Cumulation and Injury Determination of the European Community in Antidumping Cases

By

P. K. M. Tharakan, David Greenaway, and **Joe Tharakan**

"The most significant change in injury requirement brought about by the Uruguay Round Code is contained in Article 3.3, dealing with the "cumulation" of imports from more than one country. This provision legitimises a practice begun a number of years ago that was of questionable legality under the Tokyo Round Code. It no longer is possible to question its legality, only its wisdom."

Palmeter (1996: 52)

I. Introduction

The increasing use of antidumping (AD) and countervailing duty (CVD) measures by the major OECD trading countries in recent years has been well documented (see for example Finger and Fung 1994). The main reason for the growing interest in this phenomenon is the fear that the AD/CVD codes and regulations which were meant for a corrective purpose are now being increasingly used for legitimising selective, unilateral protection. Such apprehension is understandable in light of the fact that the above code and regulations contain considerable ambiguity in the provisions dealing with the determination of "dumping" and "injury", both of which are necessary conditions for imposing AD duties. Of these two, the provisions concerning injury leave more latitude to the administrators of the antidumping law (Vermulst and Waer 1991).

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One of the most controversial administrative practices in injury determination is "cumulation" by which investigating authorities aggregate all "like" imports from all countries under investigation and assess the combined impact upon the domestic industry. Although experts have called attention to the problem posed by this practice, with the exception of a recent paper by Hansen and Prusa (1996), it has rarely been subjected to systematic empirical analysis. As Palmeter (1996) states, the fact that this practice has been legitimised by the Uruguay Round does not preclude its wisdom being questioned. That is exactly what we attempt to do in this paper.

The paper is organised as follows: We take as read information on the EC's antidumping procedures and begin with background information about the practice of cumulation in injury determination in Section II.[1] Section III explains the modelling of the European Community's[2] (EC) injury determination. The regression results obtained by using the model to analyse EC's injury determinations during the period preceding the Uruguay Round are given in Section IV. Simulations based on the regression results are used to investigate in some detail in Section V the effects of cumulation. Particular attention is paid to the so-called super-additivity effect of cumulation reported in Hansen and Prusa (1996). The conclusions are summed up in Section VI.

II. Cumulation and Injury

According to the GATT-consistent EC regulation relevant to the decisions covered by this study, "a determination of injury shall be made only if the dumped or subsidised imports are, through the effects of dumping or subsidisation, causing injury i.e., causing or threatening to cause material injury to an established community industry or materially retarding the establishment of such an industry".[3] The term "material" connotes an injury of some importance. The same Article lists a number of factors which should be taken into consideration in injury

[1] For a review of EC and US procedures see Tharakan (1993).

[2] The expression European Community (EC) rather than the more accurate European Union (EU) is used throughout this paper because the data-set used here covered the time period when the former acronym was still in force and the relevant case documents refer to EC or EEC.

[3] Council Regulation (EC) No. 2176/84, Article 4. Article 3 of the post-Uruguay Council Regulation (EC) No. 3283/94 makes a similar stipulation about injury.

determination.[4] Although "no one or several" of these factors can "necessarily give decisive guidance", legal experts feel that the market share of the imported products under investigation is an important element in the injury determination (Rycken 1991: 206).

The complainants (the AD complaints are usually filed by domestic industry federations) who are well-versed in the intricacies of injury determination tend to file AD complaints against multiple exporters of "like" products. The European Commission permits cumulation of imports from several countries under certain conditions which were explicitly spelt out only in the post-Uruguay Round Council Regulation (EC) N° 3283/94. But these conditions were probably operational earlier. In any case, they provide some discretion to the investigating authorities to decide whether or not to cumulate the imports from the different countries under consideration.[5] It is a discretion which the investigating authorities in the EC have made ample use of. Our calculations show that 91 per cent of all the multiple-country filings during the period 1980–1987 were determined by the authorities on the basis of the cumulation of imported market share. The corresponding figure for all the injury decisions (including single country filings) was 66.3 per cent.

It is important to note that the EC authorities are not alone in this predilection for cumulation. The three other major users of antidumping measures – Australia, Canada and the United States – similarly make use of cumulation. In Australia, the judicial authorities have upheld the validity of the practice.[6] The Canadian Import Tribunal has endorsed

[4] They include volume of dumped or subsidised imports, prices of such imports, and actual or potential trends in: production, utilisation of capacity, stocks, sales, market share, prices, profits, return on investment, cash flow, and employment.

