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ABSTRACT

The most popular methodology used by the U.S. International Trade Commission (USITC) from 1989 through 1994 to determine whether unfairly traded imports injure competing domestic industries was known as the bifurcated approach. Injury determinations based on this approach have been rejected by reviewing bodies because the methodology does not distinguish injury caused by unfairly traded imports from other demand or supply changes. We estimate injury to the domestic industry due to changes in unfairly traded import price and to other causes for 44 USITC dumping and/or subsidy investigations. Change in unfairly traded import price was typically not the most important cause of injury to the domestic industry.

I. INTRODUCTION

Firms that face competition frequently have a number of legal avenues to limit such competition. When such competition comes from overseas competitors, they might avail themselves of laws to limit imports. In the major industrialized countries, laws to limit competition from imports fall into two broad categories: safeguards, and laws against unfairly traded imports.

Safeguards, also known as escape clause procedures, allow a World Trade Organization (WTO) member state to temporarily restrict imports when a product is imported to its territory in such increased quantities as to cause or threaten serious injury to competing domestic producers. These temporary restrictions (quotas or tariffs) can either allow the domestic industry to become more competitive, or allow an orderly transfer of resources from the industry.

Unfairly traded imports are imports that are subsidized and/or dumped, that is, sold at less than fair value. "Fair value" can be the price that the imports are sold for in their home market, the price that the imports are sold for in a third country, or the estimated cost of production including a profit. In accordance with international agreements, U.S. law requires that remedial duties (antidumping duties or countervailing duties) can only be imposed on unfairly traded imports if these imports have caused (or threaten to cause) material injury to competing domestic producers.

The U.S. International Trade Commission (USITC) is responsible for investigating and determining whether or not unfairly traded imports have caused material injury to a domestic industry. The USITC is also responsible for investigating and determining whether or not a domestic industry that petitions for relief in a safeguard proceeding has suffered serious injury

because of increased imports.

USITC Commissioners have adopted a variety of approaches to determining whether or not dumped or subsidized imports have caused material injury to competing domestic producers. An important one that has been used by several Commissioners is the unitary approach. This approach uses production and prices for the unfairly traded imports, the domestic industry, and fairly traded imports (if any), estimates of demand and supply elasticities, and dumping or subsidy margins to calculate what the performance of the domestic industry would have been had it not had to compete with unfairly traded imports.[1]

An alternative approach that has been adopted by more Commissioners is the bifurcated approach. The bifurcated approach first asks if the domestic industry has suffered material injury, and then asks whether or not unfairly traded imports contributed to this injury. By separating the injury determination into two separate questions, the presence of injury and the causation of injury, the bifurcated approach is similar to the sort of inquiry that the USITC conducts in its safeguards investigations.[2]

Commissioners who used the unitary approach relied upon an explicit economic model to compare actual domestic industry performance with what the performance would have been absent competition from unfairly traded imports. In contrast, Commissioners who used the bifurcated approach rejected formal economic analysis; in fact, many of them were openly hostile to the use of economic analysis. Because of these different attitudes towards quantitative economics, the unitary approach has also been called the economic approach.[3]

We adapt an economic model developed to measure the causes of injury in USITC safeguard investigations to measure the effect of unfairly traded imports to domestic industry

performance, that is, the second question under the bifurcated approach. We apply this methodology to all USITC unfairly traded import investigations for a time period between two major changes in the law; during this period there were Commissioners who used the unitary approach and Commissioners who used the bifurcated approach.

For those industries that petitioned for import protection against unfairly traded imports, why did they perform poorly? Were unfairly traded imports the source of their difficulties, or were there other causes?

One of the criticisms of the USITC Commissioners who used the bifurcated approach is that they incorrectly attributed to unfairly traded imports damages that may have been caused by other factors. Both a U.S. court and the World Trade Organization have overturned USITC antidumping decisions that were based on the bifurcated approach because they failed to distinguish injury from unfairly traded imports from other sources of injury. Our estimates allow us to analyze this criticism.

We compute injury estimates for these same investigations under the unitary approach, and compare them to the injury estimates under the bifurcated approach. Do the two methods really give different results?

II. THE TRADE LAWS OF THE UNITED STATES

In the United States, safeguard petitions are administered under Section 201 of the Trade Reform Act of 1974. Upon receipt of a petition for relief under Section 201, the USITC undertakes an investigation to answer three questions: (a) have imports increased, (b) has the domestic industry been seriously injured, and if so, (c) are increased imports the substantial

cause[4] of that injury? If a majority of the USITC Commissioners answers all questions in the affirmative, then they must recommend to the President of the United States relief sufficient to remedy the problem. The President can then impose quantitative restrictions or tariffs, or grant adjustment assistance to the industry and its workers. Alternatively, he can grant no relief if in his opinion such relief would not be in the national interest.

The U.S. law against unfairly traded imports, Title VII of the Trade Act of 1979, is administered by both the International Trade Administration of the Department of Commerce ("Commerce") and by the USITC. For alleged subsidization, Commerce determines the amount of such subsidy as a percentage of the selling price (the countervailing duty margin). For alleged dumping, Commerce determines the "fair value," which can be the price the foreign firm charges in its home market or in a third country, or it can be the estimated cost (including profit) of production, transportation, and distribution. The percentage amount that the price of the less than fair value (LTFV) imports must be increased to equal the fair price is called the dumping margin. The USITC determines whether or not the competing domestic industry was materially injured (or is threatened with material injury) by reason of dumped or subsidized imports. If a majority of USITC Commissioners (or if there is a tie) finds affirmatively, then a tariff equal to the countervailing duty margin or the dumping margin is automatically imposed on the imports in question.

