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U.S. Antidumping

Much Ado about Zeroing

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Abstract

The United States use of "zeroing" in its antidumping procedures has become a political flash point threatening some legitimacy of the WTO's dispute settlement system. This paper provides a positive analysis of the zeroing issue, explains how it has evolved and who is likely to be affected by it. The authors use economic theory to identify how export price volatility accentuates the impact of zeroing on the size of U.S. antidumping tariffs and review the WTO caseload over zeroing. They describe the impact that the U.S.'s retrospective system for assessing antidumping margins has on zeroing and the political economy implications as the U.S. struggles to generate policy reform. The authors survey existing evidence of the impact of the zeroing on dumping margins and contribute their own evidence to suggest that zeroing is just as likely to impact the size of U.S. antidumping duties applied on developing country exports as developed economy exports. Thus while developed economies have filed the vast majority of WTO disputes against the U.S. over zeroing, the authors conclude that zeroing is also likely a relevant issue for developing country exporters as over 60 percent of the product lines currently subject to U.S. antidumping are exported by developing countries.

This paper—a product of the Trade and Integration Team, Development Research Group—is part of a larger effort in the department to evaluate the impact that international institutions have on the market access. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at cbown@worldbank.org. .

U.S. Antidumping: Much Ado About Zeroing

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1. Introduction

One of the Uruguay Round's more notable achievements was the establishment of the WTO Dispute Settlement Understanding (DSU). When the Uruguay Round negotiations were initiated in 1986 there was a growing consensus that the original GATT dispute settlement system was ineffective (Hudec, 1993). Compliance was a key failing of the old system; GATT contracting countries either blocked or simply ignored the findings of Panels.[1] This was particularly problematic and embarrassing for high profile trade disputes involving both the United States and the European Communities (EC), e.g., bananas, beef hormones, and even tuna-dolphin. The failure to resolve these prominent disputes undermined the credibility of the GATT dispute process.

Consequently, a dispute settlement process that improved on both the timeliness and enforceability of dispute decisions was one of the major goals of the Uruguay Round. In many respects the WTO DSU does represent a significant advance over the toothless GATT system.[2] Yet, frustrations remain. In theory the new system induces compliance by increasing the possibility that plaintiffs will obtain the right to levy compensatory/ retaliatory tariffs against defendants who do not adjust their policies. In reality, compliance has continued to be a problem on occasion. Countries continue to argue about

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[1] The need to produce consensus also affected how Panels constructed their rulings as the three panelists knew that their report had also to be accepted by the losing party in order to be adopted. Accordingly, there was an incentive to rule not solely on the basis of the legal merits of a complaint, but to aim for a "diplomatic" solution by crafting a compromise that would be acceptable to both sides.

[2] Hudec (1999) refers to increasingly legalized WTO dispute settlement as one of "jurist's jurisprudence" when compared with the GATT system's "diplomat's jurisprudence" (Hudec, 1970). Jackson (1997) and Hoekman and Kostecki (2009, chapter 5) also provide useful discussions of the evolution of the GATT and WTO dispute systems. Bown (2009) emphasizes the implications of WTO dispute settlement for developing countries.

what constitutes compliance and half measures can delay even "compensatory" tariffs for years.[3]

While the GATT dispute system was damaged by its failure in highly prominent cases, the shortcomings of WTO DSU are most apparent in a series of seemingly minor disputes involving the esoteric practice of zeroing in antidumping (AD) investigations. Zeroing refers to the practice of replacing the actual amount of dumping that yield negative dumping margins with a value of zero prior to the final calculation of a weighted average margin of dumping for the product under investigation with respect to the exporters under investigation. Zeroing drops transactions that have negative margins and hence increases the overall dumping margins and the resulting size of the applied antidumping duty. As we will show zeroing makes it extremely difficult for a firm to avoid dumping. This makes zeroing a major irritant to exporters but highly desired by import-competing industries

Over the past decade the WTO Appellate Body (AB) has heard more than a dozen disputes involving zeroing and <u>each</u> time has found that the practice violates the WTO

[3] Wilson (2007) notes that the respondent country has eventually brought itself into compliance in the vast majority of WTO disputes that have resulted in adverse Panel and Appellate Body rulings. Bown and Pauwelyn (2010) provide a collection of research examining the WTO dispute settlement process for the roughly dozen cases over the 1995 – 2007 period that resulted in at least a period of noncompliance and thus WTO Article 22.6 arbitration rulings that authorized formal retaliation by the complainants. Examples of such disputes include *Brazil – Aircraft Subsidies* (Canada), *Canada – Aircraft Subsidies* (Brazil), *EC – Bananas* (Ecuador), *EC – Bananas* (U.S.), *EC – Hormones* (Canada), *EC – Hormones* (U.S.), *U.S. – Antidumping Act of 1916* (EC), *U.S. – Continuing Dumping and Subsidy Offset Act (Byrd Amendment)* (Brazil, Canada, Chile, EC, India, Japan, Korea, Mexico), *U.S. – Foreign Sales Corporations (FSC)* (EC), *U.S. – Internet Gambling* (Antigua and Barbuda), and *U.S. – Upland Cotton* (Brazil).

Antidumping Agreement (ADA).[4] The first zeroing case was initiated by India in 1998 against the EC (*EC – Bed Linen*). [5] All but one of the remaining cases has involved the U.S. as respondent. The EC changed its antidumping procedures after losing at the WTO and no longer "zeros." The U.S., by contrast, has not yet fully complied with the WTO decisions and many WTO AB cases involving the U.S.'s zeroing practice remain unresolved.

The WTO's current inability to resolve the zeroing issue is reminiscent of the enforcement problems that plagued the GATT dispute system. While the DSU may be working more or less as designed, is the zeroing issue a first indication that the WTO DSU must be reformed? Put differently, is zeroing an issue that could be better resolved through multilateral negotiations? If so, who should be at the negotiating table and what is at stake?

This paper presents a positive analysis seeking to provide some perspective on the zeroing issue. How did we get here? What exactly is zeroing? Why was the EC able to stop zeroing but not the U.S.? Are developing country exporters also exposed to zeroing? To date zeroing disputes have been dominated by developed countries – not only on the respondent side, but also on the complainant side. Should we expect a blizzard of zeroing complaints filed by developing countries? Even if the disputes fail to arise, is there evidence that zeroing impacts exports from developing countries as much as those from

[4] At least four more cases involving zeroing are pending AB decisions.

[5] Janow and Staiger (2003) and Grossman and Sykes (2006) provide an analysis of a variety of legal-economic issues associated with the first zeroing dispute of *EC – Bed Linen*. See also Crowley and Howse (2010) which examines the zeroing issues in *U.S. – Stainless Steel (Mexico)*.

developed countries? Finally, we will try to get a better sense of zeroing's importance. Is it a "big" issue? Or perhaps is this whole mess over zeroing – with apologies to William Shakespeare – much ado about nothing?

Anticipating our conclusions, we find that a unique set of characteristics have conspired to make zeroing such a bothersome issue. The WTO legislative history and technical nature of the zeroing violation likely contributes to the U.S.'s feeling that its current policy is in compliance. The U.S.'s retrospective duty collection system complicates the task of complying with the WTO AB decisions. By contrast, the prospective nature of the EC's duty collection system made zeroing a much less economically important issue, explaining why it was relatively easy for the EC to comply.

U.S. intransigence alone does not explain why zeroing consumes so much of the WTO dispute settlement caseload, which thus serves to heighten the political sensitivity to the issue. The U.S. has antidumping duties on thousands of companies, on hundreds of separate products, and on more than 50 different WTO members. Given that the U.S. "zeros" in <u>every</u> AD margin review calculation, the scope of the potential violation is enormous. The WTO AB could become a full-time zeroing body![6]

The rest of this paper proceeds as follows. Section 2 provides a discussion of the economic relevance of the zeroing issue in the context of the U.S. antidumping caseload. In

[6] It also should be mentioned that the AB may have inadvertently exacerbated the issue of a high volume of zeroing-related cases through its initial choice of addressing zeroing in a piecemeal fashion. Bown and Sykes (2008) describe the implications of the AB's narrow and iterative approach to ruling on zeroing, comparing it to a more expansive approach that might have clarified the full scope of permissibility and impermissibility of zeroing across all of the procedures of the antidumping process in which it might be used.

section 3 we more formally introduce antidumping and zeroing, and we identify how key factors such as export price volatility are likely to accentuate the impact of zeroing on the calculation of dumping margins. Section 4 then reviews the WTO dispute settlement caseload over the zeroing issue. We describe in detail the U.S.'s retrospective system for assessing antidumping margins and the impact that this has on zeroing in section 5. Section 6 focuses on the existing evidence of impact of the zeroing methodology on dumping margins. Section 7 provides our own empirical evidence into the question of zeroing's impact, and we find that zeroing is as likely to impact the AD margins on developing country exports (which has typically not been brought forward to WTO dispute settlement) as AD margins on developed economy exports (which has frequently been brought to the DSU). Finally, section 8 concludes.

2. The Economic Relevance of Zeroing

Whether zeroing is a "big" or "small" issue depends on one's perspective as well as recognition of the likely policy alternatives in a world without zeroing. Let's begin by discussing some factors that suggest that zeroing is a major trade issue.

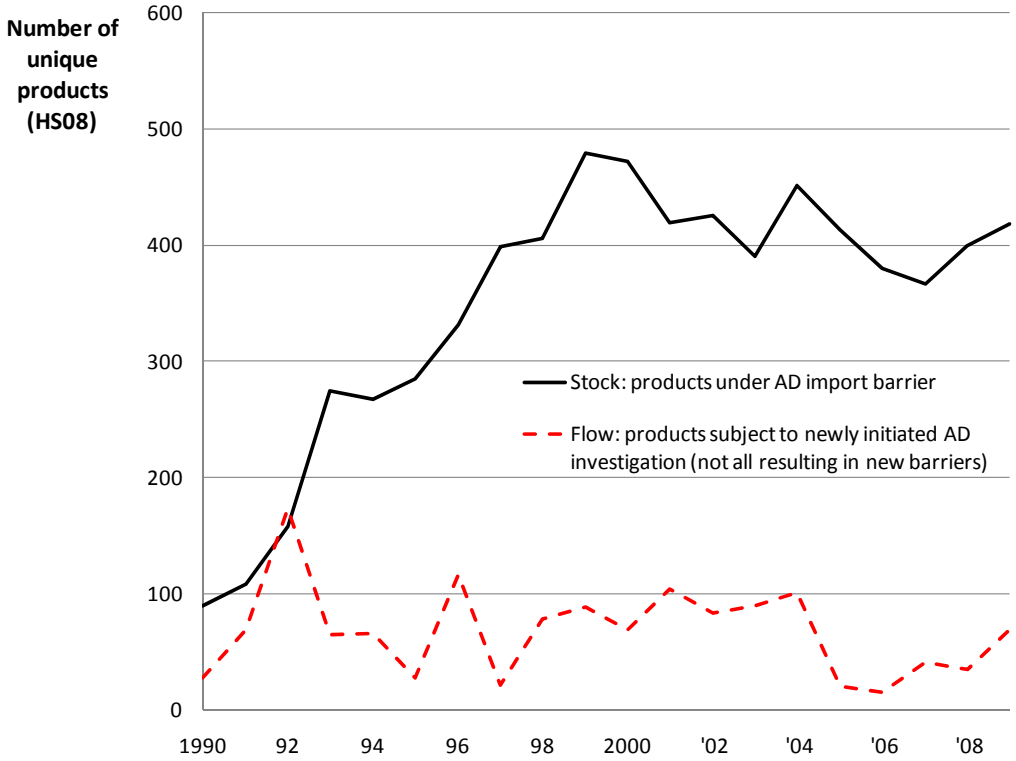
Scope – Number of cases: In Figure 1 we provide one measure of U.S. AD activity. Here we plot the number of products affected by U.S. AD actions since 1990.[7] The solid line depicts the stock of products under order while the dashed line shows the

[7] In this figure we follow the common practice of using the 8-digit tariff line to define what constitutes a product.

number of new products being investigated in each year. As shown, U.S. Department of Commerce (USDOC) currently has orders on more than 400 products. The dashed line reveals that about 75 products are subject to new investigations each year, though with fluctuations broadly consistent with macroeconomic fluctuations (Knetter and Prusa, 2003). This means that in addition to the large stock of products that have been "zeroed" many new additional WTO zeroing violations are likely occurring each year.

