidumping Duties", *Journal of International Economic*s, 57: 31-50.

Blonigen B.A., Bown, C., 2003. "Antidumping and Retaliation Threats", *Journal of International Economic*s, 60: 249-273.

Blonigen, B.A., Park, J-H, 2004. "Dynamic Pricing in the Presence of Antidumping Policy: Theory and Evidence", *American Economic Review*, 94: 134-154.

Bown, C., 2005. "Global Antidumping Database, Version 1.0", World Bank Policy Research Paper No. 3737.

Bun, M.J.G., Klaassen, F.J.G.M., 2002. "The Importance of Dynamics in Panel Gravity Models of Trade", mimeo, University of Amsterdam.

De Grauwe, P., Skudelny, F., 2000. "The Impact of EMU on Trade Flows", *Weltwirtschaftliches Archiv*, 126: 381-402.

DeVault, J., 1996. "The Welfare Effects of US Antidumping Duties", *Open Economies Review*, 7: 19-33.

Disdier, A-C., Head, K.C., 2004. "The Puzzling Persistence of the Distance Effect on Bilateral Trade", Centro Studi Luca d'Agliano, Working paper n. 186.

Eichengreen, B., Irwin, D.A., 1997. "The Role of History in Bilateral Trade Flows", in J.A. Frankel (ed.), *Issues in Regionalism*, Chicago: University of Chicago Press.

Ethier, W., Fischer, R., 1987. "The New Protectionism", *Journal of International Economic Integration*, 2: 1-11.

Evenett, S.J., Keller, W., 2002. "On Theories Explaining the Success of the Gravity Equation",

Journal of Political Economy, 110: 281-316.

Feenstra, R., 2002. "Border Effects and the Gravity Equation: Consistent Methods for Estimation", *Scottish Journal of Political Economy*, 49: 491-506.

Feinberg, R., Reynolds, K., forthcoming. "The Spread of Antidumping Regimes and the Role of Retaliation in Filings", *Southern Economic Journal*.

Feinberg, R., Reynolds, K., 2005. "Tariff Liberalization and Increased Administrative Protection: Is There a Quid Pro Quo?", working paper.

Finger, J.M., Ng, F., Wangchuk S., 2002. "Antidumping as a Safeguard Policy", in R. Stern (ed.), *Issues and Options for US-Japan Trade Policies*, Ann Arbor: University of Michigan Press.

Fischer, R., 1992. "Endogenous Probability of Protection and Firm Behavior", *Journal of International Economics*, 32: 149-163.

Frankel, J.A., (ed.), 1998. *The Regionalization of the World Economy*, Chicago: University of Chicago Press.

Gallaway, M.C., Blonigen, B.A., Flynn, J.E., 1999. "Welfare Costs of the US Antidumping and Countervailing Duty Laws", *Journal of International Economics*, 49: 211-244.

Girma, S., Greenaway, D., Wakelin, K., 2002. "Does Antidumping Stimulate FDI? Evidence from Japanese Firms in the UK", *Review of World Economics*, 3: 414-436.

Gwartney, J., Lawson, R., 2003. "The Concept and Measurement of Economic Freedom", *European Journal of Political Economy*, 19: 405-430.

Haaland, J.I., Wooton, I., 1998. "Antidumping Jumping: Reciprocal Anti-dumping and the Location of Firms", *Weltwirtschaftliches Archive*, 134: 340-362.

Hindley, B., Messerlin, P., 1996. *Antidumping Industrial Policy; Legalized Protection in the WTO and What to Do About It*, Washington DC: AEI Press.

Jonsson, G., Subramanian, A., 2001. "Dynamic Gains from Trade: Evidence from South Africa", *IMF Staff Papers*, 48: 197-224.

Konings, J., Vandenbussche, H., Springael, L., 2001. "Import Diversion under European Antidumping Policy", *Journal of Industry, Competition and Trade*, 1: 283-299.

Li, X., 2004. "Trade Liberalization and Real Exchange Rate Movement", *IMF Staff Papers*, 51: 553-584.

Liu, M.C., 2002. "Determinants of Taiwan's Trade Liberalization: The Case of a Newly Industrialized Country", *World Development*, 30: 975-989.

Messerlin, P.A., 1990. "Anti-Dumping Regulations or Pro-Cartel Law? The EC Chemical Cases", *The World Economy*, 13: 465-492.

Niels, G., 2003. "Trade Diversion and Trade Destruction Effects of Antidumping Policy: Empirical Evidence from Mexico", mimeo.

Pauwels, W., Vandenbussche, H., Weverbergh, M., 2001. "Strategic Behaviour under European

Antidumping Duties", *International Journal of the Economics of Business*, 8: 75-99.

Prusa, T.J., 1992. "Why are so Many Antidumping Petitions Withdrawn?", *Journal of International Integration*, 33: 1-20.

Prusa, T.J., 1994. "Pricing Behavior in the Presence of Antidumping Law", *Journal of International Integration*, 9: 260-289.

Prusa, T.J., 2001. "On the Spread and Impact of Antidumping", *Canadian Journal of Economics*, 34: 591-611.

Prusa, T.J., Skeath, S., 2002. "The Economic and Strategic Motives for Antidumping Filings", *Weltwirtschaftliches Archiv*, 138: 398-413.

Prusa, T.J., Skeath, S., 2005. "Modern Commercial Policy: Managed Trade or Retaliation?", in K. Choi and J. Hartigan (ed.), *Handbook of International Trade*, vol. 2, Blackwell.

Refaat, A., 2000. "Egypt: An Assessment of Recent Trade Policy Developments", in B. Hoekman and H. Kheir-El-Din (ed.), *Trade Policy Developments in the Middle East and North Africa*, Washington DC: The World Bank.

Rose, A.K., 2000. "One Money, One Market: Estimating the Effect of Common Resources on Trade", *Economic Policy*, 15: 9-45.

Rose, A.K., 2004. "Do We Really Know that the WTO Increases Trade?", *American Economic Review*, 94: 98-114.

Staiger, R.W., Wolak, F.A., 1989. "Strategic Use of Antidumping Law to Enforce Tacit International Collusion", NBER working paper 3016.

Subramanian, A., Wei, S.J., 2005. "The WTO Promotes Trade, Strongly but Unevenly", mimeo.

US International Trade Commission (1995), *The Economic Effects of Antidumping and Countervailing Duty Orders and Suspension Agreements*. Investigation No. 332-344. Publication 2900. Washington DC.

Veugelers, R., Vandenbussche, H., 1999. "European Anti-Dumping Policy and the Profitability of National and International Collusion", *European Economic Review*, 43: 1-28.

World Trade Organization (1999), "Communication from India", document WT/GC/W/200.

Zanardi, M., 2004a. "Antidumping: What are the Numbers to Discuss at Doha?", *The World Economy*, 27: 403-433.

Zanardi, M., 2004b. "Antidumping Law as a Collusive Device", *Canadian Journal of Economics*, 37: 95-122.

Zanardi, M., forthcoming. "Antidumping: a Problem in International Trade", *European Journal of Political Economy*.