Different USITC Commissioners have adopted, and reviewing courts have ratified,[5] different methodologies for determining whether unfairly traded imports have caused material injury to competing domestic industries. The two most important have been (a) the unitary approach, also known as the "but-for" approach, the elasticities approach, or the economic

approach, and (b) the bifurcated approach, also known as the trends approach, or the traditional approach.[6]

The rationale of the unitary approach is to compare the actual performance of the domestic industry with what its performance would have been absent the unfair practice. For subsidies and for dumped imports that are sold below cost, the unitary approach asks what would the performance of the competing domestic industry have been if the price of the subsidized and/or dumped imports were higher by the amount of the countervailing duty margin or antidumping margin computed by Commerce. For price discrimination dumping where data on home market sales are available, the unitary approach asks what would the performance of the competing domestic industry have been if the foreign firm(s) had been required to charge the same price in the U.S. and in its (their) home market.

The bifurcated approach instead asks two questions: (a) did the domestic industry suffer material injury over the period of investigation (which is typically the previous three years); and (b) if so, did unfairly traded imports contribute to this material injury? The bifurcated approach is therefore similar to the approach that the USITC takes in analyzing safeguard petitions: it first asks if there is injury, and then asks whether or not imports are a cause of said injury.[7] In fact, commentators call Title VII "the poor (or small) man's escape clause."[8]

The unitary approach uses the standard tools of economic analysis to determine the effect of unfairly traded imports on the domestic industry. The USITC staff have used economic models[9] to simulate the performance of the domestic industry but for it having to compete with unfairly traded imports. The difference between the simulated and the actual performance depends upon the quantity sold and prices in the U.S. of the domestic industry output, unfairly

traded imports, and fairly traded imports, if any, the antidumping margin and/or countervailing duty margin as computed by Commerce, and demand and supply elasticities. Price and quantity data have traditionally been collected in USITC investigations. Information on elasticities have been collected since the advent of the unitary approach. Both petitioners and respondents are free to submit information and commentary regarding elasticity estimates. In contrast, the USITC Commissioners who use the bifurcated approach have not tended to use economic tools in their analysis.[10] This aversion to quantitative economic analysis has caused USITC decisions to be overturned, both by the Court of Appeals for the Federal Circuit, the reviewing court for the Court of International Trade that reviews USITC decisions, and by the World Trade Organization.[11]

In August, 1992 the USITC found that domestic producers of magnesium were experiencing material injury by reason of unfairly traded imports from Canada. After countervailing and dumping duties were imposed against Canadian magnesium, imports from other sources, including China, Russia, and the Ukraine, increased. In March, 1994 domestic producers of magnesium filed a petition, alleging dumping. In May, 1995, three of the six USITC Commissioners found that domestic magnesium producers suffered declining market share, decreased employment, poor financial performance, declining capital expenditures, and falling research and development expenses over the previous three years. These same three Commissioners observed that the market share of unfairly traded imports from China, Russia, and Ukraine had increased, and said that "the effect of the large and increasing volume of subject imports during the period of investigation has been to depress prices or prevent price increases to a significant degree." They concluded: "[G]iven the substitutability between subject imports and

[U.S. produced magnesium], the rapid and significant increase in the LTFV [less than fair value] imports, the consistent underselling by these imports, the resulting decline in domestic market share and the poor financial condition of the U.S. industry, we determine that the domestic industry producing pure magnesium is materially injured by reason of the subject LTFV imports of pure magnesium."[12]

This USITC decision was overturned by the U.S. Court of Appeals for the Federal Circuit. The court said that " . . . a showing that economic harm to domestic industry occurred when LTFV imports are also on the market is not enough to show that the imports caused a material injury. . . . Hence, the anti-dumping statute mandates a showing of causal – not merely temporal – connection between the LTFV goods and the material injury."[13] The court went on to note that imports from Russia came from only two producers, but were sold by several trading firms. The U.S. price for Russian magnesium was set by the importer, not the producer. Commerce had found that only some of these importers had priced below fair value, and so a sizeable portion of the imports coming from Russia were not dumped but fairly traded. Because the unfairly traded imports and the fairly trade imports differed only in the importer who sold them, these fairly traded imports were very close, if not perfect, substitutes for the unfairly traded imports.[14] Because domestic users of magnesium could have bought fairly traded Russian magnesium rather than dumped magnesium, the court found that imports of dumped magnesium did not injure the domestic industry, and therefore whatever difficulties the domestic industry faced were the result of market forces rather than unfair trade practices.

A 1999 USITC decision on dumped steel products that relied on bifurcated analysis was challenged by Japan before the World Trade Organization (WTO). Article 3.5 of the WTO Anti-

Dumping Agreement states:

> It must be demonstrated that the dumped imports are, through the effects of dumping, as set forth in paragraphs 2 and 4, causing injury within the meaning of this Agreement. The demonstration of a causal relationship between the dumped imports and the injury to the domestic industry shall be based on an examination of all relevant evidence before the authorities. The authorities shall also examine any known factors other than the dumped imports which at the same time are injuring the domestic industry, and the injuries caused by these other factors must not be attributed to the dumped imports.