Moreover, given that most products are exported by multiple firms and by multiple countries these numbers are likely a lower bound on the number of potential zeroing complaints. This raises the real possibility that the U.S. (and the WTO AB) could potentially be confronted with hundreds of zeroing disputes.

Figure 1 – Stock and Flow of U.S. Antidumping Measures, 1990-2009



Source: Compiled by the authors from Bown (2010a). The stock is computed on a yearly basis as the number of 8-digit Harmonized System (HS) products subject to U.S. preliminary and/or final AD measures. The flow is computed on a yearly basis as the number of 8-digit HS products subject to U.S. AD investigations, some of which may not result in a duty. Since the data relies on the HS system, the stock does not reflect any imposed or removed AD measures that were imposed before 1988 under the TSUSA product classification system.

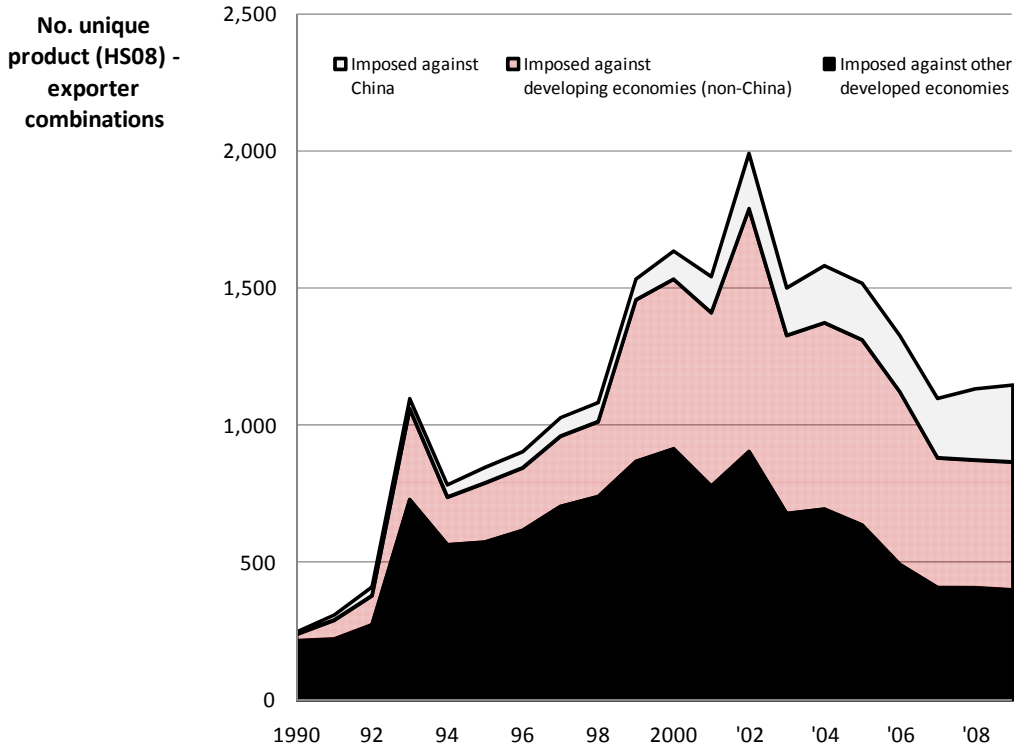
Scope – Countries Affected: Despite a dispute settlement history which has mainly entailed industrialized countries challenging the U.S.'s use of zeroing in AD cases, there is every reason to believe that zeroing is just as important for developing country exporters. First, developing countries are increasingly affected by U.S. AD. In Figure 2 we report the stock of U.S. AD measures in effect for each year from 1990 through 2009. In this chart we include information both for the products and also the exporting country. We divide the exporting countries into three groups: developed countries, China, and other

(non-China) developing countries.[8] The information in Figure 2 indicates that over 60% of the stock of products covered by U.S. AD orders in place between 2006 and 2009 were on exports sourced from developing countries, more than doubling the share of total products affected at the onset of the WTO in 1995. The stock of measures affecting developing country exports has been increasing over time, as exports from many emerging economies have continued to expand.[9] Looking forward, it is reasonable to think that this emerging pattern of AD measures involving developing countries will also be seen in the pattern of zeroing complaints at the WTO AB. Even though developing countries have currently only filed a few complaints challenging the practice, in all likelihood if the U.S. continues its non-compliance stance there will be more and more zeroing cases against the U.S., especially given that the AB's position toward zeroing is well established.

[8] We break out China separately due to the heavy incidence of AD cases against it (Bown, 2010c).

[9] Note that it is notoriously difficult to compute estimates of the incidence of trade barriers such as antidumping, thus here we address this not by attempting to construct a measure in value terms but instead by examining the count of 8-digit Harmonised System (HS) and exporter combinations subject to U.S. AD measures. On a value-weighted basis, it is likely that a larger share of the incidence of the stock of U.S. AD activity falls on developed economy exports, given the larger dollar values associated with their trade. Separately, it should also be noted that while the U.S. frequently uses AD to restrict imports from middle income economies such Brazil, China, India, Indonesia, South Africa, Thailand and Turkey, the U.S. has typically not used AD to restrict imports sourced from low income economies, with the exception of Vietnam.

Figure 2 – The Stock of U.S. Antidumping Measures Imposed and In Place, 1990-2009



Source: Compiled by the authors from Bown (2010a). The stock is computed on a yearly basis as the number of 8-digit Harmonized System (HS) product-exporter combinations subject to U.S. preliminary and/or final AD measures. Since the data relies on the HS system, the stock does not reflect any imposed or removed AD measures that were imposed before 1988 under the TSUSA product classification system.

Impact and Incidence: To date, the best evidence we have suggests that were the U.S. to stop zeroing then perhaps as much as half of all U.S. AD measures would be removed and the duties in the other cases would fall significantly. Our analysis also suggests that dumping margins calculated, and hence duties imposed on developing countries, are as likely to be affected by zeroing as those imposed on developed countries. As we will explain, zeroing particularly punishes suppliers with export price variation. We collect import pricing data for a number of the biggest AD disputes over the past decade (many of which were the basis for WTO zeroing complaints) and review the price

volatility for developed and developing countries. We find that developing countries have about the same price variation and hence their AD duties are likely to be similarly affected by zeroing.

While zeroing is likely to impact developing country exporters and may lead to escalating tensions through WTO dispute settlement, there are other factors suggesting that zeroing may be less important than the above discussion indicates.

Antidumping and WTO AB: First, when it comes to dispute settlement, a broad and general point is simply that WTO disputes over AD are highly likely to continue to occur for reasons that have nothing to do with zeroing. Bown (2009, p. 80) estimates that over the 2001-2008 period, more than 30% of the entire WTO dispute initiation caseload involved challenges to just two policies: antidumping or countervailing duties, antidumping's sister "unfair trade" policy.[10] Much of this caseload of AD challenges confronted other countries' (and the U.S.'s) use of AD, let alone the issue of zeroing. Despite the large number of disputes involving zeroing one must remember that zeroing has been an issue in less than half of the AD cases appealed to the WTO. Even if there were no disputes involving zeroing, a large fraction of the WTO AB's workload would still involve antidumping and countervailing duty issues.

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[10] Only 15% of the dispute caseload during the WTO's first six years in existence (1995-2000) related to antidumping or countervailing duties. While a large share of the DSU caseload does involve challenges to many countries' use of antidumping, this is not to imply that most imposed AD measures get challenged through the DSU. In fact, it is quite the opposite. Bown (2009, p. 82) estimates that fewer than 7% of the total WTO membership's antidumping investigations that resulted in (more than 1600) imposed measures over the 1995-2008 period faced formal challenges through dispute settlement. Nevertheless this figure is much higher for the United States; Bown and Crowley (2010) note that almost 21% (27 out of 130) of the U.S. antidumping measures imposed against WTO members over the 1997-2006 period were challenged through formal dispute settlement, including a number via the zeroing cases we describe below.

There are a number of reasons why WTO disputes challenging AD frequently occur. Perhaps the most important explanation is the simple fact that the basic use of AD import restrictions has increased over time and across the WTO membership (Prusa, 2001).[11] Dozens of economies now have in place thousands of AD orders, and they are imposed and removed with great frequency. Nevertheless, it is unlikely that AD will go away any time soon, as most of the largest WTO members have adopted the policy and appear to appreciate its flexibility, for better or for worse. This is especially apparent in light of the global economic crisis of 2008-2010 in which many WTO members increased their use of the policy (Bown, 2010b), and yet this increased AD activity did not result in a massive and global protectionist backlash.

Trade Cost: Despite AD frequently being used in the U.S., the total value of trade affected by AD (let alone zeroing) may be relatively small.[12] Furthermore, any single country subject to U.S. AD actions likely has a similar fraction of its exports affected. In many cases the elimination of zeroing would just reduce the margin, not eliminate the order, which means the impact of zeroing on the amount of trade affected is considerably smaller than the impact of AD. The small dollar value involved is likely one reason why the specter of retaliation apparently has not induced the U.S. to alter its policy.

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[11] Bown (2009) discusses a number of other reasons contributing to why AD is a frequent subject of WTO disputes, including the transparency of the policy and because it does not require political coordination of adversely affected firms and hence has fewer free rider problems than those facing exporting firms subject to many other sorts of trade barriers.