[5] According to Article 3(4) of Council Regulation (EC) N° 3283/94, "where imports of a product from more than one country are simultaneously subject to anti-dumping investigations, the effects of such imports shall be cumulatively assessed only if it is determined that (a) the margin of dumping established in relation to the imports from each country is more than *de minimis* ... and that the volume of imports from each country is not negligible, and (b) a cumulative assessment of the effects of the imports is appropriate in light of the conditions of competition between the imported products and the like Community products". Note that Article 9(3) defines the margin of dumping as *de minimis* when it is less than 2 per cent of the export price, and Article 5(7) states that AD proceedings should not be initiated against countries whose imports represent a market share of below 1 per cent, unless such countries collectively account for 3 per cent or more of Community consumption.

[6] In *Feltex Reid Rubber Limited vs. Ministry for Industry and Commerce*, as reported in Steele (1990: 269).

the principle of cumulation on various occasions and the practice has even survived a constitutional challenge at the Tribunal level.[7] Nevertheless in Canadian jurisdiction, exclusion from the cumulation principle was possible on the rare occasions when the margin of dumping was negligible, when there was no evidence of injury and where the complainant did not insist on continuing the action against the defendant.[8] But the most restrictive of all in the question of cumulation has been the US where this practice has in effect become almost mandatory since the incorporation of the cumulation provision into the Trade and Tariff Act of 1984 (P. L. N° 98-573). By clearly defining the conditions under which cases involving like products from multiple countries should be cumulated, the 1984 amendment seems to have left the US International Trade Commission (ITC) little choice in this matter (see Hansen and Prusa 1996: 748).

Since it seems unfair to punish a defendant if imports from that particular country, even if dumped, have not *by themselves* caused material injury to the domestic industry in the complainant's country, why do we observe almost universal acceptance of cumulation in antidumping proceedings? The main justification advanced is variously known as "injury in many nibbles" or the "hammering effect hypothesis". The argument here is that "being injured in many nibbles at once is just as bad as being injured in one large bite" (Horlick 1990: 162). Or as the "hammering effect hypothesis" implies, what is important is the injury caused by the *total* imports of unfairly traded like products, not their distribution (Suder 1983).

But a number of objections can be made against this line of reasoning. The practice of cumulation leads to suppliers of small amounts of imports, who would not otherwise have been found to be causing injury in isolation, being victimised (Bellis 1990: 93). In other words, cumulation can have particularly unfair effects on countries with small import market shares. Obviously, newly industrialised countries (NICs), non-market economies (NMEs) and other developing countries who tend to have small import market shares, could be particularly vulnerable. Further, as Messerlin (1991) and others have argued, cumulation could lead to "matching dumping". Defendants or potential defendants may want

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[7] In *Certain Stainless Steel Nickel and Nickel Alloy Pipe and Tubing from the USA, the Federal Republic of Germany and the Republic of Korea (ADT-1-84)*, as reported in Magnus (1990: 218).

[8] This possibility has been traced to the Tribunal's decision in *Countertop Microwave Ovens Either for Household Use Only or for Household and Commercial Use from Japan, Singapore and the Republic of Korea* (ADT-9-81), as reported in Magnus (1990: 218).

to align their prices on the leading prices in the complainant's market, without necessarily aligning their prices in third markets.

Even more important is the stimulus which cumulation gives to protectionist pressures. As Hansen and Prusa (1996) point out, cumulation encourages domestic industries to file more multiple-country petitions, and file more cases against countries with smaller import market shares. Their estimates show that cumulation increases the probability of an affirmative injury determination by 20 to 30 per cent and has changed the ITC's decision from affirmative to negative for about one-third of the cumulated cases. But their most surprising finding is that the protective effect of cumulation increases as the number of countries involved increases, *holding import market share constant*. In other words, cumulated imports have a "super-additive effect" on ITC decision-making. As we shall show below, although the results obtained by Hansen and Prusa (1996) do not by themselves confirm the existence of such a super-additive effect of cumulation, it can be shown to exist in the European Community.

III. Modelling the EC's Injury Determination

Considerable empirical analysis has been carried out in the area of the political economy of protection (see for instance Greenaway and Milner 1994). Some has been devoted to antidumping decisions. The results of these studies have been reviewed elsewhere (Tharakan 1995). Econometric work on the determinants of dumping and injury decisions has so far centred mainly around the US and the EC experiences.[9] Most studies have used what could be broadly termed as "Administered Protection" or "Agency Discretion" models. The assumption underlying this category of models is that the AD laws and regulations provide the administering agencies considerable discretion in making decisions, and that public choice models can be used to explain these decisions. Other studies have opted for "Statutory Direction" models which seek to determine whether the AD decisions are based on statutory considerations and their rational interpretation (see for example, Anderson 1993). Both types of models can of course make useful contributions. But given the discretion evidently available to the injury-determining authorities, especially in the case of cumulation, the

[9] For the United States, they include, among others, Hansen (1990), Moore (1992), Baldwin and Steagall (1994). The studies concerning the EC are mentioned later in the text.