In rejecting the USITC decision on dumped hot-rolled steel products from Japan, the WTO Appellate Body said that in applying Article 3.5 investigating authorities must[15]

> ensure that the injurious effects of the other known factors are not "attributed" to dumped imports, they must appropriately assess the injurious effects of those other factors. Logically, such an assessment must involve separating and distinguishing the injurious effects of the other factors from the injurious effects of the dumped imports. If the injurious effects of the dumped imports are not appropriately separated and distinguished from the injurious effects of the other factors, the authorities will be unable to conclude that the injury they ascribe to dumped imports is actually caused by those imports, rather than by the other factors. Thus, in the absence of such separation and distinction of the different injurious effects, the investigating authorities would have no rational basis to conclude that the dumped imports are indeed causing the injury which, under the *Anti-Dumping Agreement*, justifies the imposition of anti-dumping duties.

III. THE MODEL

As noted above, the bifurcated approach to injury determination in an unfairly traded imports investigation has much in common with the approach to injury in a Section 201 safeguard investigation. A methodology for measuring the causes of injury to a domestic industry under Section 201 was developed by Kelly (1988).[16] That paper set out three different models, and for each one showed how observed changes in domestic production, imports, and prices could be combined with elasticity estimates to decompose the change in industry output

over a time period into changes due to shifts in demand, supply, or in the case of monopoly, cost.

That paper assumed that the underlying demand and supply relationships were linear. Here we relax the assumption of linearity, and use instead a model developed for our earlier study of unfairly traded imports (Kelly and Morkre, 1998) that used the well known Armington constant-elasticity-of-substitution (CES) demand system. We assume that, for any industry definition, all goods sold in the United States can be aggregated into one of three categories: domestically produced, unfairly traded imports, and fairly traded imports. Let Q_d be the quantity of the domestic product, Q_u the quantity of unfairly traded imports, and Q_f the quantity of fairly traded imports. Q_d, Q_u, and Q_f are close, but not perfect, substitutes. Let P_d, P_u, and P_f be, respectively, the prices of domestic products, unfairly traded imports, and fairly traded imports. These three products are in turn related through an aggregation function of the CES type, so that Q_A, the quantity of the aggregate product, is defined as:

$$Q_A = (b_d Q_d^{-\rho} + b_u Q_u^{-\rho} + b_f Q_f^{-\rho})^{-1/\rho}$$

where b_d, b_u, b_f, and ρ are constants with $b_d + b_u + b_f = 1$ and $\rho > -1$. As the name of the model implies, the elasticity of substitution between any two products, σ, will be constant, and can be shown to be equal to $1/(1+\rho)$.

It is assumed that for any value of the aggregate product Q_A, purchasers choose Q_d, Q_u, and Q_f so as to minimize their total expenditure given the prices P_d, P_u, and P_f. The price of the aggregate product, P_A, is defined to be:

$$P_A \equiv (P_d Q_d + P_u Q_u + P_f Q_f)/Q_A$$

Demand for the aggregate product, D_A, is assumed to take the constant elasticity form, so that:

$$D_A = \alpha_A P_A^{\epsilon_A}$$

where ϵ_A is the own price elasticity of demand for the aggregate good.

From the first order conditions for expenditure minimization,[17] demand for an individual product can be expressed as a function of its own (industry) price, the aggregate product price, and the quantity of the aggregate product:

$$D_d(P_d,P_u,P_f) = (b_d/P_d)^{\sigma} \alpha_A^{-\sigma/\epsilon_A} Q_A^{(\sigma/\epsilon_A + 1)} \quad (1)$$

$$D_u(P_d,P_u,P_f) = (b_u/P_u)^{\sigma} \alpha_A^{-\sigma/\epsilon_A} Q_A^{(\sigma/\epsilon_A + 1)} \quad (2)$$

$$D_f(P_d,P_u,P_f) = (b_f/P_f)^{\sigma} \alpha_A^{-\sigma/\epsilon_A} Q_A^{(\sigma/\epsilon_A + 1)} \quad (3)$$

It is assumed that both domestic production and fair imports are supplied competitively to the U.S. market. It is further assumed that these supply relationships are of the constant elasticity form, so that we have:

$$S_d = \alpha_d P_d^{\eta_d} \quad (4)$$

$$S_f = \alpha_f P_f^{\eta_f} \quad (5)$$

where S_d and S_f are domestic supply and fair import supply, respectively, and α_d, α_f, η_d, and η_f are all positive constants.

The values of ρ, ϵ_A, η_d, and η_f are assumed to be fixed over time for each industry. The values b_d, b_u, b_f, α_d, α_f, and α_A vary over time, and are shift parameters for the demand and

supply functions.

A domestic industry can suffer injury from changes in demand for its product in two ways. The first is through changes in the overall demand for the product, that is, the aggregate demand shift parameter α_A decreases. The second is for purchasers' perceptions of the relative quality differences between domestically produced and imported goods to change, that is, the shift parameters b_d, b_u, and b_f change. These parameters can change because the physical properties of the products can change, because purchasers' perceptions of the products can change, or because of other changes that change the relative values that purchasers place on the products.

The cost of production of the domestic industry, or the cost of production for the producers of fairly traded imports, could change. This will happen if the supply shift parameters α_d or α_f change.

The underlying assumption behind laws against dumped imports is that dumping is done by foreign firms with market power that have the ability to price discriminate between American consumers and foreign ones, or the ability to charge prices in the U.S. below their cost of production. If this assumption were valid, then it would not be appropriate to model these foreign firms as perfect competitors, and therefore they would not have supply functions. We will therefore take the price of the unfairly traded imports to be another shift parameter of the model.

