

# The determinants of Price Undertakings in the EU

Estela Montado

London School of Economics<sup>1</sup>

August 2006

## Abstract

This paper empirically analyses the determinants of the European Commission's choice of the acceptance of price undertakings as opposed to imposing definitive antidumping duties in those cases in which both dumping and material injury have been found. A dataset of European antidumping decisions is used to analyse the hypothesised determinants of the acceptance of undertakings. Using a probit model, I analyse the importance of certain determinants on the probability that the AD authority in Europe would accept price undertakings. The evidence shows that the share of European exports to the country named in the investigation is positively associated with the probability of AD duties being imposed. Some political economy variables as well as certain country characteristics are found to be significant. The European Union is less likely to accept the "softer" remedy of price undertaking in cases involving non-market economies.

*JEL classification:* F13, F53

---

<sup>1</sup> Department of Economics, London School of Economics, Houghton Street, WC2A 2AE, London, e-mail: [e.montado-alumni@lse.ac.uk](mailto:e.montado-alumni@lse.ac.uk). I would like to thank Professor Anthony J. Venables, Dr. Oriana Bandiera, Professor Hylke Vandenbussche, Dr. Henry Overman, Dr. Steve Redding and Dr. Marco Manacorda for helpful comments and discussions. Thanks also to Professor Matthew Tharakan, Dr. Linda Springael, Peter Holmes and Dr. Jeremy Kempton for help in constructing the data set. Special thanks go to Dr and Chad Bown who kindly provided data on the European Antidumping legal cases. I acknowledge financial support from the London School of Economics. All errors remain mine.

# 1 Introduction

After several trade talks at the World Trade Organisation (WTO) level there has been a general reduction of tariffs and a fall in traditional trade policy tools has taken place. At the same time, a rise in new forms of protection has occurred. Especially, a rise in the use of antidumping (AD) and countervailing duty (CVD) measures suggests that at least in part they may have replaced the tariffs and vertical export restraints (VER). The use of antidumping measures can lead to selective protection. Legal experts have pointed out the vagueness of the antidumping code (Vermulst, 1990). This has allowed countries to implement unilateral interpretation in law or practice and claim consistency with the AD/CVD code. This is particularly important in the definition of dumping, the determination of 'normal value' and, more significantly, in the determination of injury. The AD implementation of the law contains loopholes that could let influences other than technical criteria in the determination of dumping and injury. This vagueness makes a positive finding more likely and also broadens the scope for its use. Political economy reasons for 'administered protection' may be underlying the recent increase in antidumping actions.

The purpose of this paper is to empirically assess several hypotheses about what factors are associated with the European Commission's choice of the acceptance of price undertakings as opposed to imposing definitive antidumping duties in those cases in which both dumping and material injury have been found. A dataset of European antidumping decisions initiated in the period 1995-2003 is used to analyse the hypothesised determinants of the acceptance of undertakings. Using a probit model, I analyse the importance of certain variables on the probability that the AD authority in Europe would accept price undertakings.

The final outcome of an AD investigation could be: a rejection of the claim because no dumping or injury is found or it is in the community's interest not to impose penalties; the imposition of an antidumping duty; and, the acceptance of undertakings<sup>2</sup>.

In the WTO 1994 AD agreement there is a provision for firms to offer and accept price undertakings once the Member country has made at least a preliminary affirmative determination of dumping and injury caused by the dumping. A price undertaking is an agreement by the foreign exporter to eliminate injury by increasing its price. Article 8 of the World Trade Organisation's (WTO) AD Agreement establishes that:

“...Proceedings may be suspended or terminated without the imposition of provisional or antidumping duties upon receipt of voluntary undertakings from any exporter to revise its price or to cease exports to the country in question at dumped prices so that the authorities are satisfied that the injurious effect of dumping is eliminated...”<sup>3</sup>

Price undertakings are common in Europe and Australia, but less frequent in the US and Canada. In the US antidumping law a similar provision is made, the Suspension Agreements. These agreements can remove dumping or the injury or they may require a temporary withdrawal from the market, but they are very rare in practice. While these agreements are very seldom used, private price arrangements could occur and lead to the withdrawal of petitions, as shown in Prusa (1992). So, the fact that Suspension Agreements are not the most commonly used channel towards price agreements, does not mean that price agreements do not exist or are unimportant. Moreover, the US

---

<sup>2</sup> Other reasons for the termination of a case are firms' withdrawals or expiry of the time required for the investigation to be completed.

<sup>3</sup> Article 8 of the Agreement on Implementation of Article VI of the General Agreement on Tariffs and Trade (GATT), 1994.

government has intervened with other market arrangements, like VER, for high profile industries such as steel and semiconductors.

There are two main differences between price undertakings (PU) and vertical export restraints (VER). The first difference is that while a PU usually restricts trade through a price agreement, a VER restricts trade through volumes. The second and more important difference is that the former is an agreement between the exporters and the government of the importing country whereas the latter is an agreement between governments.

A clause in the European antidumping law allows the EU administration to settle antidumping actions either by levying duties or by demanding price undertakings from the foreign exporting firms in accordance with the GATT/WTO regulations<sup>4</sup>. The undertaking could take the form of a price increase by the exporter (or importer) or of a restraint of the volume of exports. Undertakings shall be accepted after the European Commission (EC) has made at least a preliminary affirmative determination of dumping, injury and causality. Until December 1995, undertakings could be accepted even when an investigation on injury had not yet finished. But, even when undertakings had been accepted the Commission would complete the injury investigation if it so decided, if exporters representing a significant percentage of the trade involved or the country of export requested it. However, if no injury were found the undertakings would automatically lapse. The most frequent situation is that in which the Commission would only accept undertakings once dumping and injury had been found. From December 1995, the regulation states that undertakings shall not be sought or accepted unless a provisional affirmative decision of dumping and injury caused by such dumping has been made.

Once the undertaking is accepted, it would be closely monitored by the Commission and in a case of violation would be heavily penalised. The Commission would then request from the parties involved to provide periodically information relevant to the fulfilment of the undertaking and to allow the verification of data.

Price undertakings may be suggested by the exporter(s) or by the EC. When price undertakings are suggested by the Commission, it remains unclear what the motivation and the criteria for suggesting them are. Furthermore, very little information is available in the legal documents as to the motives for this suggestion.

It is important to compare the welfare effects of price undertakings with those of imposing AD duties. Although the level of price undertakings is not mentioned in the legal documents, it should be equivalent to the level of the AD duty that would have been imposed and that is necessary to eliminate the injurious effect of dumping. In Europe there exists a "lesser duty rule" by which the level of any antidumping duty is limited to the amount required to eliminate the injury to the Community industry where this is less than the margin of dumping. This should also apply to price undertakings.

The optimal tariff argument states that under perfect competition the distortions of consumption and production decisions created by the imposition of a tariff may be offset by the terms of trade gain, provided the tariff is small enough to keep the volume of trade (imports and exports) at the level most favourable to the country imposing the tariff but big enough to improve its terms of trade. In a similar fashion, imposing an AD duty could be beneficial for a large trading block like the EU. Regarding the elimination of the injury, AD duties are equivalent to price undertakings. However, for

---

<sup>4</sup> The European regulations are contained in Article 10 of Council Regulation (EEC) 2176/84, Article 10 of Council Regulation (EEC) 2423/88 and Article 8 of Council Regulation (EC) 384/96 of 22 December 1996. In this last regulation the EU has also agreed to grant a preferential treatment of price undertakings in disputes with its future member states from 1994. The Essen Summit in 1994 sets this principle against Central and Eastern European countries. This, however, does not affect the analysis discussed since it falls outside the period of study.

the country imposing AD measures, duties are more attractive since the increase in revenue (duties) accrues to the country imposing measures. If a price increase for exporters is accepted instead, this revenue is captured by the country of the defendant. Imposing AD duties would lead to larger welfare gains for a large country than price undertakings. The acceptance of price undertakings generates rents for the foreign firms that could be captured by the importing country if duties are imposed instead.

The welfare effects of undertakings could also be negative in the presence of imperfect competition and when market structure is not exogenous. Veugelers and Vandebussche (1999) analyse the effect of AD on market structure when initially there exists a European cartel and no foreign entry. They then analyse how AD regulations provide incentives for domestic and foreign firms to engage in a full cartel after entry occurs. They find that the use of AD measures can both have a pro-competitive or an anticompetitive effect, depending on the government objective function, cost asymmetries and product heterogeneity. Their welfare analysis shows that the imposition of duties in the equilibrium market structure increases domestic welfare. The rent shifting from foreign producers more than compensates consumer losses. This scope for rent shifting is larger with larger cost asymmetries. If AD cases end with the imposition of price undertakings, the welfare effects tend to be negative. The benefits to domestic producers are smaller than the loss in consumer welfare and the losses due to an anti-competitive effect of antidumping.

The only one written guideline for the rejection of undertakings is contained in the GATT/WTO AD Agreement that states that:

“...undertakings offered need not be accepted if their acceptance is considered impractical, if such as where the number of actual or potential exporters is too great, or for other reasons, including reasons of general policy...”<sup>5</sup>

However, there are no written guidelines in the regulations of European AD. The EU administration has considerable discretion in allowing price undertakings. The absence of clear-cut rules for the possible acceptance or rejection of price undertakings and the enormous discretion held by the Commission and the Council of Ministers, makes it plausible that a number of political economy considerations could play a role in the decisions. In a previous study, factors such as the prevalence of bilateral trade deficits, the country of origin of certain defendants - more specifically, Japan - and the lobbying potential of the domestic industry were found to be correlated with the decision to refuse the offer of undertakings (Tharakan, 1991b). However, this study analyses the decisions made in the period 1980-87 in which more than two thirds of affirmative decisions ended with the acceptance of undertakings. The intensity in its use has changed dramatically in the years that followed and there is no reason to believe that the hypothesised determinants might be the same.

With all these ideas as motivation, this paper analyses these and other determinants of the undertaking decisions. A legal data set of all European AD investigations initiated between 1995 and 2003 is compiled, together with other associated trade and industrial statistics, and used to empirically test several hypotheses.

The rest of the paper is organised as follows. Section 2 presents a brief overview of the related literature. Section 3 contains a descriptive analysis of price undertakings in Europe in the period 1995-2003. Section 4 contains a description of the main hypotheses formulated. Section 5 presents the econometric specification and the variables used. The results are discussed in Section 6. Finally, the conclusions are presented in Section 7.

---

<sup>5</sup> *Idem*, footnote No. 56.

## 2 Related Literature

A number of papers, including Belderbos et al. (2004) and Vandenbussche and Wauthy (2001), have analysed the effects of price undertakings in Europe. Belderbos et al. (2004) analyse the effects of undertakings on foreign direct investment (FDI). They show that the decision to accept an undertaking will depend on the objective function of the EU administration that may range from protecting only industry interests to including the interest of consumers and other users. When considering the possibility of FDI, if the EU values producers' surplus only, it is more likely to negotiate price undertakings rather than impose duties. FDI increases price competition in the EU market due to the cost advantage of foreign producers and the option of undertakings acts to persuade the foreign firm not to engage in FDI. Furthermore, they show that undertakings are less likely to occur if the EU also values the positive effect of inward foreign investment on employment and wages. Vandenbussche and Wauthy (2001) analyse the effects of price undertakings on the choice of product quality in vertically differentiated industries. They show that price undertakings lead to lower product quality in the protected industries. Although price undertakings loosen price competition when the quality of products is given, in the presence of vertically differentiated products, quality choices are affected in a detrimental way to European firms compared to free trade. When quality is endogenous, price undertakings make the foreign firm compete more aggressively in quality terms.