Agency Discretion type of models are clearly more appropriate for the present analysis. Schuknecht (1992) and Tharakan and Waelbroeck (1994) have used models of this type to analyse injury determination in the European Community. But neither took into consideration the role of cumulation as Hansen and Prusa (1996) have done in analysing the injury determinations of the ITC. We therefore build on the stock of knowledge that has become available as a result of these two studies on the EC's injury determination by taking into account the role of cumulation.

Consider the model:

$$I/NI_i = f(X_i, C_i, U_i), \tag{1}$$

where I/NI_i is the injury/no injury decision, X_i is a vector of all explanatory variables in the model except the cumulation effect C_i, and U_i is the disturbance term.

The theory of the political economy of protection proposes models which are not "closed". There exists already a well-developed literature indicating the basic Agency Discretion function of contingent protection (see Tharakan 1995 for a survey of the literature). This can be supplemented by the study of the functioning of the Agency in question. The study of Tharakan and Waelbroeck (1994) which made use of such an approach to analyse the EC's injury determination identified the following X_i variables as important:

- *Industry concentration (CON):* Given the discretion available to the authorities in injury determination and the potential rents involved, lobbying has become a clear fact of life in Brussels, (although it has some way to go before it catches up with Washington D. C.). But the organisation of effective lobbying also requires collusion when a significant part of the stakes involved concerns a limited number of units. The concentration variable used here takes the value of 1 in cases where the complainant is a professional association of an industry in which at least 25 per cent of the European production is concentrated in five firms. A positive sign is expected for CON.
- *Value added (VA):* In addition to the effect of concentration, the economic importance of the industry as measured by value added might induce the investigating authorities to judge the indicators of injury to be of importance and bias their decision in favour of an affirmative finding: A positive sign is expected.
- *Industry definition (ID):* The greater the precision of the industry definition, the greater the chances of proving injury because, as prac-

tising lawyers point out, a precise definition of an industry makes it easier for domestic producers to demonstrate injury. It also makes the first line of defence usually used by the defendants, i.e., the product concerned is not the "like" product, difficult to sustain. ID consists of the number of different products (at NIMEXE 6-digit level) covered by the case. A positive sign is expected for this variable.

- *Capital intensity (KL):* Our capital intensity variable is expected to yield a negative sign since, on Heckscher-Ohlin grounds, the highly developed EC might be expected to have a comparative advantage vis-à-vis most of its trading partners in relatively capital-intensive industries.
- *Employment (EMPL):* Political concern with possible employment losses could be expected to transmit protectionist pressures in favour of affirmative injury findings to the administrators.
- *Average wages (AW):* High average wages are usually associated with human-capital-intensive industries. The EC may not feel, on neo-factor proportions grounds, any need to provide contingent protection to such industries. But the temptation to provide such protection may arise on strategic trade policy grounds. Consequently the sign of this variable is difficult to predict.

The central issue is of course whether or not cumulation alters the injury determination. It is possible to attempt to capture the effect of cumulation by using a dummy that comes alive in cases where "like" imports from different countries are aggregated. But this measure will not capture the possibility that cumulation is likely to have a more significant effect on the outcome for defendants with a small market share. Consequently in their main specification for ITC decision functions, Hansen and Prusa (1996) used the following two variables, which we incorporate into our specification:

- *Named country's market share (NCMS):* This of course is a straightforward measure. The higher the market share of the defendant, the higher the chances of injury being found.
- *Other named countries' cumulated market share (ONCMS):* While individual countries with a high market share are likely to have been found causing injury with or without cumulation, the situation of countries with small market share is different. The possibility of them being found 'causing' injury will depend mainly on the size of the other named countries' cumulated market share. Hence this variable, which is expected to yield a positive sign, is important in verifying the existence of the possible bias introduced by cumulation.