[12] The issue is unresolved and two recent papers even provide different interpretations of the estimated impact of AD on trade flows. Vandenbussche and Zanardi (forthcoming) argue that the costs of AD are larger than generally recognized because it depresses overall bilateral trade, whereas Egger and Nelson (forthcoming) provide evidence that the impact on overall trade is small.

The Alternative Policy: Suppose zeroing were eliminated and this policy change resulted in significantly less use of antidumping by the U.S. Would this mean U.S. imports would be subject to a lot less protection? Perhaps not. More likely is that some new type of protection would emerge. What would be the alternative to antidumping? Given that countries appear to desire access to flexibility with their trade policy and the historical evidence of episodes in which there is "some" political-economy need to for some form of discretionary import protection, AD may be less worrisome economically than many other scenarios that might emerge.

3. Antidumping and Zeroing: The Theory

If a company exports a product at a price lower than the price it normally charges in its own home market, it is said to be "dumping" the product. If in addition the dumped imports are found to be causing, or threatening to cause, material injury to the competing domestic industry the WTO ADA allows governments to take action against dumping. The ADA contains rules that define how AD remedies should be implemented.[13] Of particular relevance for our discussion, the ADA states that the antidumping duty (ADD) can be no greater than the calculated dumping margin. In simplest terms a dumping margin of, say, 5%, means that on average the export price is 5% lower than the average home market price. The size of the dumping margin is therefore crucial, determining both if there is a right to levy the duty and also the size of the duty.

[13] Blonigen and Prusa (2003) provide a survey of the economic research literature on antidumping.

In the process of computing the ADD a government must aggregate the results of comparisons between the normal value and export prices. Hundreds or even thousands of individual transactions are aggregated to produce a single ADD. The ADA provides rules for how such calculations should be done. Zeroing refers to one particular step in the calculation. Zeroing is the practice of replacing the actual amount of dumping that yield negative dumping margins (i.e., export transactions for which the export price exceeds the calculated normal value) with a value of zero prior to the final calculation of a weighted average margin of dumping for the product under investigation with respect to the exporters under investigation. Because the zeroing method drops transactions that have negative margins, it has the effect of increasing the overall dumping margins.[14]

In practice zeroing is much easier to understand than the formal definition suggests. In Table 1 we present an example of a foreign firm's home and export sales in a given month.[15] We assume that the data in Table 1 represent net prices for separate transactions on a series of dates in the month of September.[16] To keep the example as simple as possible we will assume that each transaction is for the same volume, i.e., one unit. Governments compute dumping margins on a weighted average basis, but for the purposes of our illustration, the introduction of different quantities on different dates just

[14] There are two zeroing methods, simple and model. For purposes of this paper, we limit our discussion to just simple zeroing. Readers interested in the fine details of both methods should consult Prusa and Vermulst (2009).

[15] Example is drawn from Prusa and Vermulst (2009).

[16] Net prices are the exporter's prices following a series of adjustments. For example all expenses incurred to promote, sell, store, and transport the products are deducted from both export price and domestic price. In addition, various other adjustments, such as level of trade and accounting for physical differences are made.

serves to complicate the computations – and needless complication is a primary reason why AD is so misunderstood.

As seen, prices vary from transaction to transaction in both markets. As is often the case in the real world, on some dates the export price is below the home market price, on others the export price is above the home market price and occasionally, the same price is charged in both the markets.

Under ADA rules a government can calculate the difference in price on a transaction-by-transaction basis and then compute the weighted average of these price differences, i.e., the individual export transactions are compared with the individual domestic transactions made at or at about the same date as the export transactions concerned.[17]

In column (4) of Table 1 we compute the difference for each comparable transaction. Accordingly, for some comparisons the difference is positive (which means dumping) and for other comparisons it is negative. When we sum the weighted price differences we find that for all comparable transactions the cumulative difference is zero. Said differently, the dumping amount (35) for the two transactions with positive dumping is exactly equal to the amount (-35) for the five transactions with negative dumping. In this example, as long as the dumped and the non-dumped export transactions are allowed to offset each

[17] There are three common methods for calculating dumping margins: (i) a weighted average-to-weighted average comparison, (ii) a transaction-to-transaction basis, and (iii) a weighted average-to-transaction comparison. Zeroing has been used in all methods. For simplicity, we will just discuss zeroing in the context of the transaction-to-transaction approach. Prusa and Vermulst (2009) discuss all three methods.

other, the conclusion using the transaction-to-transaction method will be that there is zero dumping.

As clean and simple as the above calculations are, the U.S. has had a long practice of not computing the margins as described. Instead, in the process of the transaction-to-transaction comparisons the U.S. employs the practice of zeroing. In our example, and in fact in most "real world" cases, the use of zeroing leads to dramatically different margins. To see this, in column (5) of Table 1 we have computed the difference for each comparable transaction using zeroing. Each of the five negative margins is set to zero. In our example, the amount of dumping is 35, which implies a dumping margin of 3.9% (35 divided by the total export value of 900 = 0.039).[18]

[18] We note that this approach as adopted by the U.S. does however include all comparable transactions in the denominator (even though it zeroes many transactions in the numerator).

Table 1 – An Example of Zeroing

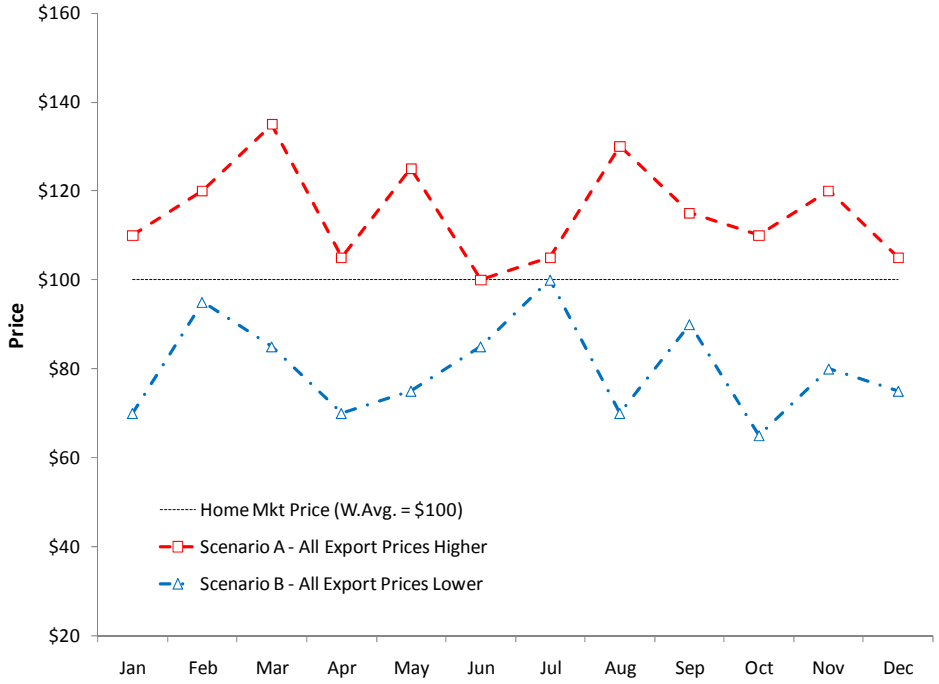
(1) Sales date	(2) Export transaction	(3) Home Mkt transaction	(4) Difference: No Zeroing	(5) Difference: Zeroing
2-Sep	75	90	15	15
4-Sep	75	95	20	20
8-Sep	95	95	0	0
10-Sep	100	95	-5	0
12-Sep	105	95	-10	0
16-Sep	105	105	0	0
18-Sep	110	105	-5	0
20-Sep	115	110	-5	0
24-Sep	120	110	-10	0
Wtd Avg. Price	100	100		
Dumping Value			0	35
Dumping Margin			0.0%	3.9%

Four important insights are gleaned from this example. First, zeroing can never lower the margin. Zeroing only drops negative margins. Second, zeroing treats some foreign prices as if they were something different than they actually were. On both September 12th and 16th the foreign firm charged $105 but a government using zeroing could treat the September 12th price as if it were just $95. Third, zeroing is driven by price variation over the sample period. If the foreign firm charged exactly the same price for all transactions then zeroing would not matter.[19] Fourth, zeroing can be the difference between no dumping (or a *de minimis* margin) and a positive dumping margin; i.e., whether an antidumping duty is applied at all.

[19] This statement can be generalized to account for "model" zeroing zeroing (Prusa and Vermulst, 2009).

We elaborate on the last two insights in Figure 3 and Figure 4. In Figure 3 we provide examples of hypothetical pricing data where zeroing does not change the ADD. In the figure we provide two different pricing scenarios over a 12 month period. In both cases we assume the foreign firm's home market price is constant at $100.[20] In Scenario A (dashed line, square markers) we consider a case when the foreign firm always charges an export price higher than $100. There is month-to-month variation but there is no dumping in any month. In Scenario B (dash-dot line, triangle markers) we depict the polar opposite situation. In this case the foreign firm always charges a lower export price than the comparable home market price. In this case the month-to-month pricing variation does not generate any potential offsetting margins.

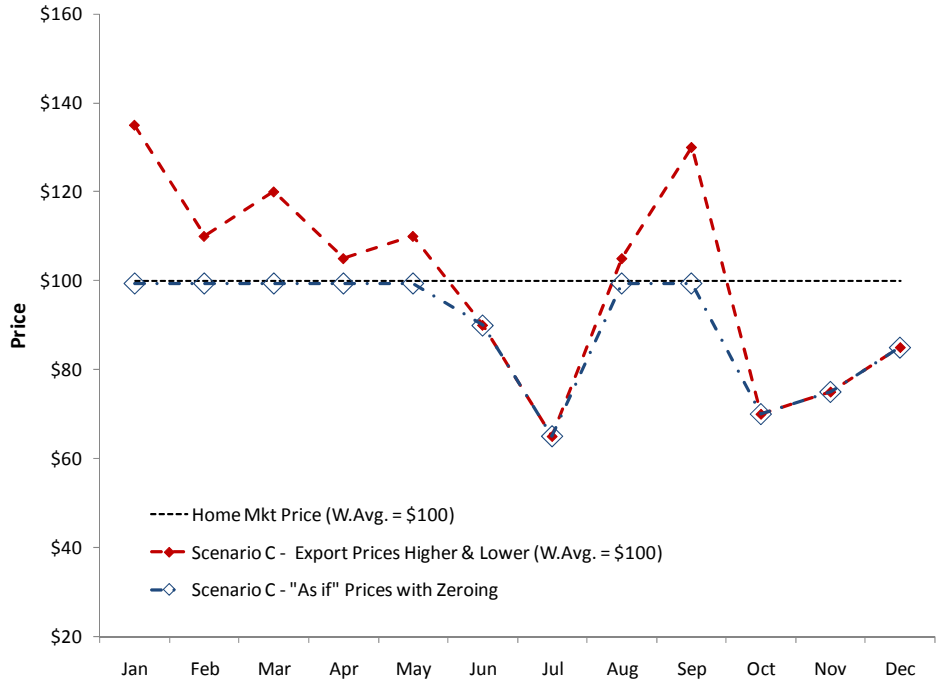
Figure 3 – Examples of Export Pricing When Zeroing Does Not Change Dumping Margin



[20] Alternatively, $100 could be the average home market price over the period.