In a related fashion, some other papers (Prusa, 1992 and Zanardi, 2004a) have analysed the possibility of AD being used as a collusive device. In the US, from the number of petitions initiated, nearly one third of antidumping cases are withdrawn or are voluntarily terminated and only one third of them actually result in dumping duties. Prusa (1992) argues that the mere existence of AD law can affect trade flows even in periods in which no petition is actually filed. He shows that, in the presence of imperfect competition, cases withdrawn can have as big an effect as the cases that resulted in duties. Petitions are used by domestic industries to threaten and induce foreign industries into a collusive agreement. He presents a model of the bargaining process leading to an agreement. Even when the agreement must be in the public interest, the ability to avoid dumping duties and cooperate on pricing decisions makes it strictly preferred to the expected International Trade Commission (ITC) decision. Antidumping petitions serve as a vehicle for achieving cooperative levels of profits.

Zanardi (2004a) argues that according to the model developed by Prusa, all antidumping investigations should be withdrawn. However, he points out that in practice we do not observe that all investigations are withdrawn. He develops a theoretical model in which only some petitions are withdrawn in equilibrium. The decision to withdraw a petition depends on the coordination costs and the bargaining power of domestic and foreign firms. The empirical results for the US verified the theory, suggesting that antidumping law is used as a collusive device.

Other research has focused on the effects of European AD policy on market structure. Veugelers and Vandenbussche (1999) show that AD protection can result in collusive outcomes. The initial situation is one in which there exists a domestic European cartel and there is no foreign entry. They then proceed to analyse how AD regulations provide incentives for foreign and domestic firms to engage in a full cartel after foreign entry occurs. AD measures can have a pro-competitive or an anticompetitive effect depending on the objective function of the European government, on the costs asymmetries and on the degree of product heterogeneity between domestic and foreign firms. European welfare could increase or decrease accordingly. They show

that when the government's objective function includes only domestic producers' welfare, undertakings are the only type of measures observed whatever the cost differences and the degree of product heterogeneity. When the government cares additionally about tariff revenue, undertakings will still predominantly be used. The third possibility is that the government additionally cares about consumer welfare. Only then, will the AD measures be predominantly duties, provided that cost differences are not too small.

Everaert (2003) suggests that technology adoption is always delayed in the presence of price undertakings compared to free trade and the result is valid when protection is either temporary or permanent.

Finally, a study by Tharakan (1991) analyses empirically the determinants of price undertakings in the period 1980-1987. The explanatory hypothesis are formulated based on three sources: the reasons given by the EC in the legal documents which terminates the case; the arguments provided by the theory of the political economy of protection and antidumping; and, the explanations provided by the practitioners (lawyers and government officials). Factors such as the prevalence of bilateral trade deficits, the country of origin of certain defendants (Japan) and the lobbying potential of the domestic industry are found to be correlated with the decision to refuse the offer of undertakings. European price undertakings were frequently used in the beginning of the 1980s. More than 72% of all affirmative decisions reached between 1980 and 1987 ended with the acceptance of price undertakings. As will be shown in the next section, the use of undertaking has decreased dramatically towards 1990 and has continued to decrease towards 1994 and it is likely that the variables associated with its acceptance may also have changed considerably. The econometric analysis discussed in the next sections builds on this work.

What makes antidumping different from tariffs, quotas, voluntary export restraints, etc. is its unique combination of political and economic manipulability and the set of specific incentives it generates at the micro level. In spite of the proliferation of political economy models of endogenous protection, very few theoretical models have addressed the specificities of the antidumping legislation. One of the problems in analysing the political economy of antidumping is that the specificities of the "supply" of protection are more complex. The institutions involved in the implementation of antidumping proceedings and the decision making process in which it is based are quite different from those required in the setting of tariff and non-tariffs barriers in which the units of decision making within government are the executive and the legislature. The institutional set up of antidumping raises several political economy issues that range from legislative delegation, to bureaucratic oversight and discretion, to logrolling and favouritism. Most of the issues of oversight, discretion and logrolling have been dealt with in the political economy literature. Some models of delegation refer specifically to administered protection but they do not have very strong micro foundations and have, therefore, few testable implications.

Legislative delegation is at the core of AD legislation. All countries that use AD delegate the decision making (investigations) to special bureaucratic units. The extent to which these units are isolated from political pressure and are independent of the executive authority varies across member states. In the European Union, for example, the investigations are carried out by two independent administrative units of the European Commission. Its members are appointed, so there is no direct political accountability. However, the Council of Ministers (body integrated by all member states) is the institution that has to agree on the final outcome of each investigation. Whether delegation allows pressure groups to lobby at the agency and the executive level or whether the agency is more insulated from any kind of political pressure remains a controversial issue in the literature. In principle, there is a potential for

political pressure to be exerted at the agency and at the executive level. But, the delegation of decision making to an agency could also mean a lower level of lobbying as suggested by Hall and Nelson (1992). In a related paper, Moore and Suranovic (1992) show that a policy reform that lowers the likelihood of a protectionist outcome improves expected welfare when an industry has only one channel to seek protection. However, if there is more than one profitable source of protection, expected welfare may be lower because the protection seeking industry chooses the alternative path.

Another important feature of the implementation of AD is that the legislature confers a great deal of discretion to the agencies. The decisions on antidumping are usually delegated to the domain of independent agencies. The term “administered protection” usually refers to protection resulting as a *statutory* response to specified market circumstances or events and is determined by administrative agencies. These statutes are allowed by the GATT/WTO, the most common ones being AD and countervailing duties (CVD). Therefore, discretion is conferred by the WTO consistent rules, on the one hand, and by politicians (principals) who delegate decision-making powers to the agencies, on the other. However, the narrowly defined objectives of the Commission and the Council limit discretion.

The scope for judicial review is closely related to agency discretion. In 1921, the US shifted the enforcement of antidumping law from a legal process to an administrative one. From then onwards AD is a legal remedy and is not subject to criminal law or to the strict rules of meaning and proof that apply to the law. The courts have also a limited role in Europe. The European Courts of Justice, and later the Court of First Instance have had a limited mandate over antidumping decisions and the European Parliament has no say at all. This implies that the role of the courts’ decision-making is very insignificant<sup>6</sup>. Agencies and the Council instead are the key players in the administration of AD.

Several issues related to informational asymmetries are important in antidumping. This is relevant because of the nature of the investigation procedure. All cases are initiated by a domestic firm or group of firms and the information provided by these firms constitutes an important source to determine whether there is “unfair” trade and injury. Although agencies also gather information from other interested parties, a common feature in all countries is that confidential business information is collected by the agencies involved. In the EU, in particular, only the investigating authority (the Commission) has access to all pertinent information and the interested parties only get a summary description. Several theoretical papers have modelled lobbying activity as the provision of policy relevant information. These are models of information transmission or models based on the principal agent theory. Among the first group are the contributions by Austen-Smith and Wright (1992), Austen-Smith (1993) and Potters and Van Winden (1991) that analyse the role of lobbies in providing policy relevant information. In these papers a lobby transmits valuable information to a policy maker who is relatively less informed than the lobby about the relevant policy. They show that an influential lobby can coexist at the agenda setting stage and at the voting stage. Although these models capture some of the features most relevant to antidumping, they have the disadvantage that they have no testable implications and their validity could, therefore, not be assessed empirically. Due to its relatively small size the Commission has limited information gathering capabilities and it can adopt the role of intermediation between conflicting interests. In this way, organised pressure groups can improve the transmission of information about their collective needs (Gorges, 1996).

Within the group of models based on the principal agent theory, several

---

<sup>6</sup> Some theoretical research has concentrated on the role of the courts (judges) in interpreting the law (Daughety and Reinganum, 2000) and the judge’s concern for reputation in decision-making (Miceli and Cosgel, 1994).

papers have analysed the role of delegation in government bureaucracies. Aspects of delegation of administrative procedures have been investigated by Epstein and O'Halloran (1994). Their paper studies the role of discretion of government agencies when legislators and an agency have different preferences. When deciding how much discretion to delegate, legislators trade off informational gains from agency expertise and distributive losses from bureaucratic drift when policy consequences are uncertain. They show that delegation leads to an informational gain. The trade-off between technical competence and political control is captured in a model of legislative decision about agency procedures by Bawn (1995). Hall and Nelson (1992) analyse the role of institutions in administered protection. They argue that administered protection treats protection as a public good in that the returns from increased protection necessarily cut across industries. In a model of perfect delegation, they show that administered protection induces a lower level of lobbying and lower protection.

Issues of oversight are also important in AD. The Council of Ministers (COM) plays an important role in the oversight of the agency's work. Epstein and O'Halloran (1994) show that if politicians have an ex-post veto power there is a discretionary floor, a minimum level of discretion that is always optimally granted. The effects and the degree of delegation by the executive or legislature to an agency are relevant in the context of antidumping. For example, the European Commission has discretion for setting the agenda (decides which cases to open, which proposals to make, etc.) and may have preferences that are different from those of the member states represented in the Council. But, discretion is limited by the control that the COM imposes at the final stage of approval. Unfortunately, the voting within the COM is kept confidential making it impossible to conduct empirical research on voting and to elucidate the preferences of its members and the existence of logrolling or "principle of non-interference". The research on the voting decisions on AD cases in the US has been plentiful. Moore (1992) finds that ITC Commissioners significantly differ in their voting behaviour. He analyses whether decisions of the ITC are immune to outside influence. More specifically, he analyses whether factors outside the reasonable interpretation of the law enter commissioners' decisions. The results indicate that getting the "right" person on the Commission affects outcomes. The study finds evidence that petitions involving constituencies of the Senate trade sub-committees are favoured. Those represented by Congressmen with direct influence over the administering bureaucracy are more likely to be successful in obtaining a positive injury decision. Hansen and Prusa (1997) analyse the decision-making process of the ITC in determining injury. They find evidence that the political pressure stems from oversight committees. Although Congress has delegated decision making powers to the ITC it retains strong influence over actual policy decision-making.

Issues of geographical location and political support may also be relevant in Europe. One could expect that those countries representing filing firms would be the only ones giving the final approval on the decisions. If members of the Council only care about the interests of the firms located within their territories, given that each member state has one representative in the COM, the only cases that would be approved would be those where the firms involved are located in eight or more countries. Kempton (2001) suggests that it is not only having an industry located in its territory what makes a country support a case and approve final measures. There may be other dimensions that shape member states' preferences. Using a sample of 55 antidumping cases initiated between 1995 and 2000 he shows that, on average, producers filing a complaint are located in three or four member states. Producers filing AD investigations located in only one country represented 10 out of 55 cases (one fifth). Producers located in less than eight countries represented 96% of the total. Considering that there were 15 member countries in Europe and that decisions in the Council have to be taken by

simple majority, a minimum of 8 votes are required to obtain the approval of definitive measures. This suggests that members of the Council do not only vote for measures if the firms are located within their national boundaries. Having an industry located in its territory is not the only reason for making a country member support an antidumping case and approve final measures. Kempton also suggests that the level of country's approval about the use of antidumping could be taken as an indicator of the Council's preferences. There are countries in Europe that vote more often against the imposition of measures (i.e. the UK, Denmark, the Netherlands, Ireland, Sweden) and others who are more prone to vote for them (i.e. France, Spain, Italy, Greece, Portugal). The preferences of the Council may be the same as those of the Commission but there may be some logrolling or principle of non-interference. The situation is very different in the US where information about voting is available. Several studies have analysed antidumping decision-making using data on Political Action Committee (PAC) contributions and voting behaviour of commissioners at the ITC (Hansen and Prusa, 1997). Moore (1992) also examines the role of the control over the ITC by congressional oversight sub committees. However, the lack of information on voting behaviour in the Council of Ministers means that empirical studies have to rely on indirect measures of political control.