As mentioned earlier, the central finding of Hansen and Prusa (1996) is the "super-additive effect" of cumulation. They obtain this result through simulations based on market-share variables among which the other named countries' cumulated market share plays a crucial role. But it is not a general outcome, and can be generated only under specific assumptions about the distribution of the other named countries' cumulated market share (see below). In view of the above considerations, and in order to verify the existence of a super-additive effect, the *number of countries cumulated (NCC)*[10] has to be introduced as a separate independent variable. We have done so, and expect this variable to yield a positive coefficient if the superadditive effect in fact exists.

On the basis of the above analysis, we have formulated the following specification:

$$I/NI_i = f(CON, VA, ID, KL, EMPL, AW, NCMS, ONCMS, NCC), \quad (2)$$

where I/NI_i is a dichotomous variable which takes the value of 1 in cases where an affirmative injury decision was made, and 0 when no injury was found. The meaning of all the other variables was explained above. This is a single-equation model of the type usually used in the analysis of the political economy of protection. No problem of simultaneity arises. No forgotten feedback comes to mind where one of the independent variables would be influenced to a meaningful extent by injury determinations. Estimation of (2) necessitated the compilation of a data-set built on a case-by-case basis and consisting of, in total, more than 2500 observations of which the vast majority of items had to be developed from raw data and in some instances refined on the basis of information obtained from practitioners.[11] Given the dichotomous nature of the dependent variable, a probit estimation procedure was used.

IV. General Findings

The probit estimation results are reported in Table 1. Several general findings are evident. As can be seen from the regression results reported in columns A and B, among the political economy variables,

[10] Note that *NCC* takes the value of 1 in all cases where a single country market share is used in injury determination, whether because the Commission opted for non-cumulation in multiple country filings or because only firms belonging to one country were involved as dependents in the case.

[11] See the Appendix for details concerning the quantification of variables, source of data, etc.

Table 1 – *Probit Estimation Results*

	Expected sign	A	B
Constant		–0.9895 (–1.0886)	–0.9923 (–1.9857)
Industry concentration	+	0.8812 (2.6153)	1.2860 (4.1111)
Value added	+	0.00015 (2.1030)	–
Industry definition	+	0.1471 (1.4864)	0.0884 (1.1357)
Capital intensity	–	–0.1451 (–3.2411)	–0.0291 (–2.259)
Employment	+	–0.00039 (–1.8415)	0.00004 (0.7017)
Average wage	?	0.1982 (2.1745)	–
Named country's market share	+	0.0559 (3.8838)	0.0539 (3.8243)
Other named countries' cumulated market share	+	0.0935 (2.0742)	0.1035 (2.4494)
Number of countries cumulated	?	0.6319 (3.5071)	0.5053 (3.0938)
Number of observations		280	280
Log likelihood		–66.9471	–71.9272
Percentage of outcomes correctly predicted		86.78%	86.78%
R^2		0.4408	0.3928

Industry concentration, Value added, Capital intensity, and Average wage yield significant results (at 5 per cent level in 2-tail test) and have the expected sign. Subject to the qualifications we make below, we can infer that these political economy pressures have an important influence on the EC's injury findings in antidumping cases. The Employment variable, which yielded a negative sign, is less significant, and as we will see below, this result is not a robust one.

In the results reported in column A where cumulation is represented by the Named country's market share, the Other named countries' cumulated market share, and the Number of countries cumulated, all three variables have positive sign, and the coefficients are highly significant. These results confirm that cumulation influences the EC's injury findings.

As is usually the case when variables are quantified using data which represent interlinked economic phenomena, some of exogenous variables are correlated. The main culprit is Value added which is highly correlated with Capital intensity, Average wages and Employment. Average wages is also correlated with Capital intensity. In the results reported in column B, the variables representing Value added and Average wage were omitted from the specification. With due acknowledgement of the bias which this procedure inevitably causes, it should be noted that the only important change that takes place is that the coefficient attached to the Employment variable loses significance and its negative sign. None of the cumulation variables experience loss of significance or sign change.

The proportion of correctly predicted outcomes is high at 86.78 per cent. The R^2 in all regressions are respectable for probit estimates. The likelihood ratio (LR) tests where the constrained specifications exclude the political economy variables, yield a ratio of 40.4213 for the specification reported in column A and 28.8183 for the one in column B. Both are significant at the 1 per cent significance level. The LR tests using the constrained specification where the cumulation variables are left out, give the ratio of 85.4418 for column A and 91.0957 for column B. In this case, too, the ratio meets the level of significance at the 1 per cent level.

V. Effects of Cumulation

The major thrust of our analysis is directed at the effects of cumulation and here we shall focus attention on two important aspects: 1. the affirmative-finding bias of cumulation, and 2. the super-additivity effect of cumulation.