Figure 4 depicts the more typical situation. We again assume the foreign firm's home market price is constant at $100. We now assume that in some months the foreign firm's export price is above $100 and in other months below $100. The firm's actual export prices are depicted by the dashed line and solid diamond markets.[21] With zeroing the government treats the foreign firm's prices as if they instead looked like dashed-dotted line with hollow diamond markers. In January, for example, a government practicing zeroing would act as if the foreign firm's price were $100 instead of $135.

Figure 4 – Example of Export Pricing When Zeroing Alters Dumping Margin



[21] As with the example given in Table 1, without zeroing the actual export prices in Figure 4 would generate no dumping margin.

As these examples show, zeroing makes it extremely difficult for a firm to avoid dumping. In January through May the foreign firm was making pricing decisions with no knowledge that those prices would be treated as something far different by the investigating foreign government. Unless a firm's export prices are always high or low (relative to some home market benchmark) zeroing combined with price variation will generate dumping margins. Moreover, the reasons for the price variation – seasonality, exchange rates, variations in freight costs over time, etc. – are irrelevant. In some cases, the product could be sold pursuant to a long-term contract which might mean no price variation and hence zeroing might not matter. In other cases, the product could be sold on a spot basis which could mean heightened price variation.

Price variation significantly affects the extent to which zeroing impacts the dumping margin. All else equal, zeroing will have a larger impact for products with greater price variation. To see this, we will now compute dumping margins across distributions with different variation but holding the average price constant.[22] We assume the average export price is $100 in each scenario.

We begin by supposing export prices are uniformly distributed between p^{low} and p^{high}.[23] In the first scenario we will assume that the weighted average home market price is $100.[24] Hence if there were no zeroing the AD margin would be 0%. With zeroing,

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[22] Nye (2009) also points out that price volatility affects the zeroing distortion.

[23] For a uniform distribution the average price is $(p^{high} - p^{low})/2$ and the standard deviation is $(p^{high} - p^{low})/12\text{^}(1/2)$.

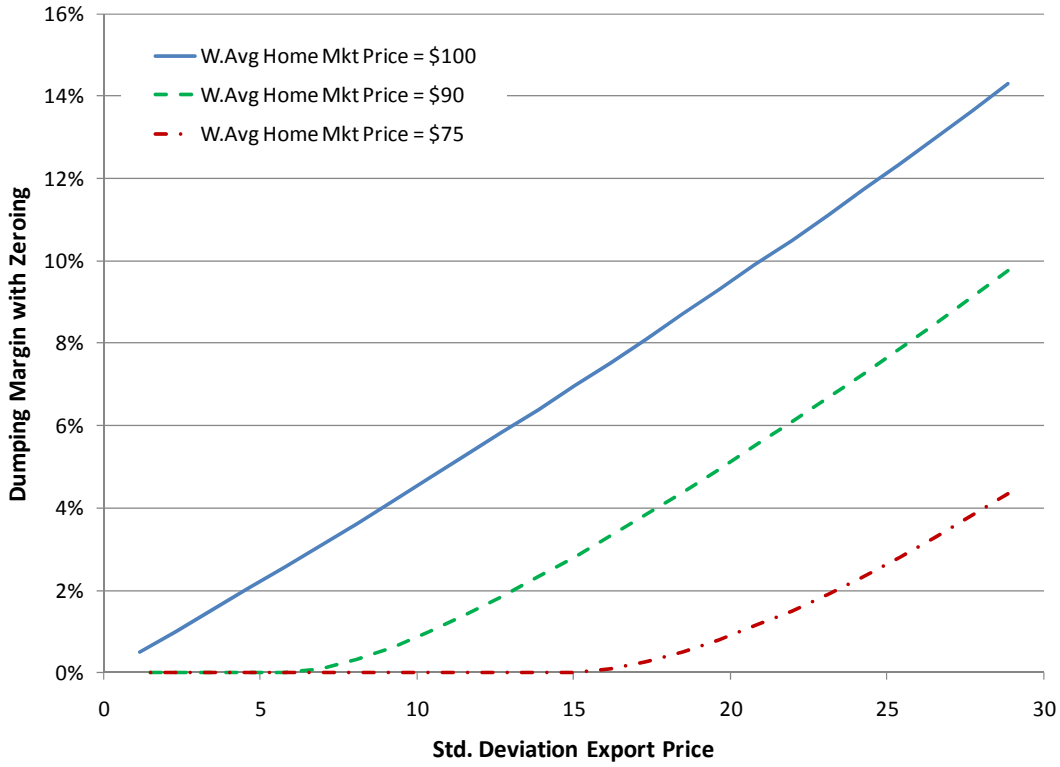
[24] For simplicity, assume one unit is sold at each transaction.

however, prices greater than $100 will be treated "as if" they were just $100. The extent of the zeroing impact depends on how much prices are adjusted; the greater the variation, the greater the adjustment. In Figure 5 we show the dumping margins as a function of different levels of price variation. The solid line depicts the ADD with zeroing. As shown, price deviation as little as 5% will generate margins in excess of the *de minimis* level.[25]

In the second scenario we consider a starker example of the impact of zeroing; here we assume the weighted average home market price is $90. In other words, in this scenario the average export price ($100) exceeds the home market price by 11%. Yet, as depicted by the dashed line, with zeroing a moderate amount of price deviation will again generate significant AD margins.

[25] For administrative reviews the U.S. imposes a *de minimis* margin of 2%.

Figure 5 – Export Price Variation and Zeroing (Uniform Distribution)



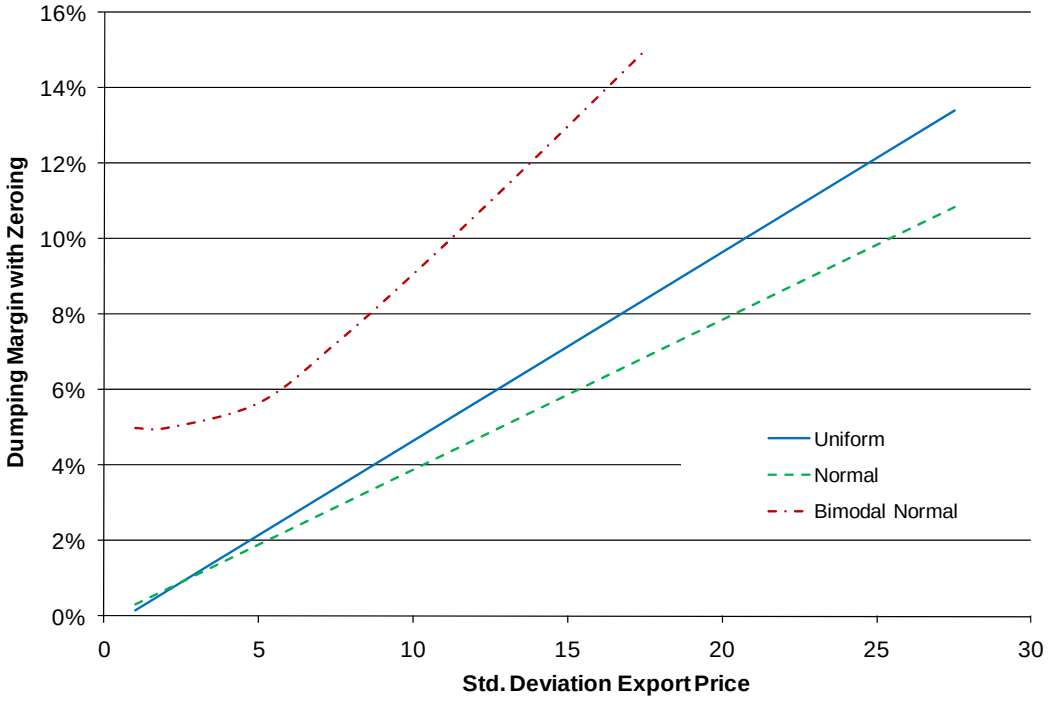
In the third scenario we consider a more extreme case when the weighted average home market price is $75. In this scenario the average export price ($100) exceeds the home market price by 33%. Yet, zeroing combined with price deviation will nonetheless generate AD margins.

Two lessons emerge from these three scenarios. First, we see that as the degree of over-selling increases (i.e., the bigger is the difference between the average export price and the average home market price), the greater is the required price variation before non *de minimis* AD margins are created. Second, despite substantially higher export prices, zeroing can produce positive dumping.

The positive relationship between price variation and zeroing is quite general. In Figure 6 we depict dumping margins with zeroing for three different distributions of

export prices: uniform, normal, and bimodal normal. As we did with the first scenario in Figure 5 we restrict the export prices so that that average is $100; this means there would be a zero dumping margin without zeroing. As shown this is not the case with zeroing. For all three distributions the dumping margin increases with the pricing variation.

Figure 6 – Export Price Variation and Zeroing (Across Distributions)



There are two key takeaways from this discussion. First, export characteristics that are associated with greater price variation will tend to be more seriously affected by zeroing. These characteristics could be associated with the product (e.g., seasonality, volatile input prices), the exporting firm or industry (e.g., more or less competitive), or exporting country (e.g., exchange rate regime).

Second, volatility will play a significant role in assessing whether zeroing is as relevant for developing countries as it has been for developed countries. As we will discuss in the following section to date most of the WTO cases involving zeroing were initiated by developed countries. One possible explanation for this is that zeroing does not affect developing country exports. Later in the paper we review export price volatility and our results suggest this is not likely the case. Consequently, the lack of zeroing cases involving developing countries most likely is explained by other reasons (e.g., unwillingness to increase trade tensions with the U.S., inexperienced legal staff, etc.).

4. WTO Disputes Involving Zeroing

There are four stages in the WTO dispute resolution system.[26] The first is the consultation phase where the two complaining and respondent countries meet and attempt to negotiate a resolution. If they are unable to do so, they can request a "Panel" to hear the evidence (the second phase). Other WTO members with an interest in the dispute can join the process at this stage as an "interested third party." The Panel hears the evidence and issues a legal ruling. If either of the primary countries is unhappy with any aspect of the Panel's rulings it can appeal the case to the WTO's Appellate Body (the third phase). After reviewing the case and hearing arguments from the parties the Appellate Body will issue its final decision. At that point if a country's policy has been found to in violation of its WTO obligations, it is supposed to bring its policy into

[26] For a detailed description of the legal process, see Mavroidis (2007, pp. 398-445).

compliance. If the complaining party is unhappy with the compliance it can request a Compliance Panel to rule on whether the respondent country has actually lived up to the AB's rulings (the fourth phase). If it has not, the AB can authorize the complainant to retaliate against the respondent, usually in the form of higher tariffs.