The review of the research on the political economy of antidumping presented highlights that there are issues related to oversight, geographical location of industry, and voting that although relevant cannot be investigated in European Antidumping. Indirect measures have to be used instead. The analysis presented in this paper is in line with the work by Finger, Hall and Nelson (1982), Moore (1992), Tharakan and Waelbroeck (1994) and Hansen and Prusa (1997) who have investigated how the antidumping decisions can be captured by political pressure.

### **3 Descriptive Analysis of Price Undertakings in Europe**

This section presents a descriptive analysis of price undertakings in Europe. Although the total number of price agreements could also include those investigations that have been withdrawn, in this paper, the focus will only be on those investigations formally terminated by the acceptance of price undertakings. Withdrawn investigations will be ignored.

In the European Union a very small proportion of investigations are withdrawals as such. Between 1985 and 1994 only 7% of cases were withdrawn after the investigations were formally initiated by the European Commission. However, a considerable number of complaints are made every year in which no investigation is officially opened. Previous to the initiation of an AD investigation, there is a consultative stage where the Commission advises the industry about filing a petition. If the industry does not have a case, an investigation is never opened, even though there is a gathering of information on behalf of the firms in the industry and a consultation with Commission officials takes place. These complaints are never reported but Kempton (2001) estimates that between 30% and 50% of the total number of complaints are rejected at this stage. Information about this consultative stage is not publicly available and it is, therefore, impossible to quantify its full scale. The only available information is contained in the decisions published in the Official Journal for those cases formally terminated due to the acceptance of price undertakings and this will be the source of the analysis in this paper.

A summary of the final outcomes of all investigations in each year of the period of study is presented in Table 1. In the period 1985-94, decisions were negative in 26% of the total number of cases, 44% ended with definitive duties, 21% with the acceptance of undertakings and 7% of cases were withdrawn. As can be seen in Figure 1 (Appendix A), there has been an increasing trend in the use of AD duties. More than one third of total cases ended with duties between 1985 and 1989, whereas this amounted to nearly 55% in the 5-year period that followed.

**Table 1: Final Outcome of AD Investigations in Europe (1985-2003), by year**

	Total	No dumping or Injury	AD Duties Sub-total	Price Undertakings Sub-total	Others
1985	51	18	12	21	0
1986	48	8	20	17	3
1987	45	5	31	9	0
1988	71	26	23	22	0
1989	53	30	11	6	6
1990	66	20	27	12	7
1991	37	1	28	7	1
1992	56	14	29	7	6
1993	42	8	26	4	4
1994	56	8	24	7	17
<b>Total</b>	<b>525</b>	<b>138</b>	<b>231</b>	<b>112</b>	<b>44</b>
<b>Percentage</b>	<b>100</b>	<b>26</b>	<b>44</b>	<b>21</b>	
1995	34	7	14	5	n/a
1996	28	11	12	4	n/a
1997	48	12	17	5	n/a
1998	21	4	4	9	n/a
1999	65	10	34	12	n/a
2000	31	9	18	2	n/a
2001	31	7	21	2	n/a
2002	21	6	8	0	n/a
2003	7	0	6	1	n/a
<b>Total</b>	<b>280</b>	<b>66</b>	<b>134</b>	<b>40</b>	
<b>Percentage</b>	<b>100</b>	<b>23</b>	<b>48</b>	<b>14</b>	

Source: Commission of the European Communities (Official Journal, Series C and L)

Note: The unit of observation is the sub-case. A sub-case is defined as the investigation against each single country named in the AD legal case.

Even though the number of investigations in Europe has remained relatively constant between 1985 and 1994, undertakings have played a diminishing role in the termination of AD cases in Europe. An average of 27.2% of all investigations initiated ended with the acceptance of price undertakings between 1985 and 1989, whereas the proportion was only of 14% in the following 5-year period. Price undertakings have been important in the beginning of the 1980's but their dominance has declined over time. Out of 249 cases in which an affirmative decision was reached during the period 1980-87 more than 72% were terminated with the acceptance of undertakings whereas this proportion only amounts to one third of the 343 cases during the period 1985-94 as shown in Table 5 (Appendix A). The decreasing frequency in the use of price undertakings has continued until more recent years. Between 1994-03, 48% ended with definitive duties and only 14% with the acceptance of undertakings. Zanardi (2004b) reports a slightly higher proportion (40.6%) for the twenty-year period that ranges from 1981 until 2001. Only for Japan, Finland and Sweden (before entering the EU) was this proportion higher than that for Europe.

The incidence of undertakings, as measured by the average annual value of imports, is on average smaller than that of duties. The average size of the cases that

ended up with the imposition of duties is 12% higher than the average size of those that ended with the acceptance of price undertakings (Table 5). However, the average value of imports in cases ending with undertakings is extremely large in certain years, especially in 1989 and 1992. This is mainly because in four out of the thirteen cases decided in these years, the cases correspond to products like photocopiers, serial dot printer parts, video recording parts and dynamic random access memories (DRAMs) originating from Japan which have very high values of imports. These high values illustrate how aggressively new importers can enter the EU market.

There exists a country and a sector bias in European undertakings. The biggest number of undertakings involve imports from Russia and Eastern European countries (Yugoslavia, Romania, Czechoslovakia, Poland and Bulgaria) followed by those from Japan and South Korea. The products involved are predominantly chemicals (46%) and iron and steel products (20%) as shown in Table 9. The range of products originating in Russia and Eastern Europe are homogeneous and similar to those produced in the EU. However, those originating from Japan and the South East Asian countries are differentiated products.

The incidence of undertakings - measured by the average case size - is very asymmetrical when analysed by groups of countries. Even though the majority of undertakings accepted involve non-market economies (NME), for these countries the average value of imports is very small (6.5 million ECU) as can be seen in Table 5.6. At the other extreme, price undertakings involving Japanese products are 60 times bigger on average in terms of imports (396 million ECU), followed by those originating in Newly Industrialised Countries (NIC). The incidence is very different for less developed countries as well as shown in Table 8. For these countries, the average annual value of imports amounts to 14 million ECU.

## **4 The Hypotheses**

Several hypotheses have been suggested to explain the choice of the European authorities (the Commission and the Council of Ministers) and their preference for price undertakings over definitive AD duties. Zanardi (2004a) analyses a model for the US in which some AD petitions are withdrawn because firms reach a collusive agreement. In his model, coordination costs among firms and bargaining power are crucial elements in reaching a collusive agreement. The probability of withdrawing a petition is negatively related to the coordination cost, for a given bargaining power.

In Europe, however, it is not possible to conduct statistical analysis with the withdrawn investigations due to the small number of cases that fall in this category. One can establish a parallelism between withdrawn petitions in the US and the use of undertakings in Europe. There might be an element of “mediated” collusion – similar to the one suggested by Prusa (1992) and Zanardi (2004a) - in the kind of formal acceptance of price undertakings observed in Europe. But, the main difference between the withdrawal of investigations and undertakings is the process of mediation exercised by the European Commission.

In what follows, I present the explanatory hypotheses. They incorporate elements of the theory of the political economy of protection and antidumping and are based on the previous research outlined.

*i) Ability to monitor*

An important factor influencing the decision to accept price undertakings is the possibility to monitor the price agreement. This ability to monitor the price undertaking is clearly established in the WTO AD Agreement (1994) and in the EU regulations. It is clearly stated that when undertakings have been accepted the importing countries may request periodic "...information relevant to the fulfilment of such an undertaking and to permit verification of the data..." The ability to request and verify data is related to the number of products involved in the case, among other things. The definition of a product is expressed in 6-digits NIMEXE and 8-digits CN codes for the period under investigation. The number of NIMEXE-CN codes mentioned in the legal case is used as a proxy for the number of products involved in each case (TECH). Accordingly, the expected sign for this variable is negative, suggesting that a price undertaking involving a big number of products is more difficult to monitor than one that involves just a few. Therefore, the bigger the number of products the lower is the probability that price undertakings will be accepted. The variable that captures this effect is TECH. Another variable is used as a proxy for the ability to monitor for the period 1995-03, the number of foreign firms (NOFF).

*ii) Bilateral trade deficits*

There is a rent transfer to exporters implicit in price undertakings. On political economy grounds, it is feasible that these transfers will be conceded to countries, which do not have excessive surpluses in their trade with the EU. Moreover, lawyers working in AD cases believe that price undertakings are difficult to negotiate in cases in which the EU and the country of the defendant face persistent trade deficits as reported by Tharakan (1991). Several proxies of these trade balances are considered. Some refer to the trade balance of just one year whilst some include the effect of several years of trade previous to the price undertaking being accepted. The expected sign of the dummy variables is negative, meaning that the EU trade deficits with the country of the defendant are associated with an increase in the probability of duties being imposed. When the variables are measured as the average trade deficit the expected sign is positive since the dummy takes value one when there is a deficit. The variables capturing these effects are specified in the next section and data sources in Appendix B.

*iii) Fear of retaliation*

Being on good terms with trade partners seems to be a plausible and desirable target of any trading nation. Retaliation is expected to be higher the higher the proportion of exports from the EU to the country of the defendant. If the "fear of retaliation" induces the European authorities to accept undertakings instead of applying AD duties, this variable should have a positive sign. Deciding on "softer" remedies like the acceptance of undertakings instead of duties might reduce the negative effect from potential retaliation. While this argument has never been made explicit by the Commission in the decisions published, it may be influencing the discretion it benefits from the existing regulations. So, it could be an implicit determinant influencing the decision not to impose AD duties. RETAL denotes the variable that captures this effect.

*iv) Constructive remedy*

The GATT/ WTO Agreement recommends that the possibility for constructive remedies should be explored before imposing AD duties in those cases where developing countries are involved. The WTO AD Agreement (Article 15) states that:

“It is recognised that special regard must be given by developed country Members to the special situation of developing country Members when considering the application of antidumping measures under this Agreement. Possibilities of constructive remedies provided for by this Agreement shall be explored before applying antidumping duties where they would affect the essential interests of developing country Members”.

Two dummy variables are included to test whether the EU is being especially “tough” or “soft” with less developed countries (LDC) and with the newly industrialised countries (NIC). A preliminary examination of the data suggests that a high proportion of less developed countries are involved in the acceptance of undertakings (Table 8). These variables are defined very broadly. The dummy variable for NIC includes semi-industrialised and South East Asian (SEA) countries. See Appendix B for a classification of countries

*v) Domestic Political Influences-bargaining power*

It is possible that political influences relative to industry size or lobbying power could play an important role in the acceptance of price undertakings. The smaller the number of firms operating in an industry the more likely they are to overcome coordination failure problems. Therefore, it sounds reasonable that the more concentrated an industry - measured by the output of the five biggest firms - the more likely that a case would end with the imposition of duties. A proxy for industry concentration is defined. Industry size can be approximated by the number employed. More employees lead to stronger political influence because injury from unfair imports would negatively affect more workers. A second, but more imperfect proxy for size is the size of the case - as measured by the percentage of EU imports of product  $k$  from country  $j$  in the total of EU imports for the year in which the investigation was initiated. However, higher imports could simply indicate the relevance of the case and bear no link to the industry’s potential political influences. Industry size can also be approximated by the value added in the industry (VA). This variable together with industry concentration (CON), industry employment (LAB) and case size (SIZE) are used and they are expected to have a negative sign.