1. The Affirmative-Finding Bias of Cumulation

In Table 2 we present several measures of the importance of cumulation on the EC's injury determination. The change in the probability of an affirmative injury finding due to cumulation given there is calculated by using the parameter estimates reported in Column A of Table 1, holding at mean value all the independent variables except the Other named countries' cumulated market share (ONCMS) and the Number of countries cumulated (NCC). The estimates show that cumulation introduces a strong affirmative-finding bias in the injury determination of the EC. Cumulation increases the probability of an affirmative in-

jury finding in the antidumping cases by about 42 per cent. Given such an effect, it is inevitable that cumulation will have a crucial impact on whether injury is found or not. For example, in the sample used in the regressions, 233 of 280 cases were cumulated. Using our parameter estimates, we calculate that in 85 (36.48 per cent) of these cases, no injury would have been found if cumulation were not used.

This affirmative-finding bias of cumulation has a number of important implications. The EC, unlike the US, makes extensive use of "undertakings" to terminate antidumping proceedings. Such undertakings are agreements between the Commission of the European Community and exporters (or importers) of allegedly dumped merchandise whereby the latter agree to revise their prices or cease exports to the extent that the Commission is satisfied that either the dumping margin or the injurious effects of the dumping are eliminated. During the period covered by this study, 72 per cent of AD cases in the EC were terminated with the acceptance of undertakings. In principle, an undertaking is accepted in the EC only after both dumping and injury have been found. But it is likely that the injury determination in AD cases terminated by undertakings is less "rigorous" than in those which end with imposition of duties. This is to be expected given the fact that in the former, the purpose of the Commission is not to punish the defendants, but to force them to align their prices to those of EC producers. In our sample, in 166 of the cases which ended with the acceptance of undertakings, the Commission determined injury by using cumulation. As reported in Table 2, our calculations based on the parameter estimates indicate that in 44.57 per cent of these cases injury would not have been found without cumulation. This is of course considerably higher than the "average" (36.48 per cent). The importance of this finding becomes clear when we consider the fact that from a welfare point of view, the undertakings are more injurious *for the EC* than the imposition of an antidumping duty. Undertakings would have all the negative effects of antidumping duties, in addition to the "loss" of duties which could have been collected, if the latter course of action was followed.

Table 2 – *Effects of Cumulation on Injury Determination in the EC*

Change in the probability of positive decision due to cumulation	42.23%
Number of cases that are affirmative with cumulation but would be predicted negative without cumulation	85
Number of cases cumulated	233
Per cent of cumulated cases where the outcome changed	36.48%

Table 3 – *The Effects of Cumulation on Specific Catagories of Cases*

	Cases ended with undertakings	Cases involving non-market economies	Cases involving developing and newly industrialised countries
Number of cases that are affirmative with cumulation but would be predicted negative without cumulation	74	48	16
Number of cases cumulated	166	124	39
Per cent of cumulated cases where the outcome changed	44.57%	38.70%	41.02%

Table 3 also shows the effects of cumulation on different groups of defendants. The non-market economies (NMEs) are particularly vulnerable to "dumping" findings because of the specific method used for calculating the margin of dumping involving such countries (Tharakan 1991). Now it can be shown that they are also vulnerable in the EC's injury findings. Of the total of 124 AD cases involving NMEs during the period 1980-1987, 48 were cumulated. The estimates reported in Table 3 show that 38.7 per cent of these cumulated cases would have "caused no injury" if cumulation were not used. The newly industrialised and developing countries (DCs) are also vulnerable to the affirmative- injury-finding bias of cumulation. While there is some evidence that the EC is being lenient to the NICs and the DCs in "dumping" decisions (Tharakan and Waelbroeck 1994: 186), the estimates reported in Table 3 show that in 42.02 per cent of the cumulated cases involving the NICs and the DCs, a no-injury finding would have been reached without cumulation.