Table 2 – WTO Jurisprudence on Zeroing

Case	Dispute	Year Initiated	3rd Parties	Panel	AB
U.S. - Shrimp (Viet Nam)	404	2010	---[a]	---[a]	---[a]
U.S. - Use of Zeroing (Korea)	402	2009	Japan	---[a]	---[a]
U.S. - Stainless Steel (Mexico), Article 21.5	344	2009	---[a]	---[a]	---[a]
U.S. - Carrier Bags (Thailand)	383	2008	Argentina, Chinese Taipei, EC, Japan, Korea	Y	---[a]
U.S. - Orange Juice (Brazil)	382	2008	Argentina, Chinese Taipei, EC, Japan, Korea, Thailand	---[a]	---[a]
U.S. - Zeroing (Japan), Article 21.5	322	2008	China, Chinese Taipei, EC, Hong Kong, Korea, Mexico, Norway, Thailand	Y	Y
U.S. - Zeroing (EC), Article 21.5	294	2007	Chinese Taipei, India, Japan, Korea, Mexico, Norway, Thailand	Y	Y
U.S. - Continued Zeroing (EC)	350	2006	Brazil, Chinese Taipei, China, Egypt, India, Japan, Korea, Mexico, Norway, Thailand	Y	Y
U.S. - Shrimp (Thailand)	343	2006	Brazil, Chile, China, EC, India, Japan, Korea, Mexico, Viet Nam	Y	N/A[b]
U.S. - Stainless Steel (Mexico)	344	2006	Chile, China, EC, Japan, Thailand	Y/N	Y
U.S. - Shrimp AD Measure (Ecuador)	335	2005	Brazil, Chile, China, EC, India, Japan, Korea, Mexico, Thailand	Y	N/A[b]
U.S. - Zeroing (Japan)	322	2004	Argentina, China, EC, Hong Kong, India, Korea, Mexico, New Zealand, Norway, Thailand	Y/N	Y
U.S. - Softwood Lumber AD Final (Canada), Article 21.5	264	2005	China, EC, India, Japan, New Zealand, Thailand	Y	Y
U.S. - Zeroing (EC)	294	2003	Argentina, Brazil, China, Chinese Taipei, Hong Kong, India, Japan, Korea, Mexico, Norway	Y	Y
U.S. - Softwood Lumber AD Final (Canada)	264	2002	EC, India, Japan	Y	Y
U.S. - Corrosion-Resistant Steel Sunset Review (Japan)	244	2002	Brazil, Chile, EC, India, Korea, Norway	N	Y
EC - Pipe Fittings (Brazil)	219	2000	Chile, Japan, Mexico, U.S.	Y	Y
EC - Bed Linen (India)	141	1998	Japan, Korea, U.S.	Y	Y

[a] Unavailable / Pending
[b] The Panel's zeroing decision was not appealed to the AB.

Source: Compiled by the authors from information on the WTO website.

In Table 2 we list all WTO AB disputes that have involved zeroing. Between the first zeroing dispute of 1998 and early 2010, of the more than 260 disputes initiated during that time period nearly 20 disputes have involved zeroing.[27] Furthermore, while 60% of all WTO disputes are resolved at the consultation phase this has not been the case for any zeroing disputes. As a result, zeroing accounts for a greater share of Panel and AB time than the above statistics suggest. Zeroing has been the subject of more than 13% of all WTO Panel investigations (phase 2) and almost 20% of all WTO AB reports (phase 3). It is quite likely that the WTO Appellate Body has devoted more time to zeroing than any other single issue in the WTO.

The number of separate Panel and AB decisions that have found the practice of zeroing to be inconsistent with the ADA is noteworthy. By our accounting, there have been at least 22 separate decisions finding the practice of zeroing to be inconsistent with the ADA (11 Panel, 11 AB). Several comments about these decisions are warranted.

First, there has been some tension between the Panels and the AB. At least twice the Panels have sent mixed messages about zeroing. In two cases, *U.S. - Stainless Steel (Mexico)* and *U.S. - Zeroing (Japan),* the Panel ruled that zeroing in original investigations was inconsistent but zeroing in review proceedings was consistent.[28] The

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[27] Five of the cases are pending AB decisions. Zeroing was only a minor issue in several disputes. However, in most of the aforementioned disputes zeroing was the focal issue being adjudicated.

[28] Adding more confusion, in *U.S. - Continued Zeroing (EC)* the Panel stated their sympathy with the U.S. position but determined zeroing inconsistent only because of prior AB rulings.

Panels' rationale hinged on their reading of Article 2.4.2 of the AD Agreement which states that

> the existence of margins of dumping *during the investigation phase* shall normally be established on the basis of a comparison of a weighted average normal value with a weighted average of prices of all comparable export transactions or by a comparison of normal value and export prices on a transaction-to-transaction basis. A normal value established on a weighted average basis may be compared to prices of individual export transactions if the authorities find a pattern of export prices which differ significantly among different purchasers, regions or time periods, and if an explanation is provided as to why such differences cannot be taken into account appropriately by the use of a weighted average-to-weighted average or transaction-to-transaction comparison. (*emphasis added*)

The Panels agreed with the U.S.'s contention that the phrase "during the investigation phase" limits the applicability to the original investigation not to any type of review proceeding. However, in both cases the AB overturned the Panel and found that zeroing was inconsistent in both original investigations and reviews.

The WTO AB has repeatedly determined that allowing zeroing in reviews but not in original investigations would lead to unequal treatment between prospective and retrospective duty systems. In the prospective system (used by most WTO members) the dumping margin is established on the basis of the original investigation. In the retrospective system used by the U.S. the dumping margin calculated in the initial investigation only establishes the deposit rate. The actual dumping margin is established during an administrative review. If the U.S.'s position held, then a country with a

retrospective system would be able to zero but a country with a prospective system (like the EC) would not.

Second, the nature of the WTO's jurisprudence has likely contributed to the number of disputes. The practice of the Panels and AB has typically been to craft very narrow determinations in the attempt to reduce accusations of "judicial activism" and thus not limit infringement on member countries' sovereign rights. As a result, important issues are often left unaddressed for "judicial economy" which opens the door for the respondent country to limit the applicability of a ruling. What the AB intended their decision to mean is often unclear until essentially the same issue is brought to the WTO DSU again (and again!). With respect to zeroing, the judicial economy exercised by the AB in the initial cases meant that many issues (i.e., alternative methods of zeroing, appropriate use during different stages in a case) were not discussed. This allowed the U.S. to interpret the early rulings very narrowly and resulted in more cases being filed (Bown and Sykes, 2008).

Any ambiguity stemming from the AB's piecemeal approach to decision-making should now be resolved in light of the recent decisions against zeroing. The first few cases challenging zeroing made claims just against the use of zeroing in original investigations as applied in specific cases. However, more recent cases – *U.S. - Continued Zeroing (EC), U.S. - Zeroing (Japan)*, and *U.S. - Zeroing (EC)* – the complainants made very expansive claims against the practice. The WTO AB's decisions now imply that the practice of zeroing is inconsistent except under exceptional circumstances.

The number of countries complaining about the practice is also noteworthy. In Table 3 we list the number of countries who have either initiated a WTO dispute involving zeroing (i.e., the "complainant") or have filed supporting briefs as interested third parties. In total, 19 countries have been involved in zeroing disputes – 10 as complainant parties.

Table 3 – Economies Involved in WTO Jurisprudence on Zeroing

	# Initiated	# 3rd Party
Argentina		4
Brazil	2	5
Canada	2	
Chile		5
China		8
Chinese Taipei		6
EC	3	10
Ecuador	1	
Egypt		1
Hong Kong		3
India	1	9
Japan	3	13
Korea	1	11
Mexico	2	8
New Zealand		2
Norway		6
Thailand	1	8
U.S.		2
Viet Nam	1	1

Source: Compiled by the authors from information on the WTO website.

5. U.S. Retrospective System and the Impact of Zeroing

Despite the ongoing cases against it, the U.S. argues that it has complied with the WTO AB rules and that its practice is now consistent with the ADA. The U.S. contends

that it has brought its policy into compliance in response to the initial WTO AB decisions against zeroing. In January 2007 the USDOC decided to stop zeroing in original investigations. The USDOC has not agreed, however, to stop zeroing in reviews. This begs the question – why would the U.S. only take half-measures when resolving this trade issue? We believe the answer is inextricably tied to the retrospective duty assessment system using by the U.S.

Compare the EC and U.S. response to the WTO AB's decisions regarding zeroing. As a general rule no WTO member happily accedes to dispute settlement decisions that go against their existing policies. However, when the EC's zeroing practice was found to be inconsistent with the WTO ADA, it fairly quickly changed its procedures to eliminate zeroing. When the U.S.'s zeroing methodology was found to be inconsistent, the U.S. has been unable (or unwilling) to fully change its procedures.

The duty assessment systems in the EC and U.S. partly explain why they responded differently to the WTO rulings. Under the prospective duty assessment system used by the EC (and all other WTO members) the exporter is assigned a duty calculated on past pricing data and the duty applies to future transactions. By contrast, under the U.S. retrospective system the AD duty imposed at the end of the original investigation only constitutes an estimate of the future liability. The actual payment of AD duties will depend on the calculations made in the course of the annual administrative or duty-assessment reviews.

Under either system zeroing will serve to increase margins. It is fair to say that import-competing industries in both the EC and U.S. want zeroing because it serves to inflate the size of margins and hence leads to the imposition of larger import restrictions that shield them from foreign competition. The difference, however, is that the impact of zeroing is amplified when used in a retrospective system. Hence, the cost of eliminating zeroing in the U.S. is greater, thus increasing U.S. reluctance to abolish the practice.

The retrospective system adds an element of uncertainty that is not present in the prospective system. Under a prospective system an importer purchasing from an exporter under an AD order will know exactly the size of its extra duty. Under a retrospective system, on the other hand, an importer purchasing from an exporter under an AD order only has an estimate of its extra duty. It is conceivable the uncertainty could have as big an impact as the margin itself. Suppose, for instance, the exporter is subject to a 5% duty and that duty exactly (or nearly) offsets her cost advantage relative to "nonsubject" suppliers – i.e., exporters which sell the same product in the U.S. market but that were not confronted with (subject to) the U.S. antidumping duty. An importer might be unwilling to purchase from the exporter under order because of the possibility of a higher liability once the administrative review is conducted. While uncertainty is inherent in the retrospective system, zeroing greatly compounds the phenomenon. As shown in Figure 4 the importer can have numerous purchases made during the period of review that are treated by the USDOC as if they were conducted at a different price than they actually were. This makes importers even more reluctant to purchase from subject exporters.

As a result, U.S. import competing industries are much more opposed to eliminating zeroing than were EC import competing industries. In turn, their strong opposition to reform makes it difficult for the USDOC to stop zeroing. Said differently, the current U.S. compliance – stopping zeroing in original investigations – is essentially costless. The *de minimis* dumping margin in original investigation is 0.5%. In other words, if the home market price is $100 and the export price is $99.49 then the case will be allowed to proceed. But, when the administrative review is conducted the exact same transactions would result in a larger dumping margin because of zeroing. Thus, the real economic impact of zeroing – both in terms of the margin imposed and the uncertainty surrounding that margin – is driven by the *review* stage.