*vi) Protection of high technology industries*

The hypothesis is that the Commission is more reluctant to accept the offer of price undertakings by foreign exporters in high technology industries in order to foster the EU industries. The Commission has an important concern to foster high technology industries. Practitioners involved with European AD do not rule out the possibility that the “softer” option to end AD cases might be denied to exporters selling hi-tech products in the European market (Tharakan, 1991). Although, different variables can be used to capture this effect, the variable used is a dummy variable that takes the value one when a product is classified as a high technology product (EUROSTAT, 1989) and zero, otherwise (HI-TECH). The hypothesis formulated is that cases are less likely to end with a price undertaking for high technology products.

*vii) Japan*

A dummy variable is introduced to capture the effect described by many practitioners that cases involving Japanese firms are likely to reject the offering of undertakings (JAP).

*iv) Non-market economies*

A dummy variable is introduced to capture the effect that in cases involving firms from non-market economies the EC is more likely to accept the offering of undertakings (NME). Many firms in non-market economies operate under a “soft budget constraint” which gives more importance to quantity targets than profitability. When this is the case, the choice of AD duties may induce the exporting firms to decrease prices even more with no effect on imports, since the state would absorb the firms’ losses.

#### *The data*

The data set used consists of all European AD investigations initiated between 1995 and 2003 which ended either with the imposition of definitive AD duties or with the acceptance of price undertakings. Each observation considers the decision made for an individual country named in the investigation. The sample covers 174 decisions and involves 47 countries. In this period, 134 investigations ended with the imposition of AD duties (77%) and 40 in price undertakings (23%).

**Table 2: Variables and Expected Signs: Acceptance of Price Undertakings**

<b>Hypotheses and variables</b>	<b>Name</b>	<b>Sign</b>
<i>Ability to monitor</i>		
Number of products covered by the case	TECH	-
<i>Trade tension</i>		
1) Bilateral trade deficit in previous five years	BTD_5	+/-
2) Bilateral trade deficit in previous three years	BTD_3	+/-
3) Bilateral trade deficit in the preceding year	BTD_1	+/-
<i>Fear of retaliation</i>		
Share of EU exports imported by the country of the defendant	RETAL	+
<i>Constructive remedy</i>		
1) Dummy for Less Developed Country	LDC	+
2) Dummy for Newly Industrialised Countries	NIC	+
<i>Domestic political influences</i>		
1) Market share of the biggest 5 firms in the industry	CON	-
2) Value of imports of the product from defendant’s country	SIZE	-
3) Number of people employed in the industry	LAB	-
4) Value added in the industry	VA	-
<i>Protection of high technology industries, Dummy</i>	HI-TECH	-
<i>Dummy for Japan</i>	JAP	-
<i>Dummy for Non-Market Economy</i>	NME	+

Information contained in the legal documents is used to construct the data set. It includes the date of initiation and termination of the case, the product name and code, the number of product codes (NIMEXE 6-digit and CN 8-digits codes), the countries named, the number of foreign firms and the type of final measures imposed. Investigations terminated by the Commission because the investigation period expires or because of withdrawals are excluded. These cases never reached the definitive-decision stage.

A dichotomous dependent variable is specified based on the type of definitive measures imposed. Provisional measures are disregarded. The information is obtained from the Commission of the European Communities, Official Journals (C and L series). Within an investigation, price undertakings are granted to individual firms. In most investigations price undertakings are accepted for all the firms involved in the export of the relevant product to the EU. However, in some cases, the final measures may consist of a mixture of undertakings and AD duties. For example, price undertakings may be granted to several individual firms and a residual AD duty may be applied to the remaining firms in the case. Between 1985 and 1994, 231 investigations ended with the imposition of AD duties applied to all firms in the case (67%), 90 in price undertakings to all firms (27%) and only 22 cases ended with a combination of undertakings and duties (6%). Between 1995 and 2003, 132 investigations ended with the imposition of

AD duties applied to all firms in the case (76%), 35 in price undertakings to all firms (20%) and only 7 cases ended with a combination of undertakings and duties (4%). The dependent variable is a binary variable that takes the value one when price undertakings are accepted from all firms in the case or when a combination of price undertakings and residual duties are imposed. The variable takes the value zero when AD duties are imposed to all firms in the case.

For each case, annual import and export trade data of the EU by source is collected from the United Nations COMTRADE database. This data is used to calculate bilateral trade deficit ratios and to define the share of European exports to the country of the defendant over total European exports. A correction of country codes is applied to Eastern European countries that were split into separate countries like Czechoslovakia, Yugoslavia and the Soviet Union or have ceased to exist, like the German Democratic Republic.

A series of industrial concentration is constructed using the market share of the 5 biggest firms in an industry in 1989. The data is obtained from Lyons and Davies (1996) "Industrial organization in the EU: structure, strategy and competitive mechanism", for most industries at the 3-digit NACE Rev 1. For the textile and chemical industries, the information is obtained from the European Commission (1989) "Horizontal mergers and competition policy".

For each product investigated, annual import trade data of the EU by source are collected from the United Nations COMTRADE database (CN 6-digit codes). For each product, import values by country of origin are collected for the year in which the case was initiated. Import values are obtained in US dollars and expressed in constant 1996 prices using the US GDP (Gross Domestic Product) deflator.

The econometric analysis refers to industries in the manufacturing sector<sup>7</sup>. The 174 investigations involve 29 industries. Each product is associated with an industry (3-digit NACE Revision 3.1). The industry associated with each product is obtained by using correspondence tables from EUROSTAT. Value added is measured in constant 1995 prices in Euros. The price index used is the GDP deflator for 15 European countries.

Finally, a binary choice variable is specified indicating either that the product is a technology intensive one or not. The data is obtained from EUROSTAT (1989) "Statistical Analysis of Extra-EUR 12 Trade in Hi-tech Products". The report lists the products that are considered as technology intensive by the European Commission, at SITC 5 digit level. The correspondence between SITC 5-digit and NIMEXE 6-digit CN 8-digit codes is made based on EUROSTAT (1988), "External trade, nomenclature of goods".

A series of the growth rate of GDP for Europe was constructed using GDP at constant prices Eurostat. A series of bilateral aggregate trade deficit for Europe was constructed using trade flows from UN COMTRADE and measured in constant prices. Both these variables are used to control for macroeconomic effects.

## **5 The Variables and the Econometric Specification**

The aim of the statistical analysis is to determine the influence of political economy and regulatory variables on the likelihood of the acceptance of price undertakings. The

---

<sup>7</sup> All investigations in the sample occurred in manufacturing industries.

sample covers all 174 cases which ended either with the imposition of definitive AD duties or with the acceptance of undertakings.

Using a probit model, I estimate the probability that an affirmative investigation ends with the acceptance of price undertakings. The independent variable takes the value one when the Commission accepts price undertakings and zero when it imposes definitive AD duties. In theory, cases in which undertakings were refused and cases in which undertakings are not proposed are clearly different. In practice, however, the number of cases in which undertakings are proposed and rejected are minimal. An analysis of a random sample of 50 cases where affirmative decisions were reached indicates that only 6% of cases fall under this category. The majority of undertakings are not proposed according to what is written in the legal documents.

The underlying model is,

$$y_i = \beta' x_i + u_i$$

where  $x_i$  is a vector of  $k$  regressors and a constant  $\alpha$ ,  $\beta$  is a vector of  $k+1$  coefficients and  $u_i$  is a normally distributed error term. The estimates of the coefficients  $\beta$  can be obtained by maximum likelihood estimation (MLE). More specifically, the following form for the underlying model is considered, when the trade remedy hypothesis refers to less developed countries (LDC):

$$P(y_i = 1) = f(\alpha, TECH, BTD, RETAL, LDC, CON, LAB, SIZE, NME, JAP, z) \quad (1)$$

Alternatively, when the hypothesis refers to newly industrialised countries (NIC) the specification used is:

$$P(y_i = 1) = f(\alpha, TECH, BTD, RETAL, NIC, CON, LAB, SIZE, VA, NME, JAP, z) \quad (2)$$

where  $\alpha$  is a constant and  $z$  is a vector of controls and all variables are as defined as specified below. The specification controls for industry heterogeneity and macroeconomic effects. A list of data sources is presented in Appendix B.

#### *The variables*

(TECH): Represents the number of products (NIMEXE 6-digit and CN 8-digit codes) covered by the case and was obtained from the relevant issues of the Official Journal. Since 1985 the classification of products becomes more precise and therefore a bigger number of products would mean that the case is more difficult to monitor making it less likely that price undertakings are accepted.

(NOFF): Represents the number of foreign firms named in the investigation.

(BTD): The bilateral trade deficit is defined as the value of imports minus the value of exports from and to the country of the defendant. Three different measures of bilateral trade deficit are used. The bilateral trade deficit in the year previous to the decision made was defined as a proportion of total trade, as follows:

$RATIO\_BTD\_1_j = \frac{BTD_{EU}^j}{(X + M)_{EU}^j}$ . Similarly, the ratio is defined for the previous three years as the average 3-year annual ratio,

$AVRATIO\_BTD\_3_j = \sum_1^3 \left( \frac{BTD_{EU}^j}{(X+M)_{EU}^j} \right) \frac{1}{3}$  and for the previous five years as the 5-year

average ratio,  $AVRATIO\_BTD\_5_j = \sum_1^5 \left( \frac{BTD_{EU}^j}{(X+M)_{EU}^j} \right) \frac{1}{5}$ . Alternative proxies are also

used, namely,  $BTD5\_5$ ,  $BTD3\_5$  and  $BTD\_1$ .  $BTD5\_5$  is defined as a dummy variable that takes the value one if there is a bilateral trade deficit in each of the five years preceding the case decision and zero, otherwise.  $BTD3\_5$  is a dummy variable that takes the value one if a deficit occurred in at least three out of five years preceding the case decision and zero, otherwise.  $BTD\_1$  is a dummy variable that takes the value one if there is a bilateral trade deficit in the year previous to the case decision and zero, otherwise.

(RETAL): Defined as the share of European exports to the country of the defendant in total European exports. It is calculated as  $X_j = \frac{X_{EU}^j}{X_{EU}}$ , where  $X_{EU}^j$  is the total exports

from the EU to country  $j$  and  $X_{EU}$  is the total exports of the EU for the year of the investigation. This variable represents the dependence of EU exports markets on the country of the defendant.

(LDC): Indicator variable that takes value one if the country of the defendant is a less developed country and zero, otherwise.

(NIC): Dummy variable that takes value one if the affected country is a newly industrialised country and zero, otherwise.

(CON): A proxy for market concentration is defined as the market share (percentage) of the 5 biggest firms in an industry in the European Union.

(SIZE): Two different proxies of case size are defined. The first one (SIZE1) is defined as the value of total imports (at constant 1990 prices) during the year in which the case was initiated by the EU of the products involved in the case from country  $j$ ,  $M_j^k$ , where country  $j$  is the country of the defendant. The second one (SIZE2) is defined as the total imports during the year in which the case was initiated by the EU of product  $k$  from

country  $j$  divided total imports by the E.U rescaled by 1000,  $s = \left( \frac{M_j^k}{M_{EU}} \right) * 1,000$ . The

empirical results reported refer to variable SIZE2, although they remain qualitatively unchanged is SIZE1 is used instead.