This model allows us to compute injury estimates for both the unitary and the bifurcated approaches. To compute the unitary estimates, we raise the raise the price of unfairly traded imports so that they are no longer unfairly traded. For subsidized imports, or imports that

Commerce has found to be sold in the U.S. below the cost of production, we increase the price of unfairly traded imports by the amount of the countervailing duty margin or dumping margin, then compute new equilibrium prices and quantities. In those investigations where foreign producers engage in price discrimination, we compute a new equilibrium given the constraint that these producers must charge the same price in their home market as in the U.S.[18]

To compute the bifurcated injury estimates, we compute the price of unfairly traded imports at the beginning of the period of investigation and at the end of the period of investigation. We then use the model to compute new equilibrium prices and quantities using the final year price of unfairly traded imports with the other shift parameters held equal to their initial year values. Similarly, we can vary in turn each of the shift parameters to measure how different demand and supply changes affected domestic industry revenue and output over the period of investigation.

IV. ESTIMATION

Our data set consists of the 41 domestic industries that petitioned for relief from unfairly traded imports between 1989 and 1994 for which there is sufficient price and quantity data in the public version of the USITC investigation reports.[19] This period is between two major changes in Title VII: the Omnibus Trade and Competitiveness Act of 1988, and the Uruguay Round Trade Agreements Implementing Act. During this time period the USITC had Commissioners who used the unitary approach as well as those who used the bifurcated approach. As a result, domestic firms that could present a case for injury under either approach would have an incentive to petition for relief.

For most of the investigations in which the imports that were alleged to be dumped by firms from different countries, the USITC majority cumulated the imports across countries. There were three investigations where this was not done, giving us a total of 44 different investigations.

The industries in our data set produced a broad range of products, including garlic, lumber, DRAMS, and steel, from a broad range of countries. Thirty two of the investigations involved allegations of dumping, two involved allegations of subsidization, and ten involved allegations of both dumping and subsidization. Details of how we constructed our data set are given in the Appendix.

Table 1 summarizes the percentage change in various variables over the USITC's three year period of investigation for the industries in our sample. Of these 41 industries, 36 saw their real revenue decline over the period of investigation, and for 24 of these, the decline was greater than 10%. Twenty nine of these industries saw their output decline over the period of investigation, and for ten the decline was greater than 10%. Thirty five saw their real price decline over the period of investigation, and for 17 the decline was greater than 10%. Forty of the 41 saw either their output or their real price decline over the period of investigation; 24 of the 41 saw both their output and their real price decline over the period of investigation.

Reports published by the USITC provided the data on prices (P_d, P_u, and P_f) and quantities (Q_d, Q_u, and Q_f), as well as USITC staff estimates of the elasticities ϵ_A, σ, η_d, and η_f. With this data, it is possible to compute the shift parameters of the model for both the initial year and the final year of the USITC's three year period of investigation.[20]

By substituting a given shift parameter for the final year of the investigation into the

model using the other shift parameters for the initial year of the investigation, we compute a new equilibrium, and compare this to the observed revenues, prices, and quantities of the domestic industry for the initial year. This gives us an estimate of the independent effect of the change in that relationship over the period of investigation.

To illustrate, the first investigation in our data set is dumped digital readouts consoles from Japan. The real revenue of the U.S. producers of consoles for digital readouts fell by 14.5% over the period of investigation. The change in aggregate demand for the product would, in the absence of any other changes, have caused domestic industry revenue to decline by 12.3%. Such a decline represents 84.5% of the observed decline of 14.5%.

Changes in relative quality over the period benefitted the industry: in the absence of any other changes, domestic industry revenue would have been higher by 0.5%. Changes in domestic supply also benefitted the domestic industry: in the absence of any other changes, domestic industry revenue would have been higher by 1.5%. These numbers are -3.5% and -10.5% of the change in domestic industry revenue. We do not have data on fairly traded imports, but know them to be small, so we assumed that all imports were unfairly traded.

The price of unfairly traded imports decreased in real terms over the period of investigation. This decrease lowered domestic industry revenue by 4.8%, holding all other demand and supply parameters constant. This figure is 33% of the 14.5% decline in real domestic industry revenue over the period of investigation.

We also estimated the upper bound effects of the unfair practice(s) on the domestic industry revenue and output. The methodology used here is that used in Kelly and Morkre (1998). The technique for most investigations is to raise the price of the unfairly traded imports

by the amount of the countervailing duty margin and/or antidumping margin, and compute new equilibrium prices and outputs.

For those cases of price discrimination dumping where the data is available we computed a new equilibrium by maximizing the profit of the producers of the unfairly traded imports subject to the constraint that the foreign producers had to charge the same price in their home market as they did in the U.S.[21]

These are upper bound estimates, which overstate the actual effect of the unfair practice for a number of reasons. First, they rely upon the countervailing duty and dumping margins computed by Commerce. The consensus of opinion is that the methods and practices of Commerce significantly bias these margins upward.[22] As the margins are biased upward, so will be the injury estimates computed from them.