2. The Super-Additivity Effect

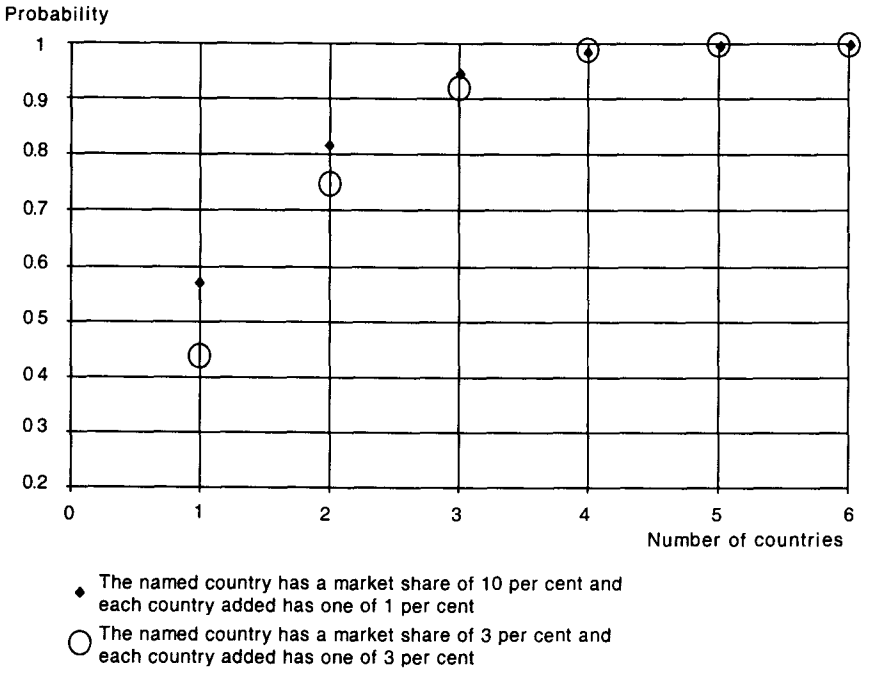
In the study on the US ITC's decisionmaking, Hansen and Prusa (1996) reported a surprising finding concerning the super-additive effect of cumulation. This is that, even with equivalent total market shares, the probability of an affirmative injury finding increases when the number of countries cumulated increases. As they point out, "for all levels of market share, the probability of an affirmative decision when imports from five countries are cumulated lies above that for two countries,

which in turn lies above the probability when only one single country is being investigated" (p. 762). They rightly call this effect a "startling" one. If this finding can be substantiated, it would mean, for example, even if cumulation leads to practically no increase in the total market share of the defendants, the probability of an affirmative injury finding would be substantially increased by the simple act of aggregating imports of "like" products from all countries under investigation.

Yet, there is a methodological problem here. A necessary condition for the "super-additive effect" is that the regression coefficient obtained for the variable Other named countries' cumulated market share is greater than the coefficient yielded by its twin variable the Named country's market share. This is a condition that is satisfied in the regression results reported in Table 1 in this paper, and in 5 out of 6 comparable regressions reported by Hansen and Prusa (1996). But this is not a sufficient condition (J. Tharakan 1997). In fact given the methodology used by Hansen and Prusa (1996), the super-additivity effect would crucially depend on the assumption made about the Other named countries' cumulated market share. In order to determine whether the Number of countries cumulated would yield a super-additive effect, the specification will have to include that particular variable. If the variable representing the number of countries yields a positive and significant coefficient, simulations will confirm that increasing the number of countries will by itself (while holding the market share constant) increase the probability of an affirmative injury finding.

Our specifications include the Number of countries cumulated as a separate explanatory variable. It yielded a positive and significant coefficient in all regressions. Under these conditions the existence of a "super-additive effect" of cumulation can be shown to exist in the case of the EC. In Figure 1 we plot two scenarios. In the first one, we plot the estimated probability of an affirmative injury decision as a function of the Number of countries cumulated and the other named countries' cumulated market share. All other independent variables are valued at the sample mean and the coefficients are from the regression reported in column A of Table 1. As in the illustration given by Hansen and Prusa (1996), three hypothetical scenarios are envisaged. In Figure 1, we plot two scenarios. In the first one, we plot the probability of an affirmative finding in a case where the named countries' market share (NCMS) is 10 per cent and each case that is cumulated to the first one has 1 per cent each of market share. In other words, in this simulation we do not hold the total market share constant. It increases, albeit marginally, with each country cumulated. In such a "realistic" situation, the probability of an