(LAB, VA): EUROSTAT Structural Business Statistics database, for the relevant years.  $LAB$  is the number of people employed in the industry,  $VA$  is the value added in the industry. Value added is measured in 100 billion Euros and transformed into constant prices using the GDP deflator for 15 countries in Europe (EU-15). The NIMEXE 6-digit and CN 8-digit product codes were correlated with the industry codes using correspondence tables provided by EUROSTAT.

(HI-TECH): The dummy variable is constructed using a study by the EC (EUROSTAT, 1989), which contains a list of products that are considered to be technology intensive. The study analyses the external trade of the European Community in technology

intensive products. The information is presented at a much-disaggregated level (STIC 5-digits). Each product (NIMEXE 6-digit and CN 8-digit codes) as defined in the Official Journal is assigned the respective SITC 5-digit code using European Commission (1988). This dummy variable takes the value one if the product is defined by the European Commission to be hi-tech and zero, otherwise.

(NME): Dummy variable that takes value one if the affected country has a non-market economy and zero, otherwise.

(JAP): Dummy variable that takes value one if the affected country is Japan and zero, otherwise.

## 6 Empirical Results

The econometric analysis of the hypothesised determinants on the choice of the European Commission between accepting price undertakings and imposing antidumping duties confirms some of the hypotheses presented in the previous section. The main results of the estimated probit model are reported in Table 3 with robust standard errors corrected for heteroscedasticity. The observations (sub-cases) in each legal case are considered as one cluster when estimating the standard errors, since the observations within an investigation may not be independent while observations across investigations are. The results reported are the marginal effects of the probability of acceptance of price undertakings; conditional on an affirmative decision being made (after both dumping and injury are found to exist). All the reported results include industry, year dummies, GDP growth and the EU trade deficit to control for sector heterogeneity and macroeconomic effects.

Column (1) reports the estimates for the hypothesised determinants of the decision to accept price undertakings by the European Commission for the main specification of the model (equation 1). It uses the five-year average of the proportional bilateral trade deficit (AVRATIO\_BDT\_5) as a proxy for the trade tension hypothesis. It includes a dummy for LDC to test for the constructive remedy hypothesis, concentration and employment as proxies for domestic political influence. We can reject the hypothesis that all coefficients except the intercept are zero at the 0.05 level ( $Wald\chi^2 = 50.8, df = 21, p < 0.05$ ).

The results are presented in Table 3 and are consistent with the hypothesis formulated. First, the evidence shows that bilateral trade deficits are associated with the rejection of price undertaking. The bigger the trade deficit the more likely it is that cases end up with the imposition of duties. Second, the share of European exports to the country named in the investigation is positively associated with the probability of AD duties being imposed. These results are very robust since the variable (RETAL) and (AVRATIO\_BTD\_5) are significant at 5% and 1% respectively in all specifications of the model. Bown et al (2003) suggest that less developed countries are targeted by US AD because of differences in administrative capacity and limited retaliatory ability. An analysis of some descriptive statistics indicates that the ability to threaten retaliation and the limitation in administrative capacity might be important determinants in the explanation of the Commission's choice of "tougher" measures. There seems to be a strong bias in the use of AD duties in "affirmative" decisions. The number of cases ending with duties is geographically concentrated in South East Asian Countries, China and Russia, representing 51% of all affirmative investigations measures (Table 12). Between 65% and 100% of cases against this group of countries ends up with duties.

**Table 3: Probit Estimates (marginal effects) of the Acceptance of Undertaking Decisions by the European Union (1995-2003): Main Specification**

<i>Hypothesis and Variables</i>	(1)	(2)	(3)	(4)
<i>*Ability to Monitor(-)</i>				
Number of Products	-0.111*** <i>-3.09</i>	-0.114*** <i>-2.83</i>	-0.069*** <i>-3.54</i>	-0.016 <i>-0.64</i>
Number of Foreign Firms	-0.048** <i>-2.29</i>	-0.038* <i>-1.81</i>	-0.038*** <i>-2.76</i>	0.016 <i>0.93</i>
<i>*Trade Tension (+)</i>				
Bilateral Trade Deficit in previous 5 years (average ratio)	0.361** <i>2.46</i>	0.608*** <i>3.14</i>	0.200*** <i>-2.99</i>	0.691*** <i>2.90</i>
<i>*Fear of retaliation (+)</i>				
Share EU export to country of defendant	-8.61** <i>-2.80</i>	-10.49*** <i>-2.77</i>	-4.676*** <i>-3.35</i>	-10.98** <i>-2.30</i>
<i>*Constructive remedy</i>				
Less Developed Country (+)	-0.864** <i>-2.32</i>		-0.939*** <i>-3.50</i>	-0.013 <i>-0.04</i>
Newly Industrialised Country (+)		0.067 <i>0.86</i>		
<i>*Domestic Political Influences</i>				
Concentration (-)	0.025*** <i>2.83</i>	0.028*** <i>2.94</i>	0.021*** <i>3.49</i>	0.002 <i>0.29</i>
Industry Size: Employment (-)	4.809*** <i>3.09</i>	4.355*** <i>2.57</i>		0.010 <i>0.02</i>
Industry Size: Value Added (-)			0.038*** <i>4.14</i>	
Relative Case Size: Imports (-)	5.974 <i>0.66</i>	5.851 <i>0.61</i>	8.427 <i>1.53</i>	-9.277 <i>-1.64</i>
<i>*Hi-tech products (-)</i>	n/a	n/a	n/a	n/a
<i>*Non-market economy (?)</i>	-0.731** <i>-2.39</i>	-0.131* <i>-1.11</i>	-0.817 <i>-3.49</i>	0.089 <i>0.26</i>
<i>*Japan (-)</i>	n/a	n/a	n/a	n/a
<i>*GDP growth rate (?)</i>	-0.381*** <i>-3.57</i>	-0.378*** <i>-3.10</i>	-0.351*** <i>-4.94</i>	-0.276 <i>-1.59</i>
Year Dummies	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Industry Dummies (14)	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>No</i>
Sector Dummies (5)	<i>No</i>	<i>No</i>	<i>No</i>	<i>Yes</i>
No. observations	106	106	106	120
Wald $\chi^2$ (df)	50.8(21)***	85.2(21)***	84.9(21)**	39.1(19)***
Log likelihood	-29.7	-31.8	-26.1	-48.8
Pseudo R <sup>2</sup>	0.56	0.53	0.61	0.33

Notes: z-values presented in italics. The unit of observation is the sub-case. A sub-case is defined as the investigation against each single country named in an AD legal case. Each regression also includes a constant. Robust standard errors in parenthesis, corrected for heteroscedasticity and for clustering on each legal case. \* indicates significant at the 10% confidence level; \*\* 5% level and \*\*\* 1% level (two-tailed test). Marginal effects for “less developed country”, “newly industrialised country”, “hi-tech products”, “non-market economy” and “Japan” are for discrete changes in the variables from 0 to 1. In column (1), (2) and (3), 34 observations corresponding to five industries, one year, cases involving Japan and Hi-tech products are eliminated because decisions are deterministic. Price undertakings are always rejected (see text for details).

**Table 4: Sensitivity Analysis I: Probit Estimates (marginal effects) of the Decisions to Accept Price Undertaking by the European Union (1995-2003)**

<i>Hypothesis and Variables</i>	(1)	(2)	(3)	(4)	(5)	(6)
<i>*Ability to Monitor (-)</i>	-0.111***	-0.124***	-0.122***	-0.114***	-0.126***	-0.125***
Number of Products	-3.09	-3.11	-3.10	-2.83	-2.84	-2.86
Number of foreign firms	-0.048**	-0.057***	-0.059**	-0.038*	-0.044*	-0.046*
	-2.29	-2.37	-2.35	-1.81	-1.80	-1.82
<i>*Trade Tension: Bilateral Trade Deficit in previous 5 years (+)</i>	0.361**			0.608***		
(average ratio)	2.46			3.14		
Bilateral Trade Deficit in previous 3 years (+)		0.273			0.560**	
(average ratio)		1.52			2.35	
Bilateral Trade Deficit in preceding year (+)			0.210			0.469**
(average ratio)			1.21			2.02
<i>*Fear of retaliation (+) Share EU exports to country of defendant</i>	-8.61**	-9.62**	-9.428***	-10.491***	-12.336***	-11.842**
	-2.80	-2.44	-2.75	-2.77	-2.64	-2.50
<i>*Constructive remedy: Less Developed Country (+)</i>	-0.864**	-0.993**	-0.938***			
	-2.32	-2.54	-2.69			
Newly Industrialised Country (+)				0.067	0.067	0.056
				0.86	0.73	0.58
<i>*Domestic Political Influences: Concentration (-)</i>	0.025***	0.027***	0.026***	0.029***	0.032***	0.030***
	2.83	2.83	2.77	2.94	3.02	2.97
Industry Size: Employment (-)	4.809***	5.461***	5.496***	4.355***	4.860***	4.911***
	3.09	3.14	3.14	2.57	2.62	2.60
Relative Case Size: Imports (-)	5.974	6.469	6.178	5.851	6.281	6.339
	0.66	0.64	0.61	0.61	0.60	0.60
<i>*Hi-tech Products (-)</i>	n/a	n/a	n/a	n/a	n/a	n/a
<i>*Non-market Economy (?)</i>	-0.731**	-0.831***	-0.847***	-0.131	-0.161	-0.164
	-2.39	-2.57	-2.66	-1.11	-1.18	-1.20
<i>*Japan (-)</i>	n/a	n/a	n/a	n/a	n/a	n/a
<i>*GDP Growth Rate (?)</i>	-0.381***	-0.422***	-0.433***	-0.378***	-0.38***3	-0.390***
	-3.57	-3.51	-3.51	-3.1	-2.85	-2.79
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies (14)	Yes	Yes	Yes	Yes	Yes	Yes
No. observations	106	108	108	106	108	108
Wald $\chi^2$ (df)	50.8(21)***	43.9(21)***	41.6(21)***	85.2(21)***	77.7(21)***	79.7(21)***
Log likelihood	-29.7	-30.6	-30.8	-31.7	-33.2	-33.7
Pseudo R <sup>2</sup>	0.56	0.56	0.56	0.53	0.52	0.51

Note: see note in Table 3.

These countries are not heavy users of antidumping against the EU. Their retaliatory ability is limited.

In Column (2), the dummy for newly industrialised countries (NIC) is used instead of (LDC) to test the constructive remedy hypothesis. The main results remain qualitatively the same (equation 2). The results reported in Column (2) should be more relevant than those presented in Column (1). In the latter the dummy variables relating to less developed countries and Japan present a relatively large and significant partial correlation coefficient of -0.78 (Table 11). Column (3) reports the estimates when value added (VA) instead of employment is used. The results are the same. Finally, column (4) reports the marginal effects estimates when five control dummies corresponding to five aggregated sectors of economic activity are considered. The proportion of European exports to the country of the defendant and the bilateral trade deficit are significant at conventional levels.

There is some evidence confirming the ability to monitor hypothesis. The number of products in the case is significant at the 1% in the specifications using 14 industries dummies (Columns 1 to 3) and the number of foreign firms are significant at the 5% and 1% in some specifications (Column 1 and 3 respectively).