Second, dumping and subsidy margins are computed by Commerce on the value of the product at the (foreign) factory gate. The price of the product sold in the United States will be the price at the factory gate plus the costs of transportation (which includes freight and insurance) and ordinary tariffs (as opposed to AD or CVD duties). Although some of these costs will be proportional to the value of the product, others will not. Because of this, when the price of an unfairly traded product is raised by the amount of the margin at the factory gate, the price of the good in the United States will increase by proportionally less than the margin. However, our methodology assumes that price in the United States rises by the amount of the margin and therefore overstates somewhat the effect of unfair trade practices on domestic industry.[23]

Third, we model the domestic industry as being perfectly competitive and the victim of unfair practices by foreign firms that, in the case of price discrimination dumping, behave as

monopolists. This combination of assumptions maximizes the impact of unfair imports on the domestic industry.[24] This market structure is, however, often at considerable variance with reality. There are cases where foreign industries are highly fragmented, such as shop towels from Bangladesh, and/or involve firms from several different countries.[25] Such circumstances would tend to make it more difficult for foreign firms to coordinate their activities sufficiently to behave as the tight cartels that our assumptions imply, and are inconsistent with international price discrimination with large dumping margins.

Fourth, price discrimination can be eliminated not just by raising the price that a foreign firm sells its product for in the U.S., it can also be eliminated by lowering the price that the firm charges in its home market. Where we had data on the quantity that was sold in the home market, we were able to compute partial pass through injury estimates. Where we did not have this data, we were forced to make full pass through injury estimates, that is, we assumed that in the absence of dumping the unfairly traded imports would be higher by the full amount of the dumping margin. Because full pass through injury estimates are higher than partial pass through injury estimates,[26] this will overstate the true injury to the domestic industry.

There were ten cases in which the imports in question were alleged to be both dumped and subsidized. For two of these, the subsidy margin turned out to be zero. For six cases the USITC majority "cross-cumulated," that is, it combined the injury from the practice of subsidization with the injury from dumping in determining whether or not the domestic industry was materially injured. For these cases we computed the effect of the unfair practices by combing the dumping margin with the countervailing duty margin. For two industries the USITC majority did not cross cumulate its injury determinations, and so for these two cases we

computed separate estimates of the effects of dumping and the effects of subsidization. Therefore, there are 46 different sets of estimates of injury to the domestic industry from dumping and/or subsidization.

Table 2 summarizes our estimates of the effects of changes in aggregate demand, relative quality, domestic supply, fair import supply, and unfairly traded import price over the three year period of investigation on revenue for the 44 investigations. The final row presents a summary of our upper bound estimates of the effects of the unfair practice on domestic industry revenue in the final year of the investigation, that is, the unitary approach's measure of injury.

The median total revenue decrease was 13.6 %. Changes in aggregate demand had the largest effect, decreasing domestic industry revenue by 5.3 %, or 41.7 % of the total median decrease. Changes in relative quality decreased domestic industry revenue by 1.0 % (7.9%). Changes in domestic supply and fair import supply caused decreases of revenue of 0.6 % (4.7%) and 0.7% (5.5%). Changes in unfairly traded import price decreased domestic industry revenue by 3.7 % (29.1%).

From the first row of Table 2, we see that five industries saw their revenue increase over the period of investigation, two saw their revenue decrease by less than 5%, ten saw their revenue decrease by between 5% and 10%, and 24 saw their revenue decrease by more than 10%. The second row shows that eight industries benefitted from changes in aggregate demand over the period of investigation, 13 had revenue losses of less than 5%, eight had revenue losses of more than 5% but less than 10%, and 15 had revenue losses of more than 10% due to changes in aggregate demand. The numbers in parentheses show the number above it as a percentage of all investigations in our sample. Nine industries did not compete with fairly traded imports, and

so the numbers in that row sum to 35.

In 36 of the 44 cases, changes in aggregate demand for the product in question caused revenue to decrease during the period of investigation. For a majority of the cases, the loss in revenue exceeded 10%. The growth of the U.S. economy was in recession in the fourth quarter of 1990 and the first quarter of 1991. However, the cases in which the estimates indicate that demand fell do not seem to be concentrated in this period, but rather appear to be evenly distributed throughout the sample period. In 29 cases changes in relative quality adversely affected domestic revenue. In 28 of the 44 cases, changes in domestic supply adversely affected domestic industry revenue. There were fairly traded imports in 35 of the 44 cases; in 22 of these 35, changes in fairly traded imports supply adversely affected domestic industry revenue. The price of unfairly traded imports decreased in real terms over the period of investigation in 37 cases, adversely affecting domestic industry revenue.

Changes in aggregate demand had the largest negative impact on domestic revenue in 20 cases, changes in relative quality in eight, changes in domestic supply in three, changes in fairly traded import supply in five, and changes in unfair import price in eight.

The final row of Table 2 summarizes our estimates of the injury to the domestic industry from the dumping and/or subsidization under the unitary approach. Since these estimates are always negative when the antidumping or countervailing duty margins are positive, there is no entry in the first column. The next to last column in the final row shows that for 13 of the 46 USITC injury determinations, the estimated effect of the unfair practice in the final year of the investigation was larger than any of the estimates of the effect of changes in other factors over the previous three years.

Table 3 presents comparable figures for changes in domestic industry output due to changes in supply and demand functions, and the upper bound estimates of the effects of dumping and/or subsidization.

Once again, in the majority of the cases, aggregate demand, relative quality, fair import supply, and unfair import price changed to the detriment of the domestic industry. In 34 of 44 cases, or 77.3%, domestic supply actually increased, which *ceteris paribus* would have caused domestic industry output to rise. In 19 of these cases the domestic industry revenue fell as a result of the supply increase (and in one case revenue increased as a result of a domestic supply decrease).

Changes in aggregate demand had the largest effect on domestic industry output in 18 cases. Changes in relative quality had the largest effect on domestic industry output in seven cases. Changes in domestic industry supply and fair import supply were the most important cause of injury in seven and four cases, respectively. The change in unfair import price had the largest negative effect on domestic industry revenue in eight cases.