6. The Impact of Zeroing on Margins and Duties

We now turn beyond the theory to the empirical question of the impact of zeroing on AD margins.[29] Getting an accurate measure of the impact of zeroing on margins is difficult. The fundamental problem is that the USDOC uses firm level pricing in both the home and export markets to calculate margins. What we would like to do is compute the counterfactual "what if there were no zeroing" and then compare the counterfactual margin to the actual margin with zeroing. The calculation of this counterfactual requires access to confidential firm-level pricing data and that is something we do not have. We

[29] An important affect of zeroing is the additional uncertainty created for importers buying from subject suppliers. We know of no empirical evidence on this latter impact so we will just focus on how zeroing affects the size of the margin.

do, however, have results from previous studies that did have access to such data and were able perform the counterfactual exercise.

We begin by reviewing the result from what we believe is the only published study of zeroing that utilizes the same firm-level data as USDOC. We then examine evidence of the impact of zeroing as contained in submissions to the WTO AB where countries submit the results of the counterfactual calculations.

6.1 Firm-level evidence

The only published firm-level analysis of the impact of zeroing is contained in series of papers by the CATO Institute (Lindsey and Ikenson, 2002a, 2002b; Ikenson, 2004). Lindsey and Ikenson were able to get 18 firms from five different countries to share the exact pricing data they had submitted to the USDOC as part of their dumping investigations. The determinations covered 14 original investigations and 4 administrative reviews. For each of these determinations, Lindsey and Ikenson used the USDOC's own dumping calculation computer programs. They first recreated the dumping margins determined by the USDOC. They then altered those programs to gauge the effect of zeroing on margins. They state

> Using actual case data and the DOC's dumping calculation computer programs, it was possible to calculate the actual effects of zeroing in these particular cases. In 17 of the 18 determinations, the dumping margin was inflated by zeroing. In 5 of the cases, the overall dumping margin would have been negative. On average, the dumping margins in the 17 cases

> would have been 86.41 percent lower if zeroing had not been employed.[30]

Due to confidentiality issues, Lindsey and Ikenson are unable to report the actual size of the original dumping margin. As a result we are unable to determine how great the 86 percent reduction is – it could imply a change in the actual dumping margin of 2, 20 or even 50 percentage points. While we don't know the identity of the individual firms we do know what cases were involved (e.g., stainless steel bar from Germany) and we know the "all others" duty reported for each case.[31] Using the "all others" duty we estimate that the Lindsey and Ikenson estimate of an 86.41 percent reduction due to zeroing implies that the *average* impact of zeroing is at least 17.50 percentage points – i.e., a change in the margin of dumping from 20.2 to 2.7 percent.

Particularly noteworthy are Lindsey and Ikenson's results with respect to reviews. Their results confirm that zeroing has a particularly powerful impact at the review phase. They had access to case data for just four review calculations and in each instance they found the margin was <u>entirely</u> driven by zeroing. That is, without zeroing there would have been no margin. Their results are consistent with the idea that firms subject to AD orders make an effort to comply with the dumping order but are ultimately bedeviled by the distortion created by zeroing – transactions that they thought would be treated as

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[30] Ikenson (2004), p. 2.

[31] We note that the "all others" rate often does not necessarily correspond to any individual firm's duty but is better thought of as the average margin for all firms involved in the case.

occurring at one price were assigned a lower price by USDOC which in effect creates margins.

6.2 Evidence from WTO dispute documents

While the Lindsey and Ikenson study is compelling, it involves a small sample of firms. We have also reviewed the WTO disputes for evidence on the impact of zeroing. We found reports of the impact of zeroing in the public documents for only three cases: *U.S. - Stainless Steel* (Mexico) (dispute 344), *U.S. - Zeroing* (Japan) (dispute 322), and *U.S. - Zeroing* (EC) (dispute 294). From these three disputes we have information on the impact of zeroing for 74 separate margin calculations.

The tabulation of the findings is given in Table 4. For each margin calculation we report the name of the product under investigation, the name of the company subject to the investigation, and the AD duty as calculated by the USDOC (inclusive of zeroing). For original investigations this is the final AD duty for each firm; for administrative reviews this is the duty margin actually imposed by USDOC. In the final column we report the results of the counterfactual exercise – what the margin would have been if zeroing were not performed. Given the individual firms' sensitivities about revealing confidential pricing information, many times we do not know the exact "what if no zeroing" margin. Instead, the public documents often simply report "lower," "negative," or *de minimis*. "Lower" simply means the margin would have been lower but would have still been above the *de minimis* level; "negative" means the margin would have been negative (i.e., no

dumping); *de minimis* means the margin would be positive but sufficiently small to be considered zero. In either of this latter two cases the case would have been terminated (if an original investigation) or no duties would have been paid (if an administrative review).

Table 4 – WTO Disputes – Reported Impact of Zeroing (case by case)

Case Number	Case Name	Company	AD Duty (with zeroing)	AD Duty (w/o zeroing) [a]
DS294 - No. 1	(OI) Certain Hot-Rolled Carbon Steel Flat Products from the Netherlands	Corus Staal BV	2.59%	Negative
DS294 - No. 2	(OI) Stainless Steel Bar from France	Ugine-Savoie Imphy	3.90%	Negative
		Aubert & Duval S.A	71.83%	Lower
DS294 - No. 3	(OI) Stainless Steel Bar from Germany	BGH	13.63%	Lower
		Einsal	4.17%	*de minimis*
		EWK	15.40%	Lower
		KEP	33.20%	Lower
DS294 - No. 4	(OI) Stainless Steel Bar from Italy	Acciaierie Valbruna Srl / Acciaierie Bolzano D.p.A	2.50%	Negative
		Acciaiera Foroni SpA	7.07%	Lower
		Rodacciai S.p.A	3.83%	Lower
		Cogne Acciai Speciali Srl	33%	N/A
DS294 - No. 5	(OI) Stainless Steel Bar from the United Kingdom	Corus Engineering Steels	4.48%	Negative
		Crownridge Stainless Steel, Ltd/Valkia Ltd and Firth Rixson Special Steels, Ltd	125.77%	N/A
DS294 - No. 6	(AR) Industrial Nitrocellulose from France	Bergerac NC	3.26%	Lower
DS294 - No. 7	(AR) Industrial Nitrocellulose from the United Kingdom	Imperial Chemical Industries	3.06%	Negative
DS294 - No. 8	(AR) Stainless Steel Plate in Coils from Belgium	ALZ NV	3.84%	Negative
DS294 - No. 9	(AR) Certain Pasta from Italy	Pastificio Guido Ferrara S.r.L	1.25%	Lower
		Pastificio Antonio Pallante S.r.L	1.78%	Lower
		PAM S.r.L.	4.10%	*de minimis*
DS294 - No. 10	(AR) Certain Pasta from Italy	Pastificio Garofalo S.p.A	0.55%	Lower
DS294 - No. 11	(AR) Stainless Steel Sheet Strip in Coils from Italy	Acciai Speciali Terni SpA	0.66%	Negative
DS294 - No. 12	(AR) Stainless Steel Sheet Strip in Coils from Italy	Acciai Speciali Terni SpA	5.84%	Negative
DS294 - No. 13	(AR) Granular Polytetrafluoroenthylene Resin from Italy	Ausimont SpA	2.15%	Lower
DS294 - No. 14	(AR) Granular Polytetrafluoroenthylene Resin from Italy	Ausimont SpA	12.08%	Lower
DS294 - No. 15	(AR) Stainless Steel Sheet and Strip in Coils from France	Ugine	3.00%	Negative
DS294 - No. 16	(AR) Stainless Steel Sheet and Strip in Coils from France	Ugine	1.44%	Negative
DS294 - No. 17	(AR) Stainless Steel Sheet and Strip in Coils from Germany	KTN	2.61%	Negative
DS294 - No. 18	(AR) Stainless Steel Sheet and Strip in Coils from Germany	TKN	4.77%	Negative

Table 4 (continued)

Case Number	Case Name	Company	AD Duty (with zeroing)	AD Duty (w/o zeroing) [a]
DS294 - No. 19	(AR) Ball Bearings from France	SKF France SA and Sarma	8.51%	Negative
DS294 - No. 20	(AR) Ball Bearings from Italy	SKF Industrie SpA	3.70%	Negative
DS294 - No. 21	(AR) Ball Bearings from United Kingdom	FAG Italia SpA	1.42%	Negative
		NSK Bearings Europe Ltd	16.87%	Negative
		Barden Corporation UK	3.87%	Negative
DS294 - No. 22	(OI) Stainless Steel Wire Rod from Sweden	Fagersta Stainless AB	5.71%	Negative
DS294 - No. 23	(OI) Stainless Steel Wire Rod from Spain	Roldán SA	4.73%	Lower
DS294 - No. 24	(OI) Stainless Steel Wire Rod from Italy	Cogne Acciai Speciali Srl	12.72%	Lower
DS294 - No. 25	(OI) Stainless Steel Wire Rod from Belgium	ALZ	3.84%	Lower
DS294 - No. 26	(OI) Stainless Steel Sheet and Strip in Coils from France	Usinor	9.38%	Lower
DS294 - No. 27	(OI) Stainless Steel Sheet and Strip in Coils from Italy	Acciai Spaciali Terni SpA	11.23%	Lower
DS294 - No. 28	(OI) Stainless Steel Sheet and Strip in Coils from UK	Avesta Sheffield	14.84%	Lower
DS294 - No. 29	(OI) Certain Cut-to-Length Carbon-Quality Steel Plate from France	Usinor	10.41%	Lower
DS294 - No. 30	(OI) Certain Cut-to-Length Carbon-Quality Steel Plate from Italy	Palini and Bertoli SpA	7.85%	Lower
DS294 - No. 31	(OI) Certain Pasta from Italy	Italpasta	21.34%	Lower
		La Molisana	14.78%	Lower
		Liguori	12.41%	Lower
		Pagani	18.30%	Lower
DS322 - No. 1	(OI) Certain Cut-To-Length Carbon-Quality Steel Plate Products from Japan	Kawasaki Steel Corporation	10.58%	Lower (9.46%)
DS322 - No. 2	(AR) Tapered Roller Bearings, Four Inches or Less in Outside Diameter, and Components Thereof, From Japan	Koyo Seiko Co., Ltd.	14.86%	Negative (-1.27%)
DS322 - No. 3	(AR) Tapered Roller Bearings and Parts Thereof, Finished and Unfinished, From Japan	NTN Corporation	17.58%	Negative (-6.01%)
DS322 - No. 4	(AR) Tapered Roller Bearings and Parts Thereof, Finished and Unfinished, From Japan	Koyo Seiko Co., Ltd.	17.94%	Lower (13.32%)
DS322 - No. 5	(AR) Ball Bearings and Parts Thereof From Japan	NTN Corporation	6.14%	Negative (-25.15%)
DS322 - No. 6	(AR) Cylindrical Roller Bearings and Parts Thereof From Japan	NTN Corporation	3.49%	Negative (-25.24%)