There is no evidence confirming the constructive remedy hypothesis. The dummy for less developed countries is found to be significant at the 5% and 1% in some specifications and has a positive sign. This would indicate that the European Commission is not following the recommendations of WTO/GATT about constructive remedies when the exporters' country of origin is a developing country.

Some of the domestic political influences are found to be significant, especially the variables that measure industrial concentration and industry size (measured by employment and value added). Finally, some of the countries' characteristics are found to be significant at the 5% for some specifications (see Column 1). Some of the evidence suggests that the EU is less likely to apply the "softer" remedy of price undertaking in cases involving non-market economies. Cases involving exports from non-market economies have a 73-percentage point lower probability of undertakings being accepted at the means of the regressors, everything else being equal.

The regression results displayed in Columns (1) to (3) in Table 3 show that there are industrial sectors that never succeed in obtaining acceptance of undertakings. These sectors are: Leather, luggage, handbag and footwear (NACE 19, 6 observations), plastic products (NACE 25, 5 observations), machinery and equipment (NACE 29, 3 observations), electrical machinery (NACE 31, 2 observations), radio, television and communication equipment (NACE 32, 2 observations) and manufacture of other transport equipment (NACE 35, 1 observation). In total, 19 observations referring to those industries are omitted in the results reported. In this sample, cases involving high technology products are always rejected undertakings and 10 observations are omitted in Columns (1) to (3). The same happens with the 6 cases involving Japanese exports. This is consistent with the hypotheses formulated.

The sensitivity analysis is presented in Table 4. Column (1) replicates the results of Column (1) in Table 3 for ease of comparability. The constructive remedy hypothesis refers to LDC, (equation 2). The results remain qualitatively unchanged when different proxies are used to capture the trade tension hypothesis, except that the variable that captures the effect of trade deficits over the 3-year and 1-year period previous to the investigation is found to be significant only in some specifications (see Columns 4 and 5, Table 4).

A final caveat is that the results should be interpreted with caution since the sample contains new AD investigations and only 15 review cases. Some review cases are omitted. In Europe, AD measures are imposed for a period of 5 years and after that, they ceased automatically (provided there is no review of the case). The review can be

requested by the filing firms or by the European Commission. In cases that are reviewed a new investigation is carried out. The reviewed cases are, therefore, like new cases and in the period 1985-94 represented 36% of all investigations.

## 7 Conclusions

After dumping and injury have been found, investigating authorities can end an investigation by accepting price undertakings. This paper examines several hypotheses about the determinants of the decisions on acceptance of price undertakings versus the imposition of definitive duties conditional on an AD “affirmative” decision on dumping and injury having been made by the EC for investigations initiated in the period 1995-2003. The role of undertakings in Europe has decreased quite dramatically towards the end of the 1980s and beginning of the 1990s. This decreasing trend has continued to exist in the period under investigation.

The economic benefits of undertakings (relative to duties) for the exporter are that it allows it to raise prices instead of paying duties. The less harming option of price undertaking allows foreign exporters to capture some of the rents that would otherwise accrue to the importing country. But, it is not clear why the European authorities would prefer this way of ending affirmative cases instead of imposing duties. This paper statistically analysed the economic and political hypotheses related to these decisions.

The results are consistent with some of the hypothesis formulated. First, the probit estimates show a statistically significant association between the share of EU exports to the country of the defendant and the probability of undertakings. The evidence suggests that the potential loss from retaliation has not prevented the Commission from imposing AD duties. The “tougher” remedy of AD duties is more likely to be imposed on firms located in those countries that are receivers of EU exports. These results are robust and found in all specifications of the model and are consistent with the findings of a previous study. However, this result should be interpreted with caution as this variable could also be seen as a proxy for stable trade relations between the EU and its trade partners. Accordingly, using the “tougher” option of AD duties may be less likely to affect the exports to trade partners. A third interpretation of this result could be that the EU is using “tougher” measures against its trade partner because these in turn are using AD heavily against the EU.

Montado (2006) shows that the share of EU exports to the country named in the investigation is found to be associated with the Commission’s decisions on dumping and injury. These are the decisions that can be challenged in European courts and at the GATT/WTO level. However, when choosing between AD duties and undertakings – after dumping and injury have been found - the Commission is “tougher” (uses AD duties) on those trading partners that have a bigger share of European exports. Bown (2004) empirically assesses the GATT/WTO dispute settlement mechanism. He finds that there are various forms of GATT-illegal protection against trading partners that are unable to credibly threaten retaliation. Bown et al’s suggestion (2003) that less developed countries are targeted by US AD because of differences in administrative capacity and limited retaliatory ability may be useful to interpret the results of this paper. This may explain why the EC chooses to use AD duties once dumping and injury have been found. The extent to which the limited administrative capacity or retaliatory ability of the trading partners targeted by European AD affect the choice of measures imposed remains an issue for further empirical research.

Second, there is some evidence that bilateral trade deficits have an impact on the EC choice between the acceptance of price undertakings and the imposition of duties.

Third, there is no evidence confirming the political economy hypothesis. The estimates show positive and statistically significant effects of industrial concentration, employment and value added on the probability of undertakings.

Fourth, the evidence suggests that some countries' characteristics are significant. The results show that the EU is less likely to apply the "softer" remedy of price undertaking in cases involving non-market economies. Not only is the Commission more likely to find dumping when exports originate from these countries but also is also more likely to choose the "tougher" remedy of AD duties in affirmative cases. This contradicts results from previous studies but can be explained because a great proportion of these centrally planned economies started a transition towards a market driven mechanism towards the middle of the period investigated. Interestingly, there is no evidence that the EC takes into account the possibility of constructive remedies when deciding the type of measures imposed.

Fifth, there is some evidence to confirm the alleged ease or ability to "monitor" the price undertakings hypothesis, as indicated in the guidelines of the GATT/WTO Agreement.

One caveat is that the results should be interpreted with caution since the sample contains all new AD investigations and only some review cases are included.

The present study uses a unique data set with information gathered from the reports published by the EC in the Official Journal and other sources. It contains information on 174 AD investigations initiated between 1995 and 2003 in which an affirmative decision has been made. The analysis improves on previous studies in that it explicitly controls for industry heterogeneity and macroeconomic effects.

The comparative analysis with earlier empirical research on the subject suggests that the determinants of the acceptance of price undertakings are partly different. In a previous study (Tharakan 1991) factors such as the prevalence of bilateral trade deficits, country characteristics especially for cases related to Japanese imports; and the lobbying potential of the domestic industry were found to be correlated with the decision to refuse the offer of undertakings. In this study, the evidence shows that the share of European exports to the country named in the investigation is associated with an increase in the probability of AD duties being imposed. The analysis presented in this paper highlighted the importance of slightly different variables associated with the decisions. However, the results are similar in that the political economy influences are found to be significant. A higher industrial concentration, employment and value added is associated with an increase in the probability of undertakings being accepted. This is clearly important given that the reasons for accepting undertaking are not openly stated in the publications in the Official Journal and, therefore, remain mostly unknown. The differences between the variables found to be significant in this study and in the previous one could partly be explained by the decreasing overall importance of price undertakings to terminate AD investigations as well as a change in the strategic objectives of the investigating authorities. As Veugelers and Vandebussche (1999) suggest an increasing importance of consumer interests in the government welfare function leads to an increasing number of AD duties. They show that when consumer surplus has increasing importance in the government's welfare function the number of undertakings decreases, in the presence of national and international cartels. This theoretical research suggests that the tendency towards duties instead of undertakings may be the result of a change in the European Commissions' preferences. The results of the descriptive and econometric analysis discussed in this paper indicate that it is plausible that the European authorities' objectives were granting greater weight to consumer welfare.

A previous empirical study (Messerlin, 1990) provides evidence of European AD cases that are "twinned" to antitrust cases and suggests that AD action may be part

of a strategy of cartelisation. It suggests that AD action may be part of a strategy of European cartels to force foreign exporters to the EU to join the cartel. This research suggests that collusive agreements may be relevant in Europe. Further research would be needed to ascertain their magnitude and extent. Although, one might suspect the existence of cartelisation strategies, further research is required to assess its existence and impacts on trade.

In a way, price undertaking can be viewed as mediated price agreements. Whether the determinants of these mediated price agreements are different when requested by the Commission or by the exporters remains to be investigated.

## References

- Austen-Smith, David and J. Wright (1992), Competitive Lobbying for a Legislator's Vote, *Social Choice and Welfare*, 9, 229-57.
- Austen-Smith, David (1993), Information and Influence, Lobbying for Agendas and Votes, *American Journal of Political Science*, vol. 37, 3, 799-833.
- Bawn, Kathleen (1995), Political Control versus Expertise: Congressional Choices about Administrative Procedures, *American Political Science Review*, 89, 1, 62-73.
- Belderbos, R., H. Vandenbussche and R. Veugelers (2004) Antidumping Duties, Undertakings and Foreign Direct Investment in the EU, *European Economic Review*, 48, 2, 429-53.
- Blonigen, Bruce and Thomas J. Prusa (2003a), Antidumping, in *Handbook of International Trade*, E. Kwan Choi and James Hartigan (eds.), Oxford, UK and Cambridge MA: Blackwell Publishing.
- Daughety, Andrew F. and Jennifer F. Reinganum (2000), Appealing Judgements, *Rand Journal of Economics*, 31, 3, 502-25
- Epstein, David and Sharyn O'Halloran (1994), Administrative Procedures, Information and Agency Discretion, *American Journal of Political Science*, 38, 697-722.
- European Commission, *Official Journal*, C and L Series.
- European Commission (1984), *Council Regulation (EC) No. 2176/84*, on Protection Against Dumped or Subsidized Imports from Countries Non-members of the European Communities, L201:1-19.
- European Commission (1988), *Council Regulation (EC) No. 2423/88*, on Protection Against Dumped or Subsidized Imports from Countries Non-members of the European Communities.
- European Commission (1989), *Horizontal Merges and Competition Policy in the E.C.*, Commission of the European Community, European Economy, No. 40, May, Brussels.
- European Commission (1994), *Council Regulation (EC) No. 3283/94*, on Protection Against Dumped Imports from Countries Non-members of the European Communities, L349:1-22.
- European Commission (1995), *Council Regulation (EC) No. 384/96*, on Protection Against Dumped Imports from Countries Non-members of the European Communities, 22 December 1995.
- EUROSTAT, COMEXT, *Intra and Extra EU Trade*, NIMEXE-CN, Annual Data.
- EUROSTAT, *External Trade, Nomenclature of Goods*, Theme 6, Series E.
- EUROSTAT (1988), *External Trade, Nomenclature of Goods*, Vol. 5, Correlation Tables CN 1988 (SITC Rev. 3), Luxembourg.
- EUROSTAT (1989), *Statistical Analysis of Extra-EUR 12 Trade in Hi-tech Products*, Luxembourg.
- EUROSTAT (1998), *Intra and Extra EU Trade*, (Annual Data – Combined Nomenclature), Supplement 2.
- EUROSTAT, *International Concordance*, published by U.S. Department of Commerce, EUROSTAT and Statistics of Canada.
- Everaert, G. (2003), Technology Adoption under Price Undertakings, LICOS, Centre for Transition Economics, *Catholic University of Leuven, Discussion Paper 137/2003*.