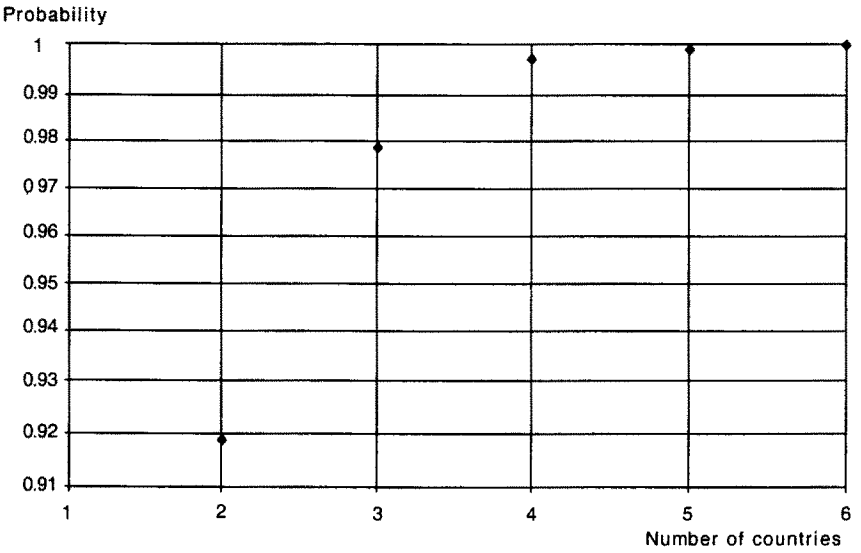
Figure 1 – *Probability of an Affirmative Injury Decision for Two Different Scenarios of Cumulation*



affirmative finding being reached, increases dramatically. With the named country having 10 per cent of the market share and with no cumulation, the probability of an affirmative finding is less than 60 per cent. But if the Commission cumulates with the first country a second country with a 1 per cent market share, the probability of an affirmative injury finding increases dramatically to more than 80 per cent. The addition of one more country with 1 per cent market share raises the probability to around 95 per cent. Still another country with 1 per cent market share being cumulated takes the probability to very high levels.

The second scenario presented in Figure 1 is rather similar. The difference is that the named country has a market share of 3 per cent and each country that is cumulated to it also has 3 per cent market share. If only one country is involved, the probability of an affirmative injury finding is a little above 40 per cent. Add one more country with 3 per cent market share, and the probability jumps to above 75 per cent. The addition of a further country with 3 per cent market share raises the probability to the 90s, and so on.

Figure 2 – *Super-Additivity only for Cumulated Cases: 15 Per Cent Total Market Share, 7 Per Cent NCMS and 8 Per Cent ONCMS*



Strictly speaking, the two scenarios sketched above do not deal with the "super-additivity effect" of cumulation. The super-additivity effect refers to the situation in which the simple fact of increasing the number of countries cumulated while holding market share constant increases the probability of an affirmative finding. As shown in Figure 2, with the results obtained in our regressions, it is possible to demonstrate the existence of the above effect and its *general nature*, at least as far as the EC's injury decisions are concerned. In all the cases of cumulation postulated in Figure 2, the total market share and the distribution of this market share between the named country and other named countries are held constant. With a total market share of 15 per cent consisting of 7 per cent for the named country and 8 per cent for the other named countries, the probability of an affirmative finding is close to 92 per cent. If 3 countries are cumulated with the named country holding 7 per cent of the market share as before and the 2 other named countries sharing the remaining 8 per cent of the market share, the probability of an affirmative finding leaps to nearly 98 per cent. Further direc-

tion of this change, under similar conditions and with the increase in the number of countries cumulated can be read off from Figure 2. It is of course evident that increasing the number of countries cumulated will change the country distribution of shares within the Other named countries' market share. The "countries which are already present" will not have the same market share as before. But the super-additivity effect will hold not only for any total market share, but also for any distribution of this total market share over the named country's market and the other named countries' market share. This shows the general nature of this surprising result.

VI. Concluding Remarks

The increasing use of antidumping measures by the major OECD trading countries has raised the fear that this corrective mechanism is being hijacked for protectionist purposes. In view of the ambiguities contained in the AD rules and regulations and the discretionary powers they allow the administrators especially in injury determinations, this concern deserves to be taken seriously. One of the controversial administrative practices in injury determination is cumulation, by which authorities aggregate all "like" imports from all countries under investigation and assess the combined impact upon the domestic industry. In the US, cumulation is practically mandatory since 1984. The EC allows some discretion to the administrators to cumulate or not to cumulate, but they clearly prefer the former course of action. The Uruguay Round has legitimised this practice.

Our analysis clearly shows that cumulation strikingly increases the likelihood of affirmative findings by the European Community in antidumping cases. According to our estimates, the change in the probability of an affirmative decision due to cumulation could be nearly 42 per cent. In about 36.5 per cent of the cumulated cases the outcome would have changed from an affirmative to a negative injury finding, if cumulation were not used.