Table 4(continued)

Case Number	Case Name	Company	AD Duty (with zeroing)	AD Duty (w/o zeroing) [a]
DS322 - No. 7	(AR) Spherical Plain Bearings and Parts Thereof From Japan	NTN Corporation	2.78%	Negative (-26.06%)
DS322 - No. 8	(AR) Ball Bearings and Parts Thereof From Japan	Koyo Seiko Co., Ltd.	10.10%	Negative (-5.51%)
		NTN Corporation	9.16%	Negative (-15.21%)
		NSK Ltd.	4.22%	Negative (-20.76%)
DS322 - No. 9	(AR) Cylindrical Roller Bearings and Parts Thereof From Japan	Koyo Seiko Co., Ltd.	5.28%	Negative (-11.70%)
		NTN Corporation	16.26%	Negative (-8.08%)
DS322 - No. 10	(AR) Spherical Plain Bearings and Parts Thereof From Japan	NTN Corporation	3.60%	Negative (-10.31%)
DS322 - No. 11	(AR) Ball Bearings and Parts Thereof From Japan	NSK Ltd.	6.07%	Negative (-18.78%)
		Asahi Seiko Co., Ltd.	2.51%	Negative (-26.83%)
		NTN Corporation	9.34%	Negative (-12.17%)
DS322 - No. 12	(AR) Ball Bearings and Parts Thereof From Japan	NTN Corporation	4.51%	Negative (-25.99%)
		NSK Ltd.	2.68%	Negative (-29.90%)
DS322 - No. 13	(AR) Ball Bearings and Parts Thereof From Japan	Koyo Seiko Co., Ltd.	5.56%	Negative (-10.83%)
		NTN Corporation	2.74%	Negative (-25.86%)
		NSK Ltd.	2.46%	Negative (-29.61%)
DS344 - No. 1	(OI) Stainless Steel from Mexico)	ThyssenKrupp Mexinox S.A. de C.V.	30.85%	Lower
DS344 - No. 2	(First AR) Stainless Steel from Mexico	ThyssenKrupp Mexinox S.A. de C.V	2.28%	Negative
DS344 - No. 3	(Second AR)Stainless Steel from Mexico	ThyssenKrupp Mexinox S.A. de C.V	6.15%	Lower (1.83%)
DS344 - No. 4	(Third AR)Stainless Steel from Mexico	ThyssenKrupp Mexinox S.A. de C.V	7.43%	Lower (4.96%)
DS344 - No. 5	(Fourth AR)Stainless Steel from Mexico	ThyssenKrupp Mexinox S.A. de C.V	5.42%	Lower (1.54%)
DS344 - No. 6	(Fifth AR)Stainless Steel from Mexico	ThyssenKrupp Mexinox S.A. de C.V	2.96%	Negative

[a] This column indicates what would have been the outcome if zeroing were not applied; "lower" simply means the margin would have been lower; "negative" means the margin would have been negative (i.e., no dumping) and as a result the case would have been terminated (for original investigations) or no duties would have been paid (for administrative reviews). "*De minimis*" means the margin is too small to be subject to an order. "OI" indicates original investigation whereas "AR" indicates administrative review.

Source: Compiled by the authors from the public documents submitted as part of each AB dispute; case information available from the WTO website.

In Table 5 we summarize the information reported in Table 4. Without zeroing in 30 instances the dumping margin would have been lowered and in 42 instances the margin would have been eliminated, i.e., a zero margin. Said differently, more than half of the cases submitted to the WTO would have no dumping but for the practice of zeroing.

Table 5 – WTO Disputes – Reported Impact of Zeroing (summary)

Dumping margin lower	30
Dumping margin eliminated	42
Dumping margin change "N/A"	2
Total cases	74

Source: Compiled from the information in Table 4.

One needs to be cautious extrapolating the statistics from the WTO AB cases to all U.S. AD activity. There are two reasons why we are concerned that there is a possible selection issue which might result in the WTO AB evidence overstating the impact of zeroing. First, the cases submitted to the WTO may have been selected precisely because they were particularly egregious examples of zeroing. While we have no evidence for this, it is nevertheless a concern given the complainants desire to submit the most compelling cases to the WTO.

Second, the cases chosen for WTO appeal might have lower margins and thus be more likely to have a zero margin if the practice of zeroing ceased. There is some evidence that this is the case. Using information from Bown (2010a), we compared the dumping margins for cases that were the basis for WTO zeroing complaints with all other U.S. AD cases. The average margin for cases not brought to the WTO is 62.6%

while the average margin for cases that have been the basis for WTO zeroing complaints is 36.2%.[32] This does not mean that the practice of zeroing has not affected the margins in the other cases, but it does suggest that the margins for most cases are not entirely driven by zeroing. It also suggests that countries choose to file WTO appeal on cases where it is more likely that the elimination of zeroing could mean *de minimis* margins and the removal of antidumping duties altogether.

The more robust finding is that the impact of zeroing is to increase the dumping margin. In Table 6 we use the WTO disputes and calculate the impact on the margin due to zeroing. On average, dumping margins would have been 12.3 percentage points lower. While this is smaller than the Lindsey and Ikenson's study estimates we note that it is greater than the average margin (10.5%) for these cases. This is again compelling evidence that zeroing has a large and significant impact on margins.

Table 6 – WTO Cases, Change in Margin Due to Zeroing (percentage point change)

	Median	**Mean**
Cases where dumping margin was lowered but not eliminated	3.9%	3.3%
Cases where dumping margin was eliminated	7.2%	13.3%
All cases	4.8%	12.3%

Source: Compiled from the information in Table 4.

[32] The difference is statistically significant at the 1% level.

If we focus just on the WTO cases in Table 4 that involve administrative reviews, we have a sample of 45 dumping margins. Of this sample, in 35 of the 45 cases the margin would have been eliminated if zeroing were not employed. If one is willing to assume that this is a representative statistic for other cases, the evidence from the current WTO jurisprudence suggests that about 75% of review margins would be eliminated but for zeroing. This is consistent with the CATO study which also found the impact of zeroing at the review phase to be particularly significant.

We again urge caution in applying the WTO AB statistics to the overall sample of U.S. antidumping cases. As we discussed above, the margins for cases brought to the WTO AB are generally lower than those for other cases. It may simply be the case that the low margin cases give the complaining country the "biggest bang for the buck" and therefore are more likely to result in WTO challenges.[33]

Moreover, given that non-challenged cases tend to have higher margins, it is uncertain what the impact of zeroing is on the trade volumes. That is, suppose the U.S. stopped zeroing in all cases. The elimination of zeroing may result in lower margins but nevertheless have little impact on trade. This would be the case, for instance, if the computed margin without dumping was still quite high. Suppose a firm has a dumping margin with zeroing of 80% and its margin without zeroing was 35%. It is not likely that a margin of 35% would result in a significantly different volume of imports than a margin of 80% – a duty can easily be prohibitive at 35%.

[33] Bown (2005) argues this selection issue applies more generally in WTO disputes.

7. Likely Impact of Zeroing on Developing Countries

Until relatively recently, most of the WTO disputes over zeroing had been dominated by cases initiated by developed economy complainants such as EC, Japan, and Canada. While there have been a few cases involving developing country complainants, zeroing was a side issue in many of these cases.[34]

Since 2008, however, a growing number of developing countries such as Vietnam, Korea, Thailand, and Brazil have initiated zeroing complaints at the WTO. Can we expect other developing countries to also join the fray? The answer would seemingly be "yes". First, the U.S. applies its practice of zeroing against all subject import suppliers. Every developing country with products subject to U.S. AD orders has had zeroing applied. Second, as Figure 2 indicates, there are many developing country exports subject to current U.S. antidumping orders. This means there are many cases that could be the basis for a WTO complaint. Third, and perhaps the most compelling reason why one should expect more zeroing cases, the WTO AB's views on zeroing are now well established. As discussed above, numerous decisions have been made against zeroing. Moreover, the most recent WTO decisions have clearly established the general inconsistency of zeroing and have responded to all criticisms by panels of the early zeroing decisions. Given these decisions, it is hard to see how the U.S. could win any

[34] Disputes 206, 335, 343, and 345 all contained zeroing complaints but they were primarily about other procedures.

zeroing dispute at the WTO. This reality will likely embolden other countries to initiate their own actions against the U.S.

The key unknown is the extent that zeroing has a different impact on developed versus developing country margins. If zeroing has a smaller impact on developing countries then arguably there is a smaller benefit of filing a costly WTO dispute. This might be the case, for instance, if developing countries prices are consistently "low" or consistently "high" (e.g., as shown in Figure 3). In these cases, even though zeroing is technically applied to the pricing data, it may not have any influence (or only a small impact) on the margin. It could also be the case that import prices for developing countries were subject to less volatility than those for developed countries. As shown in Figure 5, if this were the case then, all else equal, zeroing will have less of an impact on the ADD for countries with less price variation. In these situations developing countries will have a smaller stake in a WTO dispute and hence be less compelled to initiate a dispute. Finally, and as discussed in the last section, it may also be the case that the counterfactual dumping margins applied in the absence of zeroing might still be so high so that the applied U.S. antidumping duty is still prohibitive – i.e., *de facto*, there is no positive trade-enhancing effect of eliminating zeroing from the dumping calculation.[35]

[35] Moreover, as Bown (2009) notes, in general the cost relative to benefits for developing countries to challenge the U.S. at the WTO might be higher than for developed countries. Nevertheless, this does not appear to be much of an issue for potential developing country complainants when the trade barrier at issue is the trading partner's use of antidumping, of which there are many disputes. Indeed, Bown (2009, table 6-6, p. 163) points out that with access to the Advisory Centre on WTO Law – which provides DSU legal assistance to developing country clients – there have been a number of disputes in which the imposed AD measure being challenged was restricting less than $3 million of trade per year.

This discussion suggests that it is possible that both the benefits and costs of WTO disputes may differ for developing countries, and as a result we might not see a lot of developing country-initiated zeroing disputes. Because the failure to initiate a dispute is not clear evidence that there has been no harm, whether the U.S. zeroing process is also likely to adversely impact developing country exporters is therefore an empirical question.

For our purposes we limit ourselves to the question of whether zeroing likely has a significant effect on any potential duty imposed on developing countries. To get a sense of the possible extent of zeroing's impact on developing countries we gathered U.S. import data for some of the most prominent products subject to U.S. ADD scrutiny over the past decade.[36] Two factors influenced what products we included in our sample. First, we wanted to capture cases that were economically "important" for developing countries and were in products most likely to be subject to AD examination. Second, we wanted to focus on products where we had strong independent evidence that there had been a WTO zeroing violation. With respect to the first criterion, we included cases where there was both significant AD activity and also substantial import supply by developing countries. With respect to second criterion, we included products for which there already had been WTO disputes.