- Finger, J. Michael, H. Keith Hall and Douglas R. Nelson (1982), The Political Economy of Administered Protection, *American Economic Review*, 452-66.
- Gorges, M. J. (1996), *Eurocorporatism? Interest Intermediation in the EC*, University Press of America, London.
- Hansen, Wendy and Thomas Prusa (1996), Cumulation and ITC Decision Making: the Sum is Greater than the Whole, *Economic Enquiry*, 34, 746-69.
- Hansen, Wendy and Thomas Prusa (1997), The Economics and Politics of Trade Policy: an Empirical Analysis of the ITC Decision Making, *Review of International Economics*, 5, 230-45.
- Hall, Keith H. and Douglas R. Nelson (1992), Institutional Structure in the Political Economy of Protection: Legislated vs. Administered Protection, *Law and Economics*, 61-77.
- International Monetary Fund (IMF), *International Financial Statistics*, Exchange Rate, ECU per Dollar, annual averages.
- Kempton, Jeremy (2001), *Decision to Defend: Delegation, Rules and Discretion in European Community Antidumping Policy*, PhD Thesis, Sussex University.
- Messerlin, Patrick (1990), Antidumping Regulations or Pro-cartel Law? The EC Chemical Cases, *The World Economy*, 465-92.
- Miceli, Thomas and Metin Cosgel (1994), Reputation and Judicial Decision-making, *Journal of Economic Behaviour and Organization*, 23, 31-51.
- Miranda, Jorge, Raul A. Torres and Mario Ruiz (1997), The International Use of Antidumping: 1987-1997, *Journal of World Trade*, 32, 5-71.
- Montado, E (2006), The political Economy of Antidumping in Europe, London School of Economics, mimeo.
- Moore, Michael O. (1992), Rules or Politics? An Empirical Analysis of I.T.C. Antidumping Decisions, *Economic Inquiry*, 30 (3), 449-66.
- Moore, Michael O. and S. Suranovic, (1992), Lobbying vs. Administered Protection: Endogenous Industry Choice and Welfare, *Journal of International Economics*, 32, 289-303.
- Prusa, Thomas J. (1992), Why are so Many Antidumping Petitions Withdrawn? *Journal of International Economics*, 33, 1-2, 1-20.
- Potters, Jan and Frans Van Winden (1991), Lobbying and Asymmetric Information, *Public Choice*, 74, 269-92.
- Tharakan, P. K. M. (1991), The Political Economy of Antidumping Undertakings in the European Communities, *European Economic Review*, 35, 1341-59.
- Tharakan, P. K. M. and J. Waelbroeck (1994), Antidumping and Countervailing Duty Decisions in the E.C. and in the U.S.: An Experiment in Comparative Political Economy, *European Economic Review*, 38, 171-93.
- Vandenbussche, Hylke and Xavier Wauthy (2001), Inflicting Injury Through Product Quality: How European Antidumping Policy Disadvantages European Producers, *European Journal of Political Economy*, 17, 101-16
- Veugelers, R. and Hylke Vandenbussche (1999), European Antidumping Policy and the Profitability of National and International Collusion, *European Economic Review*, 43, 11-28.
- Vermulst, E. (1990), The Antidumping Systems of Australia, Canada, the E.C. and the U.S.A: Have Antidumping Laws Become a Problem in International Trade? in *Antidumping Law and Practice: a Comparative Study*, J. H. Jackson and E. A. Vermulst (eds.), New York: Harvester Wheatsheaf.
- Zanardi, Maurizio (2004a), Antidumping Law as a Collusive Device, *Canadian Journal of Economics*, 37, 1, 95-122.
- Zanardi, Maurizio (2004b), Antidumping: What are the Numbers to Discuss at Doha? *The World Economy*, 27, 3, 403-33

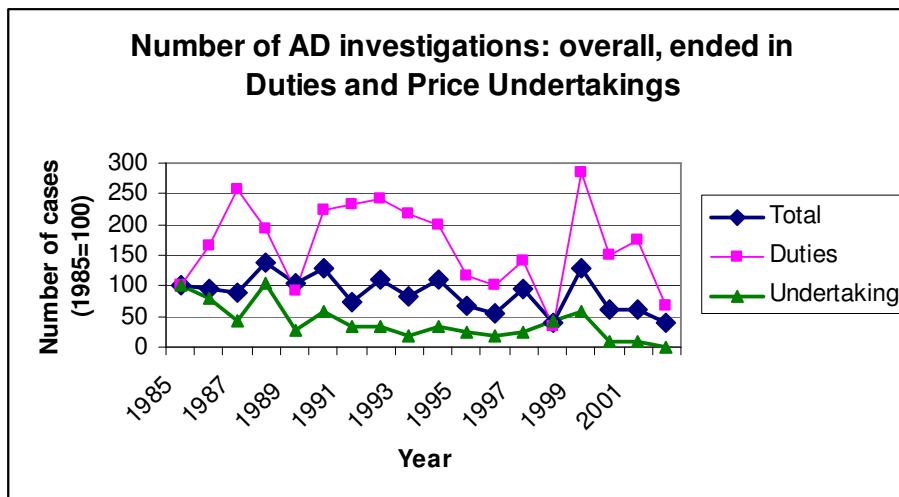
## Appendix A

**Table 5: Number of Cases and Value of Imports in European Antidumping. Investigations Terminated by the Imposition of Definitive Duties and the Acceptance of Undertakings: (1985-2003)**

Year	Number of cases		Value of imports during the year of the case decision (in 1,000 ECU)		Average annual "case size" (in 1,000 ECU)	
	Imposition of definitive duties	Acceptance of undertakings	Imposition of definitive duties	Acceptance of undertakings	Imposition of definitive duties	Acceptance of undertakings
1985	12	21	827,957	268,209	68,996	12,772
1986	20	17	771,314	155,723	38,568	9,160
1987	31	9	4,272,045	521,196	137,808	57,911
1988	23	22	418,282	1,681,294	18,186	76,422
1989	11	6	542,688	958,551	49,335	157,759
1990	27	12	623,383	59,202	23,088	4,934
1991	28	7	942,324	290,991	33,654	41,570
1992	29	7	1,486,971	869,832	51,275	124,262
1993	26	4	1,011,728	58,501	38,913	14,625
1994	24	7	834,493	206,555	34,771	29,507
<b>1985-94</b>	<b>231</b>	<b>112</b>	<b>11,731,235</b>	<b>5,070,054</b>	<b>50,785</b>	<b>45,268</b>
			Value of imports during the year of the case decision (in 1,000 US 1996 Dollars)		Average annual "case size" (in 1,000 US 1996 Dollars)	
1995	14	5	1,358,608	192,131	97,043	38,426
1996	12	4	1,210,889	151,703	100,907	37,926
1997	17	5	1,235,188	514,451	72,658	10,290
1998	4	9	64,307	112,467	16,077	12,496
1999	34	12	2,386,360	434,958	70,187	36,247
2000	18	2	611,851	32,210	33,992	16,105
2001	21	2	1,032,563	10,183	49,170	5,091
2002	8	0	295,297	0	36,912	0
2003	6	1	257,098	17,697	42,850	17,697
<b>1995-03</b>	<b>134</b>	<b>40</b>	<b>8,452,161</b>	<b>1,002,799</b>	<b>63,076</b>	<b>25,070</b>

Source: Commission of the European Communities (Official Journal, Series C and L) and EUROSTAT, Intra and Extra EU Trade and UN COMTRADE

**Figure 1: Number of European Antidumping Investigations Ending in Duties and Price Undertakings 1985-1994 (1985=100)**



Source: Commission of the European Communities (Official Journal, Series C and L)

**Table 6: Final Outcome of AD Investigations in Europe (1985-2003), by year**

Year	Total	Rejection of the claim		Imposition of Duties		Price Undertakings		Withdrawn	Expired
		No dumping or Injury	Community Interest	Sub-total	% of total	Sub-total	% of total		
1985	51	18	0	12	24	21	41	0	-
1986	48	8	0	20	42	17	35	3	0
1987	45	5	0	31	69	9	20	0	0
1988	71	26	0	23	32	22	31	0	0
1989	53	30	0	11	21	6	11	0	6
1990	66	20	1	27	41	12	18	6	0
1991	37	1	0	28	76	7	19	1	0
1992	56	14	1	29	52	7	13	4	1
1993	42	8	0	26	62	4	10	4	0
1994	56	8	0	24	43	7	13	17	0
<b>Total</b>	<b>525</b>	<b>138</b>	<b>2</b>	<b>231</b>		<b>112</b>		<b>35</b>	<b>7</b>
<b>Percentage</b>	<b>100</b>	<b>26</b>	<b>0</b>	<b>44</b>		<b>21</b>		<b>7</b>	<b>1</b>
1995	34	7	0	14	41	5	15	8	n/a
1996	28	11	0	12	43	4	14	1	n/a
1997	48	12	5	17	41	5	12	3	n/a
1998	21	4	0	4	19	9	43	4	n/a
1999	65	10	0	34	52	12	18	9	n/a
2000	31	9	0	18	58	2	6	2	n/a
2001	31	7	0	21	68	2	6	1	n/a
2002	21	6	0	8	38	0	0	7	n/a
2003	7	0	0	6	86	1	14	0	n/a
<b>Total</b>	<b>280</b>	<b>66</b>	<b>5</b>	<b>134</b>		<b>40</b>		<b>35</b>	
<b>Percentage</b>	<b>100</b>	<b>23</b>	<b>2</b>	<b>48</b>		<b>14</b>		<b>13</b>	

Note: The unit of observation is the sub-case. A sub-case is defined as the investigation against each single country named in the AD legal case.

Source: Commission of the European Communities (Official Journal, Series C and L)

**Table 7: Number of AD Investigations and Average Value of Imports Terminated by the Acceptance of Undertakings, Yearly (1985-1994), by Region**

Undertakings Total	Newly Industrialised Countries	Average Value of Imports (1,000 ECU)	Non Market Economies (a)	Average Value of Imports (1,000 ECU)	Japan	Average Value of Imports (1,000 ECU)	Other Countries	Average Value of Imports (1,000 ECU)	
1985	21	6	4,165	5	2,178	2	60,626	8	13,885
1986	17	4	18,483	10	5,418	0	0	3	9,203
1987	9	3	74,060	3	5,053	1	265,809	2	9,025
1988	22	7	11,140	5	1,627	2	721,821	8	18,942
1989	6	1	1,102	0	0	2	440,003	3	25,815
1990	12	4	8,264	5	2,258	0	0	3	4,952
1991	7	3	90,184	3	6,201	0	0	1	1,836
1992	7	3	5,172	0	0	2	426,962	2	196
1993	4	0	0	4	14,623	0	0	0	0
1994	7	1	11,267	5	17,168	0	0	1	109,448
<b>Total</b>	<b>112</b>	<b>32</b>	<b>22,830</b>	<b>40</b>	<b>6,565</b>	<b>9</b>	<b>396,070</b>	<b>31</b>	<b>16,524</b>

Note: The unit of observation is the sub-case. See note in Table 5.5. (a) NME excludes Yugoslavia that is classified as Newly Industrialised Country.

Source: Commission of the European Communities (Official Journal, Series C and L)

**Table 8: Number of AD Investigations and Average Value of Imports Terminated by the Acceptance of Undertakings, Yearly (1985-1994), Less Developed Countries**

	Undertakings Total	Less Developed Countries	Average Value of Imports (1,000 ECU)	Other Countries	Average Value of Imports (1,000 ECU)
1985	21	13	5,425	8	24,710
1986	17	16	9,618	1	1,828
1987	9	7	34,821	2	138,723
1988	22	15	5,858	7	227,631
1989	6	4	19,637	2	440,003
1990	12	11	4,595	1	8,661
1991	7	7	41,570	0	0
1992	7	5	3,182	2	426,962
1993	4	4	14,626	0	0
1994	7	7	29,508	0	0
<b>Total</b>	<b>112</b>	<b>89</b>	<b>14,125</b>	<b>23</b>	<b>165,780</b>

Note: The unit of observation is the sub-case. See note in Table 5.5.