The European Community has in the past concluded a substantial proportion of antidumping cases with the acceptance of price undertakings. This is a practice which can be strongly criticised from a welfare standpoint. About 44.6 per cent of cases in which the defendants agreed to increase their prices to cover the dumping/injury margin, no injury would have been found if the authorities had not aggregated imports from the countries under investigation. The corresponding figures for AD cases involving centrally planned economies is also almost

39 per cent; those involving the newly industrialised and developing countries is about 41 per cent.

But the most dramatic result of cumulation is the so-called "super-additivity" effect which was first noticed by Hansen and Prusa (1996) in their study of the US ITC's decisions. Our results obtained by the use of a somewhat different methodology demonstrate the existence of such an effect in the EC's injury determinations. This means that for a given cumulated import market share, the greater the number of countries cumulated, the greater the probability of an affirmative injury finding. In practical terms, this means that the inclusion of countries with marginal market share in the investigation can increase the probability of all defendants being penalised.

The "hammering effect hypothesis", i.e. what counts is the injury caused by the total imports of unfairly traded "like" products and not their distribution, has been a strong argument in support of cumulation. But the affirmative-injury-finding bias of cumulation and above all its super-additivity effect provide powerful counter-arguments against the practice. Although the Uruguay Round has legitimised cumulation, the investigating authorities in the EC, unlike their US counterparts, are under no obligation to follow that practice. Article 3.4 of Council Regulation (EC) N°3283/94 clearly gives them the leeway not to cumulate. The results reported in this study provide an important reason for not exercising the option in favour of cumulation.

Appendix

1. Data

The information on case decisions which was used to build the dichotomous dependent variable (I/NI_i) is from the *Official Journal of the EC* (1980–1987) and the *Annual Reports of the Commission* (Commission of the European Communities 1983–1989). The basic information necessary for building the three cumulation variables (NCMS, ONCMS, NCC) were also partially obtained from the first source mentioned. Specifically: the *Official Journal* (C and L Series) published daily by the Commission of the European Communities (1980–1987) was consulted on a case-by-case basis to determine whether cumulation was used in multiple country filings and if so, how many countries were involved. The case reports often give the cumulated market share used in the injury determinations but not the individual market share of the countries involved. These were estimated on the basis of the share of

the imports of each one of the investigated countries in the total of the investigated imports for the relevant years. The import figures were obtained from EUROSTAT (1980–1987). The concentration variable (CON) was built on the basis of information collected from the following sources: whether a complainant is a professional association or not was ascertained from the relevant issue of the *EC Official Journal*; whether in the industry (NACE three-digit level) concerned, five firms accounted for at least 25 per cent of the output in the EC was ascertained from the *Commission of the European Community* (1989: 41). The data necessary for calculating the variables VA, KL, EMPL and AW were collected from EUROSTAT (1983–1989). The number of products involved in each case, necessary for developing the Industry Definition (ID) variable was obtained from the relevant issues of the *Official Journal* of the EC.

For the calculations reported in Table 2, the non-market economies were defined in accordance with the list provided in the *Journal Officiel des Communautés Européennes* (1987). A broad definition of the newly industrialised and developing countries was used, including Yugoslavia and the oil exporting countries (Saudi Arabia, Libya and Kuwait). A list of the countries included in this category can be obtained from the authors on request.

2. Summary Statistics of the Data Used in the Regressions

Number of Observations: 280

	Mean	Std Dev	Minimum	Maximum
VA	11694.36786	9986.30744	270.00000	29211.00000
ID	1.94643	1.82790	1.00000	21.00000
KL	30.45300	12.56284	10.16000	65.81000
EMPL	3509.03571	2472.03590	160.00000	9405.00000
AW	16.28704	4.84869	7.29000	27.23000
CON	0.56786	0.49626	0.00000	1.00000
NCMS	10.00063	14.82031	0.050500	86.98400
ONCMS	11.67726	16.72778	0.00000	93.57990
NCC	3.09286	2.13822	1.00000	8.00000

	Sum	Variance	Skewness	Kurtosis
VA	3274423.00000	9.97263D+07	0.44284	−1.41732
ID	545.00000	3.34121	5.25412	44.58394

	Sum	Variance	Skewness	Kurtosis
KL	8526.84005	157.82507	0.80579	–0.18617
EMPL	982530.00000	6110961.46000	0.20240	–1.41975
AW	4560.37001	23.50979	0.47435	–0.50674
CON	159.00000	0.24627	–0.27544	–1.93803
NCMS	2800.17745	219.64163	2.94365	10.06219
ONCMS	3269.63200	279.81879	2.32896	6.44947
NCC	866.00000	4.57199	0.89085	–0.19156

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