For more than 60% of the cases the effect of the unfair practice on domestic industry output (that is, the unitary measure of injury from unfairly traded imports) was less than 5%. The effect of the unfair practice in the final year of the investigation caused a larger decrease in domestic industry output than any individual cause of injury to the domestic industry in 11 cases.[27]

In summary, industries that petitioned for relief from imports that they alleged were dumped and/or subsidized performed poorly on average, with their revenue, output, and price declining over the three years prior to their petition. However, these same industries generally

suffered from adverse changes apart from a decrease in price of the unfairly traded imports in question. Furthermore, more often than not adverse economic changes had a bigger economic impact upon the domestic industry than did the impact of unfair trade practices. Of the 39 USITC injury determinations where domestic industry revenue declined, for only seven (17.9%) was the estimated effect of the unfair practice greater than the revenue decline. Of the 34 USITC injury determinations where domestic industry output declined, for only 16 (47.1%) was the estimated effect of the unfair practice greater than the output decline. The majority of industries in our sample suffered hardship for reasons other than the unfair trade practice.

Sensitivity Analysis

The USITC staff typically reports its elasticity estimates as ranges. The elasticity parameters used in the calculations for Tables 2 and 3 were the mid-points of the USITC staff estimates. We have also done the same calculations using both the lower bound elasticity estimates and the upper bound elasticity estimates. Using the end-points of the ranges does not materially change the finding that the change in the price of unfairly traded imports was typically not the most important cause of injury to the domestic industry. The change in unfairly traded import price was the most important cause of declining revenue for six industries using the lower bound elasticity estimates, eight industries using the mid-point elasticity estimates, and seven industries using the upper bound elasticity estimates. The change in unfairly traded import price was the most important cause of declining output for six industries using the lower bound elasticity estimates, eight industries using the mid-point elasticity estimates, and six industries using the upper bound elasticity estimates.

As discussed above, when the underlying model is not linear, the sum of individual

changes due to changes in individual supply and demand functions will no longer add up to the observed change in revenue or output.

The numbers in Tables 2 and 3 were calculated by substituting the final year value of the shift parameter of interest while holding the values of the other shift parameters constant at their initial year values. Another way to perform these calculations would be to substitute the initial year value of the shift parameter of interest while using the final year values of all of the other shift parameters. This is therefore equivalent to asking, what would the performance of the industry have been if everything else had changed, except the particular supply or demand relationship in question. Because the underlying model is non-linear, this gives a different answer than the methodology used to compute Tables 2 and 3.

While the injury calculations are different, our conclusion that unfair import price is typically not the most important source of injury to the domestic industry remains valid. In only nine of 44 investigations was the change in the price of unfairly traded imports the most important cause of declining revenue, and for only seven of 44 investigations was it the most important cause of declining output.

V. COMPARING UNITARY AND BIFURCATED INJURY ESTIMATES

The debate among USITC Commissioners as to the correct way to measure injury from unfairly traded imports was, to put it mildly, a spirited one. Was this debate warranted? Do the approaches give significantly different answers?

The first investigation in our study showed very different injury estimates between the two approaches. As discussed above, the revenue of domestic producers of digital readout

consoles declined by 14.5% in real terms over the period of investigation. The bifurcated injury estimate was 4.8%. The unitary injury estimate was 15.4% using the partial pass through model, and 21.0% using the full pass through model. Although the Commissioners who used the bifurcated approach tended to be more likely to find that the domestic industry was materially injured or threatened with material injury from unfairly traded imports than were those Commissioners who used the unitary approach, in this case the four Commissioners who relied on the bifurcated approach[28] voted negative, while the two Commissioners who relied on the unitary approach[29] found material injury to the domestic industry from unfairly traded imports.

We can point to examples such as dumped DRAMs from Korea, where the bifurcated injury estimate was large (84.8%) while the unitary injury estimate was not (4.1%). We also find examples where both the unitary and the bifurcated estimates were large, such as dumped stainless steel flanges from India and Taiwan, where the unitary injury estimate was 33.6%, and the bifurcated injury estimate was 13.3%. Then there are examples where neither the unitary nor the bifurcated injury estimate was large, such as dumped shop towels from Bangladesh, where the unitary injury estimate was 1.2%, and the bifurcated injury estimate was .01%.[30]

We computed a correlation coefficient for our unitary injury estimates with our bifurcated injury estimates. The correlation coefficient is .23, which is not statistically significant at a 5% level.[31]

One lump or two? It is an important question. In general, the unitary approach and the bifurcated approach will give different injury estimates.

VI. CONCLUSION

For more than twenty years the predominant approach used by the USITC to determine whether or not unfairly traded imports have caused material injury to a competing domestic industry has been the bifurcated approach. One criticism of this approach is that it fails to distinguish between injury from unfairly traded imports from other sources of injury. This shortcoming has caused USITC determinations to be rejected by reviewing bodies (U.S. courts and the WTO).[32]

Our results indicate that this concern is a serious one. A variety of industries that have performed poorly have petitioned for protection from unfairly traded imports. However, competition from unfairly traded imports is only one of the problems that they face, and more often than not, it is not the most important source of their difficulties.

The unitary approach, which compares the actual performance of a domestic industry with a simulation of what that performance would have been if the industry had not had to compete with unfairly traded imports, in every case we examine gives a very different measure of injury than the bifurcated approach. This suggests that there are domestic industries that have suffered lower revenue and output because they have had to compete with dumped or subsidized imports that will not be able to obtain import relief from a USITC relying on the bifurcated approach.