Source: Commission of the European Communities (Official Journal, Series C and L)

**Table 9: Number of Investigations Terminated by the Acceptance of Price Undertakings, Yearly (1985-1994), by Sector of Economic Activity**

	85	86	87	88	89	90	91	92	93	94	Total	Percentage
Chemicals	0	14	7	9	3	7	3	4	2	2	51	46
Iron steel	0	1	0	7	2	3	3	0	2	5	23	20
Textiles	7	0	0	0	0	0	0	1	0	0	8	7
Electronics & Elect. Mach.	2	1	2	4	1	0	1	2	0	0	13	12
Other	12	1	0	2	0	0	0	2	0	0	17	15
<b>Total</b>	<b>21</b>	<b>17</b>	<b>9</b>	<b>22</b>	<b>6</b>	<b>10</b>	<b>7</b>	<b>9</b>	<b>4</b>	<b>7</b>	<b>112</b>	<b>100</b>

Note: The unit of observation is the sub-case. See note in Table 5.5.

Source: Commission of the European Communities (Official Journal, Series C and L)

**Table 10: Descriptive Statistics of Variables Used in European Price Undertakings' Regressions (1995-03)**

Variable	Mean	Standard Deviation	Minimum	Maximum	Coefficient Variation
<i>Dependent variable</i>					
UDT	0.234286	0.4247669	0	1	1.81303
<i>Regressors</i>					
TECH	3.051724	2.833306	1	12	0.92835
BTD5_5	0.411767	0.493607	0	1	1.19876
BTD3_5	0.623529	0.485732	0	1	0.77932
BTD_1	0.656977	0.476105	0	1	0.72469
RETAL	0.015065	0.014348	0.000277	0.153022	0.95239
CON1	31.90058	16.11673	3	65	0.50522
SIZE1	5.51e+07	1.53e+08	0	1.81e+09	2.77695
SIZE2	0.007011	0.020363	0	0.244124	2.90443
VA	15.37376	12.78224	0.051718	36.96233	0.83143
LAB	0.107616	0.101274	0.000018	0.369443	0.94107
HI-TECH	0.057471	0.233413	0	1	4.06138
NME	0.428571	0.496292	0	1	1.15801
LDC	0.942857	0.232781	0	1	0.24689
NIC	0.137143	0.344985	0	1	5.51552
JAPAN	0.028571	0.167077	0	1	5.84768
NOC	4.068571	2.460232	1	10	0.60469

Note: It refers to 174 observations. The unit of observation is the sub-case. Statistics are calculated for each sub-case. A sub-case is defined as the investigation against each single country named in an AD legal case. See Appendix B for more details on data construction and sources.

**Table 11: Correlation Matrix (1995-2003)**

	LAB	VA	CON	SIZE	RETAL	NME	LDC	JAP	BTD
LAB	1								
VA		1							
CON	-0.26*	-	1						
SIZE	-	-	-	1					
RETAL	-	-	-	-	1				
NME	-	-	-	-	-	1			
LDC	-	-	-	-0.37*	-0.53*	-	1		
JAP	-	-	-	0.46*	0.32*	-	-0.78*	1	
BTD	-	-	-	0.20*	-	0.20*	-	-	1

Note: The above tables report pair wise correlations using 166 observations;  
 (\*) indicates partial correlation coefficients significant at the 5% level of confidence

**Table 12: Number of cases ending with AD duties and undertakings, ranked in descending order by share of EU exports, 1985-1994**

Country name/Country Group	AD duties	Undertakings	Total	AD Duties (in %)	Share of EU exports (in %)	
					Minimum	Maximum
<i>United States</i>	7	0	7	100%	16.9	21.8
<i>South East Asia</i>						
Japan	27	9	36	75%	2.7	5.5
Hong Kong	6	1	7	86%	1.4	2.0
Singapore	3	0	3	100%	1.4	1.6
South Korea	15	8	23	65%	0.9	1.9
Taiwan	8	4	12	66%	0.7	1.6
Malaysia	4	1	5	80%	0.3	1.0
Indonesia	5	3	8	63%	0.5	0.9
Thailand	8	3	11	67%	0.6	1.1
<i>China</i>	42	3	45	93%	1.3	2.3
<i>Russia</i>	19	7	26	73%	1.3	3.3
Sub-total (in %)	144 (62%)	39 (35%)	183 (53%)			
Total number of cases	231	112	343		0	21.8

Note: the unit of observation is the sub-case. See note in Table 6.

Source: Commission of the European Communities (Official Journal, Series C and L) and EUROSTAT, Intra and Extra EU Trade.

## Appendix B

### The Data

(Basic legal cases information): The information on a legal case decision to build a dichotomous dependent variable for AD duties as opposed to price undertakings was obtained from the Commission of the European Communities, Official Journals (C and L series) available on CD-Rom. Several pieces of information were obtained for each legal document: the investigation (legal case) number, date in which the investigation was initiated, product under investigation, countries named in the investigation (country of the defendant), the final decisions reached (AD duties or price undertakings) and the year in which the investigation ended. The products involved in each case are identified at the NIMEXE 6-digit level and CN 8-digit level. Different series of related industry level data were used to match the case information. For the period 1995-2003, the information was obtained from the Global Antidumping Database Version 2.0 available in [http://people.brandeis.edu/~cdown/global\\_ad/](http://people.brandeis.edu/~cdown/global_ad/). The data collection project was lead by Chad Bown and funded by the Development Research Group of the World Bank and Brandeis University (Bown, 2006).

Firms located in more than one country could be named in an investigation. The method for counting investigations used consists of considering each country named in an investigation as one separate sub-case. This is a preferred approach since the final measures are imposed for each country of origin. When more than one country is named in the investigation, each country is considered as one sub-case and therefore, as one observation in the econometric analysis.

(TECH): Represents the number of products (CN 8-digits) covered by the case and was obtained from the relevant issues of the Official Journal. Since 1985 the classification of products becomes more precise and therefore a bigger number of products would mean that the case is more difficult to monitor making it less likely that price undertakings are accepted.

(BTD): The data was obtained from EUROSTAT-COMEXT, External Trade figures NIMEXE-CN exports and imports for the relevant years and from United Nations COMTRADE database. The bilateral trade deficit is defined as the value of imports minus the value of exports from and to the country of the defendant over total trade. Three different measures of bilateral trade deficit were used. The bilateral trade deficit in the year previous to the decision made was defined as a proportion of total trade, as follows:

$RATIO\_BTD\_1_j = \frac{BTD_{EU}^j}{(X + M)_{EU}^j}$ . Similarly, the ratio was defined for the three years previous as the average 3-year annual

ratio,  $AVRATIO\_BTD\_3_j = \sum_1^3 \left( \frac{BTD_{EU}^j}{(X + M)_{EU}^j} \right) \frac{1}{3}$  and for the five years previous as the

5-year average ratio,  $AVRATIO\_BTD\_5_j = \sum_1^5 \left( \frac{BTD_{EU}^j}{(X + M)_{EU}^j} \right) \frac{1}{5}$ . Alternatively,

BTD5\_5 is a dummy variable that takes the value one when there is a bilateral trade deficit with the country of the defendant in each one of the 5 years preceding the decision to accept price undertakings, and zero, otherwise. Similarly, BTD3\_5 is a dummy variable that takes the value one when there is a trade deficit in at least three of

the five years preceding the decision, and zero, otherwise. Finally, *BTD\_1* is a dummy variable that takes the value one when there is a trade deficit in the year preceding the decision, and zero, otherwise.

(*RETAL*): For each investigated country, annual export trade from the EU was collected using the United Nations COMTRADE database. The data was used to construct the share of the value of European exports to the country of the defendant in the value of total European exports.

(*LDC*): A dummy variable that takes the value one if the country named in the investigation is a developing country. Less developed countries are defined in a broad sense including Albania, Algeria, Argentina, Belarus, Bosnia Herzegovina, Brazil, Bulgaria, China, Croatia, Czech Republic, Czechoslovakia, Egypt, German Democratic Republic, Georgia, Hong-Kong, Hungary, India, Indonesia, Kazakhstan, Kuwait, Libya, Lithuania, Macao, Macedonia, Malaysia, Mexico, North Korea, Pakistan, Philippines, Poland, Romania, Russia, USSR, Saudi Arabia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Taiwan, Thailand, Trinidad and Tobago, Turkey, Turkmenistan, Ukraine, Venezuela, Vietnam, Yugoslavia and Zimbabwe.

(*NIC*): Dummy variable that takes value one if the affected country is a newly industrialised country (*NIC*) and zero, otherwise. This group includes Mexico, Brazil, Argentina, Singapore, South Korea, Taiwan, Hong-Kong and Yugoslavia.

(*CON*): Market share of the 5 biggest firms in an industry in the European Union. The data used is reported in B. R. Lyons and S. W. Davies (1996) for most industries at 3-digit NACE Rev. 1, available for 1989. For some textile and chemical industries, the information was obtained from the European Commission (1989) "Horizontal merges and competition policy".

(*SIZE1*) and (*SIZE2*): The number of products involved in each one of the cases was identified from the relevant issues of the EU Official Journal (*NIMEXE* 6-digits and *CN* 8-digits). For each investigated product, annual imports trade was collected from United Nations COMTRADE database for the relevant years. The number of *NIMEXE* 6-digit and *CN* 8-digit codes that define a product was identified from the relevant issues of the EU Official Journal. The value of imports obtained from United Nations are expressed in US dollars and in constant 1996 prices using the US Gross Domestic Product (*GDP*) deflator.

(*LAB*, *VA*): OECD STAN database for the relevant years. *LAB* is the number engaged (total employment) in the industry and it is measured in millions. *VA* is the value added in the industry. For the period 1985-94, it is measured in hundred billion ( $10^{11}$ ) US dollars. It is measured in constant 1990 prices of local currencies and transformed into billions of US dollars using the exchange rate (International Monetary Fund, International Financial Statistics). For the period 1995-03, value added in measured in 100 billion Euros and transformed into constant prices using the *GDP* deflator for 15 countries in Europe (EU-15). The *NIMEXE* 6-digit and *CN* 8-digit product codes were correlated with the industry codes using correspondence tables provided by EUROSTAT.

(*HI-TECH*): Obtained from EUROSTAT (1989). The report lists the products considered as technology intensive.

(NME): Dummy variable that takes value one if the affected country has a non-market economy and zero, otherwise. This group is defined in a very broad sense and it includes Albania, Belarus, Bosnia Herzegovina, Bulgaria, Croatia, China, Czech Republic, Czechoslovakia, German Democratic Republic, Georgia, Hungary, Kazakhstan, Lithuania, Macedonia, North Korea, Poland, Romania, Russia, USSR, Slovakia, Slovenia, Yugoslavia, Turkmenistan, Ukraine and Vietnam.

(JAPAN): Dummy variable that takes value one if the affected country is Japan and zero, otherwise.

(GDP) A series of the growth rate of GDP (Gross Domestic Product) for Europe was constructed using GDP at constant prices from Eurostat. The composition of Europe has remained unchanged in the period of study and data refers to the 15 European members (EU-15).