Once we selected the products to review, we then calculated the monthly price variation during the 12 months during the year prior to the filing of the case, a time

[36] List of cases included in the analysis is given in the appendix.

generally used by the USDOC in its ADD calculations. Products were identified at the HTS 10 digit level. To assist in comparability across the various products, we normalized the prices for each HTS product so that the mean price for each HTS product was 1 for the sample period. With that normalization we then computed the pricing variation over the period.

We used the World Bank's country classification guide to divide countries according to their development status.[37] We group countries designated by the World Bank as "Low income" and "Lower-middle income" as *low income* and those designated "Upper-middle income" and "High income" as *high income*.[38]

We can use regression analysis to test for the statistical significance of the difference in price variation. The OLS results for a linear specification are given in Table 7. We also control for whether a supplying country was subject to the investigation in these regressions. For each product, suppliers fall into one of four categories: (i) subject-high income; (ii) subject-low income; (iii) nonsubject-high income; and (iv) nonsubject low income. All parameters are measured relative to the subject-high income countries; i.e., the economies filing the zeroing disputes against the U.S. at the WTO. In Specification A we include just the basic controls; in Specification B we attempt to control for the possible correlation between price variation and price levels by also controlling for the general level of prices. In this specification "low prices" ("high

[37] World Bank "WTI Country Classification by Region and Income, (July 2009-July 2010) " at http://tinyurl.com/y494rao

[38] Most countries in our sample we call "low income" fall under the World Bank's category "Lower middle income".

prices") correspond to exporters with prices at least 30% below (above) the average for the product. The third category ("moderate prices") denotes export prices within 30% of the average price. In Specification B moderate and high price suppliers are measured relative to low price suppliers.

Table 7 – OLS Regression: Month-to-Month Variation in Prices by Supplying Country

	A	**B**
Subject, Low Income	-0.164	0.026
	[0.122]	[0.802]
Nonsubject, High Income	0.379	0.331
	[0.000]***	[0.000]***
Nonsubject, Low Income	0.197	0.341
	[0.070]*	[0.001]***
"Moderate" prices		0.297
		[0.000]***
"High" prices		1.174
		[0.000]***
Constant	1.070	0.608
	[0.000]***	[0.000]***
Observations	1,948	1,948
Adjusted R-squared	0.021	0.105

p values in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

The table reveals several interesting insights. First, focus just on the subject suppliers that were confronted with the U.S. antidumping. The results indicate that there is no statistically significant difference in price variation for low income and high income countries. In specification A the estimate is negative and in specification B the estimate is positive. In both specifications the parameter estimates are statistically

insignificant. This is important because it suggests price volatility for developing countries is comparable to that of developed countries, at least with respect to the products in our sample. What does this mean for zeroing? Given many of products in our sample were the basis for WTO zeroing disputes, we know that zeroing has affected the margins for developed countries in the sample. All else equal the similarity in price volatility makes it likely that zeroing has affected the margins and duties that the U.S. imposes on *developing* countries. Thus, even though developing countries did not initiate the WTO disputes, they are quite likely affected by zeroing in the same way as the developed countries that did initiate the disputes. Said differently, the results suggest that the lack of WTO activity is not a sign that zeroing is less relevant for developing countries.

Second, both specifications show that price volatility for nonsubject suppliers is higher than for subject suppliers. The parameter estimates are statistically significant in both specifications. This suggests that the specter of zeroing also looms over nonsubject countries. While they were not investigated in these cases, their price variation is greater than for firms that were investigated which makes it likely zeroing would have also affected their dumping margins.[39]

Third, in specification B we control for the suppliers' export price levels. This is an attempt to capture some of the insights from our earlier discussion about the impact of price levels on zeroing. While the estimates clearly show that higher volatility is

[39] One potential explanation for why the non-subject countries were not investigated is because they were not "dumping." However, without any information on home market prices we cannot infer whether these suppliers are selling at less than fair value.

associated with higher price levels, the main results with respect to subject and nonsubject suppliers are consistent across both specifications.

Overall, the results from this analysis indicate that developing countries have comparable price volatility as developed countries. Thus, even though developing countries have not yet initiated many WTO disputes about zeroing, the pricing evidence suggests that their margins have been similarly affected by zeroing.

8. Concluding Comments

Zeroing has emerged as a particularly irksome issue for all affected parties. For the U.S. the numerous negative decisions fuel the belief in Congress that the WTO is biased and lessens U.S. support for the WTO. For U.S. trading partners, the U.S.'s non-responsiveness to the zeroing decisions sends a signal that compliance is voluntary, and this effectively erodes the legitimacy of the WTO. At one level, the WTO's current inability to resolve the zeroing issue echoes of the enforcement problems that eroded support for the GATT dispute system in the 1980s.

The evidence suggests a real possibility that developing countries will also soon begin filing WTO complaints over the U.S.'s use of zeroing. First, WTO AB has now a long series of decisions striking down virtually all use of zeroing.[40] This makes it far

[40] The AB decisions suggest that zeroing in response to "targeted dumping" is WTO consistent. What constitutes "targeted dumping" is unclear. Recent actions by USDOC seem to indicate that the U.S. will try to use this exception in order to continue zeroing (e.g., zeroing was applied in the final

more likely that a developing country will prevail in a dispute against the U.S. Second, the evidence indicates that the elimination of zeroing significantly reduces the AD margin. This means there is potentially a large economic return to the filing dispute. Third, the empirical evidence implies that developing countries export prices are at least as volatile as developed countries. This makes it likely that zeroing has affected developing country margins and thus the size of antidumping duties that their exporters face. Fourth, at this point in time there is no clear sign that the U.S. is ready to stop zeroing. This means that the WTO violations will remain unless pursued by the affected developing countries.

All signs, therefore, point towards more WTO cases and more strain on the system. We, however, do not believe the zeroing problem will be the ruin of the WTO DSU. To a large extent, the WTO dispute mechanism is working as designed. While complainant parties have every reason to be frustrated with the pace of compliance, the WTO dispute settlement process was designed to proceed at a somewhat ponderous pace. As of early 2010, several cases are in or have just finished the Article 21.5 compliance phase of the DSU. As specified by the WTO Agreement, complainant parties will likely soon have the right to retaliate against U.S. trade to offset the damage due to zeroing.

Much to the frustration of the other WTO members, the retaliation value will likely be quite small for most instances of violation. For most countries and most

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determination of sales at less than fair value in a recent case involving Polyethylene Retail Carrier Bags from Taiwan, 75 Fed. Reg. 14569, Mar. 26, 2010).

products the value of trade subject to AD orders is quite small. Even if half the orders are removed, the dollar value of current WTO decisions against the U.S. is likely insufficient to spur action by Congress. While zeroing is consuming a large amount of AB time, the reality is that it might be too small a violation to induce a difficult policy change.

The resolution to the zeroing issue may well be that the retaliatory claims against the U.S. – likely including many by developing countries – will have to continue to amass until the impact is sufficient enough to spur USDOC to changes its policy. In effect, the large number of zeroing cases at the AB is one indicator that it is an economically small issue.

Nevertheless, for the WTO itself, the growing number of very similar, unimplemented decisions against a prominent and powerful member challenges the stature of the institution. If the WTO cannot resolve something as simple as zeroing, how can any of its members hope the AB can help resolve truly complicated and politically charged issues like genetically modified organisms, intellectual property standards, agriculture reform, labor standards, or border tax adjustments for climate change? From this perspective, it is in the WTO's best interest to see the zeroing conflict resolved sooner rather than later.

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Appendix: U.S. Antidumping Cases Used in Price Variation Analysis

Product	**Case ID (Bown, 2010)**
Ball Bearings	USA-AD-391a, USA-AD-392a, USA-AD-393a, USA-AD-394a, USA-AD-399a
Brass Sheet/Strip	USA-AD-317
Certain Frozen and Canned Warmwater Shrimp and Prawns	USA-AD-1063, USA-AD-1064, USA-AD-1065, USA-AD-1066, USA-AD-1067, USA-AD-1068
Chlorinated Isocyanurates	USA-AD-1083
Citric Acid and Certain Citrate Salts	USA-AD-1151, USA-AD-1152
Cold-Rolled Carbon Steel Products	USA-AD-829, USA-AD-830, USA-AD-831, USA-AD-832, USA-AD-833, USA-AD-834, USA-AD-835, USA-AD-836, USA-AD-837, USA-AD-838, USA-AD-839, USA-AD-840
Cold-Rolled Steel Products	USA-AD-964, USA-AD-965, USA-AD-966, USA-AD-967, USA-AD-968, USA-AD-969, USA-AD-970, USA-AD-971, USA-AD-972, USA-AD-973, USA-AD-974, USA-AD-975, USA-AD-976, USA-AD-977, USA-AD-978, USA-AD-979, USA-AD-980, USA-AD-981, USA-AD-982, USA-AD-983
Corrosion-Resistant Carbon Steel Sheet	USA-AD-617
Cut-To-Length Carbon Steel Plate	USA-AD-815, USA-AD-816, USA-AD-817, USA-AD-818, USA-AD-819, USA-AD-820, USA-AD-821, USA-AD-822
Cylindrical Roller Bearings	USA-AD-391c, USA-AD-392c, USA-AD-393c, USA-AD-394c, USA-AD-399c
Granular Polytetrafluoroethylene Resin	USA-AD-385
Hot Rolled Carbon Steel Flat Products	USA-AD-806, USA-AD-807, USA-AD-808
Hot-Rolled Carbon Steel Products	USA-AD-898, USA-AD-899, USA-AD-900, USA-AD-901, USA-AD-902, USA-AD-903, USA-AD-904, USA-AD-905, USA-AD-906, USA-AD-907, USA-AD-908

U.S. Antidumping Cases Used in Price Variation Analysis (continued)

Product	**Case ID (Bown, 2010)**
Industrial Nitrocellulose	USA-AD-443
Nitrocellulose	USA-AD-96
Oil Country Tubular Goods	USA-AD-1000, USA-AD-1001, USA-AD-1002, USA-AD-1003, USA-AD-1004, USA-AD-1005
Oil Country Tubular Goods	USA-AD-992, USA-AD-993, USA-AD-994, USA-AD-995, USA-AD-996, USA-AD-997, USA-AD-998, USA-AD-999
Pasta	USA-AD-734
Purified Carboxymethylcellulose	USA-AD-1084, USA-AD-1085, USA-AD-1086, USA-AD-1087
Spherical Plain Ball Bearings	USA-AD-394e
Stainless Steel Bar	USA-AD-913, USA-AD-914, USA-AD-915, USA-AD-918
Stainless Steel Plate in Coils	USA-AD-788
Stainless Steel Sheet and Strip	USA-AD-797, USA-AD-798, USA-AD-799, USA-AD-802
Steel Concrete Rebar	USA-AD-878
Tapered Roller Bearings	USA-AD-343