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APPENDIX

Our principal data sources are the USITC reports for final antidumping and countervailing duty investigations conducted between 1989 and 1994. During this period there were 97 final reports, covering 207 antidumping investigations and 49 countervailing duty investigations. An investigation refers to a particular product from a particular country that is either dumped or subsidized.

U.S. law requires the USITC to cumulate imports from different countries in analyzing injury under a broad variety of circumstances. We followed the USITC in this regard: when the USITC majority cumulated imports in their analysis, so did we. For example, Investigation Numbers 731-TA-532 through 537 covered certain dumped circular, welded, non-alloy steel pipes and tubes from Brazil, South Korea, Mexico, Romania, Taiwan, and Venezuela. The USITC cumulated imports from Brazil, South Korea, Romania, Taiwan and Venezuela, but not Romania. As a result, we treated these six investigations as two cases. The competing domestic industry was the same in both cases.

The exact boundaries of industry definition are not clear, and as Palmeter (1987) documents, there do not appear to be any clear principles to industry definition. Petitioners (the domestic industry) and respondents (importers) frequently argue for different definitions, and different Commissioners use different definitions in their analysis. We used the domestic industry definition that was used by the USITC majority.

Data on prices and quantities came from the USITC reports. Data is frequently withheld from publication to preserve confidentiality, and so we were limited to 44 cases.

Data on countervailing duty and dumping margins came from the Federal Register

notices of the Department of Commerce, as reprinted in the USITC reports. We used the "all other" rate, which is a weighted average for all firms investigated by Commerce.

The elasticities came from memoranda prepared in each case by the Office of Economics of the USITC. These memoranda were prepared by the USITC economists based on their review of the evidence in the investigations and were informed by the views of lawyers and economists for petitioners and respondents.

Calculations were done using GAMS, a software package designed for modeling.

Table 1
Performance of Industries That Petitioned for Relief

Magnitude	>0	<0, >-5.0	<-5.0, >-10.0	<-10.0	Median
Revenue	5	2	10	24	-13.6
Output	12	12	7	10	-2.9
Price	6	7	11	17	-9.1

Table 2
Sources of Change to
and Effect of Unfair Practice on
Domestic Industry Revenue

	>0	<0, >-5.0	<-5.0, >-10.0	<-10.0	Largest Change	Median
Revenue	5 (12.2%)	2 (4.9%)	10 (24.4%)	24 (58.5%)		-13.6
Aggregate Demand	8 (18.2%)	13 (29.5%)	8 (18.2%)	15 (34.1%)	20	-5.3
Relative Quality	15 (34.1%)	12 (27.3%)	10 (22.7%)	7 (15.9%)	8	-1.0
Domestic Supply	16 (36.4%)	20 (45.5%)	2 (4.5%)	6 (13.6%)	3	-0.6
Fair Import Supply	13 (29.5%)	13 (29.5%)	5 (11.4%)	4 (9.1%)	5	-0.7
Unfair Import Price	7 (15.9%)	22 (50.0%)	6 (13.6%)	9 (20.5%)	8	-3.7
Effect of Practice		26 (56.5%)	5 (11.4%)	15 (32.6%)	*13*	

Table 3
Sources of Change to
and Effect of Unfair Practice on
Domestic Industry Output

	>0	<0, >-5.0	<-5.0, >-10.0	<-10.0	Largest Change	Median
Output	12 (29.3%)	12 (29.3%)	7 (17.1%)	10 (24.4%)		-2.9
Aggregate Demand	8 (18.2%)	17 (38.6%)	9 (20.5%)	10 (22.7%)	18	-4.4
Relative Quality	15 (34.1%)	16 (36.4%)	7 (15.9%)	6 (13.6%)	7	-0.8
Domestic Supply	34 (77.3%)	2 (4.5%)	2 (4.5%)	6 (13.6%)	7	8
Fair Import Supply	13 (29.5%)	14 (31.8%)	4 (9.1%)	4 (9.1%)	4	-0.6
Unfair Import Price	7 (15.9%)	26 (59.1%)	5 (11.4%)	6 (13.6%)	8	-2.7
Effect of Practice		29 (63%)	6 (13%)	11 (23.9%)	*11*	

FOOTNOTES

* The views expressed in this paper do not necessarily reflect the views of the Federal Trade Commission or any individual Commissioner. We wish to thank Sandy Lin and Van Vu Brantner for research assistance, and Thomas F. Jennings, Denis Breen, and two anonymous referees for helpful comments on an earlier draft.
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1. See Durling and McCullough (2005).

2. *Ibid.*

3. *Ibid.*

4. Substantial cause is defined as a cause "which is important and not less than any other cause." 19 U.S.C. § 201 (b)(4). Prior to 1974, increased imports had to be a more important cause of injury than all other causes in aggregate. This was relaxed by the Trade Law of 1974, so that all that was necessary was that injury from increased imports be more important than any other individual cause of injury.

5. *United States Steel Group* v. *U.S.* 96 F.3d 1332 (Fed. Cir. 1996) at 1361-2, affirming *United States Steel Group* v. *U.S.* 873 F. Supp. 673 (CIT 1994).

6. Advantages of the unitary approach are given by Knoll (1989) and Cass and Knoll (1997). The bifurcated approach is discussed by Morkre and Kruth (1989) and Kaplan (1990).

7. The bifurcated approach to unfairly traded imports differs from that used for safeguards in several ways. First, the material injury standard of Title VII is lower than the serious injury standard of Section 201. Second, in a safeguards investigation the USITC will find affirmatively only if it finds that increased imports are at least as important a cause of injury to the domestic industry as any other cause. In contrast, Commissioners who use the bifurcated approach in a Title VII investigation will find affirmatively provided that unfairly traded imports have been a non-*de minimus* cause of injury to the domestic industry. Third, in a Section 201 investigation the USITC considers the aggregate effect of increased imports from all sources on the domestic industry, while in a Title VII investigation the USITC only considers the effect of imports that the Commerce Department has determined to be unfairly traded.

8. Finger, Hall and Nelson (1982) at 465; *see* also Hansen and Prussa (1995) at 311. Suomela (1993) at 44 argues that "[A]lthough the intent of the entire Congress appears to have been to bring U.S. law into conformity with the [General Agreement on Tariffs and Trade, the forerunner of the WTO], the intent of the subcommittees was to provide an escape-clause form of relief."

9. The USITC staff's original model was the Comparative Analysis of Domestic Industry Condition, or CADIC, developed by Boltuck (1991). This was then followed by the Commercial Policy Analysis System, or COMPAS.

10. See Cass (1997) and Durling and McCullough (2005).

11. See Durling and McCullough (2005).

12. *Magnesium from China, Russia, and Ukraine*, U.S. International Trade Commission, May, 1995. ["*Magnesium*"]

13. *Gerald Metals, Inc.* v. *U.S.*, 132 F. 3d 716 (Fed. Cir. 1997) at 719-20.

14. Fairly traded and unfairly traded magnesium appear to have been sold at the same price. This is suggested by the opinion of Commissioner Crawford (*Magnesium*, p. 48) The actual pricing data are confidential. Note that for the dumping margin Commerce did not rely on observed prices in Russia but rather resorted to "Best Information Available," which was the margin alleged by the petitioner. 60 F.R. 1660, March 30, 1995.

15. World Trade Organization, "United States – Antidumping Measures on Certain Hot-Rolled Steel Products from Japan," Report of the Appellate Body, WT/DS184/AB/R, July 24, 2001, at page 74, paragraph 223.

16. Other economists who have discussed causation in safeguard actions under U.S. law include Grossman (1986), Pindyk and Rotemberg (1987), and Rousslang (1988). Irwin (2003) uses the Kelly methodology to study U.S. safeguards actions that have been overturned by the WTO because they fail to distinguish injury to the domestic industry caused by increased imports from other sources of injury. He finds that for most of these actions increased import supply was the substantial cause of injury to the domestic industry.

17. See Armington (1969) at 167.

18. Details of how the shift parameters are calculated are in Morkre and Kelly (1994).

19. Details on these industries, as well as individual case estimates, are given in Kelly and Morkre (2002), available as of this writing at http://www.ftc.gov/be/morkre.pdf.

20. *Op. cit.* Endnote 14.

21. These were dumped consoles for digital readouts from Japan, dumped motorcycle batteries from Taiwan, dumped martial arts uniforms from Taiwan, dumped residential door locks from Taiwan, dumped cement and clinker from Japan, and dumped groundwood paper from Finland, Belgium, France, Germany, and the United Kingdom.

22. See Cass and Boltuck (1996) at 365-8, Boltuck and Litan (1991), Horlick (1989) at 146, and Palmeter (1991) at 20.

23. The extent of the overstatement depends on the importance of international freight charges (transportation plus insurance). A study by Hummels (1999) using 1994 data from the U.S. Census shows that freight charges vary considerably across categories of imports. They exceed 20 % (of total import value) for the several products including: meat and meat products (21.1 %), crude fertilizer (21.1 %), natural gas (23.6 %), coal and coke (28.6 %). In general the overstatement equals the ratio of freight charges to total value of imports.

24. This conclusion also receives support from efforts of one of the authors to model the adverse effect of a foreign subsidy on domestic industry under different market structures. The specific model used has two substitute products produced by two firms (one domestic the other foreign), linear demands, and constant marginal costs. The foreign firm benefits from a unit export subsidy. It can be shown that the adverse effect of a foreign subsidy is more severe for domestic industry under perfect competition than under Bertrand competition. Moreover, the subsidy effect is more severe under Bertrand competition than under Cournot competition. Bertrand competition is more competitive-like than Cournot competition. Unpublished materials available upon request.

25. For example, industrial belts is a price dumping case involving the following eight countries: Israel, Italy, Japan, Singapore, South Korea, Taiwan, the United Kingdom, and West Germany.

26. There were six cases where we were able to compute partial pass through estimates. On average, the partial pass through injury estimate is 59.33% of the full pass through injury estimate.

27. There was also a *de facto* tie in the case of dumped pipe from Brazil, Mexico, South Korea, Taiwan, and Venezuela: the effect of the unfair practice was to decrease output by 11.43%, while the change in aggregate demand decreased output by 11.45%.

28. Commissioners Eckes, Lodwick, Newquist, and Rohr.

29. Commissioners Brunsdale and Cass.

30. Commissioners Newquist, Rohr, and Nuzum found material injury here.

31. If we limit the correlation analysis to only the 36 USITC determinations in which at least one Commissioner determined that the domestic industry had suffered material injury (regardless of the reason(s)), the correlation coefficient is only .20, which is again not statistically significant at the 5% level.

32. See Durling and McCullough (2005).