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Macroeconomic factors and antidumping filings: evidence from four countries

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Abstract

This paper examines the relationship between antidumping filings and macroeconomic factors. Real exchange rate fluctuations affect the two criteria for dumping in opposite ways, making the overall effect on filings ambiguous in theory. Examining the filing patterns of the four major users of AD law during the 1980–98 period we find that real exchange rates and domestic real GDP growth both have statistically significant impacts on filings. Bilateral filing data indicate that a one-standard deviation real appreciation of the domestic currency increases filings by 33%. We also find one-standard deviation fall in domestic real GDP increases filings by 23%.

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1. Introduction

The GATT/WTO antidumping (AD) statute requires two criteria to be met in order to impose duties on foreign suppliers named in antidumping suits. First, there must be evidence that the domestic industry has suffered “material injury” (e.g., a decline in profitability) as a result of foreign imports. Second, the foreign suppliers must be found to be pricing at “less than fair value” (LTFV). This latter

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criterion can be determined in either of two ways: (1) by showing that the price charged in the domestic market by the foreign suppliers is below the price charged for the same product in other markets (i.e., the “price-based” method) or (2) by showing that the price charged in the domestic market is below an estimate of cost plus a normal return (i.e., the “constructed-value” method).

The focus of this paper is on how macroeconomic factors in general, and fluctuations in real exchange rates in particular, can affect the determination of each of these criteria. As we will explain, a foreign firm’s response to a real exchange rate changes increases the likelihood that at least one of the AD criteria will be satisfied. At a theoretical level real exchange rate changes can either increase or decrease filings, depending on which AD test is most responsive to pricing changes. Empirically which effect is more important is also an open question. Within the business community there appears to be a belief that a strong domestic currency precipitates filings. For example, in its March 26, 1999 *Economic Analyst* publication, Goldman Sachs documents a rise in AD cases associated with an increase in the value of the trade-weighted U.S. dollar. Interestingly, the existing empirical literature reaches the opposite conclusion. In particular, using a dataset based on U.S. AD filings from 1982 to 87 Feinberg (1989) finds that filings increase with a weaker dollar.

Fluctuations in economic activity, both in the importing country and the exporting country, might also affect filing decisions. Clearly, a slump in economic activity in the importing country makes it more likely domestic firms perform poorly which may facilitate a finding of material injury. Also, a weak economy in the importing country might naturally lead foreign firms to reduce prices on shipments to the importing country. This could increase the likelihood of pricing below fair value. Thus we would expect that import country GDP will be negatively related to filings. It is less clear how export country GDP is related to filings. One possibility is that a weak foreign economy increases the likelihood that foreign firms will cut prices to maintain overall levels of output. While such behavior might cause injury to domestic firms, it is not clear that it would trigger pricing below “fair value” in the price-based sense, since foreign firms would presumably be lowering prices to all markets (especially their own home market). It is possible, however, that generally low prices would increase the chance of LTFV using the “constructed-value” method.

Our goal in this paper is to examine the relationship between AD filings, real exchange rates, and economic activity using data for four of the primary AD users (Australia, Canada, the European Union, and the U.S.).¹ Interestingly, despite the

¹Several recent papers study issues related to those examined in this paper. Hens et al. (1999) study pricing-to-market in a reciprocal duopoly model. However, they do not address the issue of how pricing-to-market is affected by AD law. Blonigen and Haynes (1999) study the pricing behavior of firms following the imposition of AD duties. We are interested in the pricing behavior prior to an AD investigation. Finally, a number of papers including Baldwin and Steagall (1994) and Krupp (1994) examine how various factors influence the ITC injury decision. We focus not on the injury determination but on the number of filings in this work.

theoretical ambiguity we find unambiguous support in both the aggregate and bilateral filing data that a real appreciation of the filing country's currency will lead to a significant increase in AD filings. For instance, in our bilateral data we find that a one standard deviation real appreciation of the filing country currency leads to a 33% increase in AD filings. We also find that a one standard deviation fall in domestic real GDP growth leads to a 23% increase in AD filings.

We believe that these findings are further evidence that antidumping law is not primarily used to combat unfair trade, but rather is often simple protectionism. While fluctuations in real GDP and real exchange rates are certain to affect industry equilibria, they are unlikely to be systematically associated with malevolent behavior by foreign firms. Our results suggests that foreign firms are being held responsible for the impact of factors beyond their control.

2. Exchange rates and antidumping filings

From a theoretical perspective, a foreign firm's response to a real exchange rate change will exacerbate either the injury or LTFV test. This point can be made simply by considering the case of a foreign firm servicing the domestic market.² In Fig. 1 we graph the foreign supplier's response to a real depreciation in its home currency (e.g., Japanese exporter's response to a weakening of the yen). As the firm is servicing the domestic market, the demand curve represents domestic demand (e.g., demand in the U.S. market).

When the foreign currency weakens, the firm's costs (denominated in domestic currency units) fall from MC_0 to MC_1 . Therefore, normal response of foreign firms is to lower the domestic currency price of foreign goods. This would be expected to reduce the profits of domestic producers in the same industry by lowering their margins or market share.³

In general, however, this price response (in terms of its own home currency) implies that the foreign firm has increased the foreign currency price of shipments to the domestic market relative to other destinations, but by less than the appreciation of the domestic currency.⁴ An increase in the foreign currency price

²The informal verbal arguments made here are thoroughly derived in the working paper version of this paper (Knetter and Prusa, 2000).

³Note that the dollar price of imported goods will fall relative to domestic goods with a real appreciation of the dollar provided the foreign firm does not completely offset the relative cost change with a markup change. The special case in which markups are adjusted to fully offset the effects of currency movements is known as "complete pricing-to-market" in the literature. The opposite case, in which exchange rate changes are fully passed-through to foreign buyers is known as "full pass-through."

⁴The relationship between exchange rate fluctuations and destination-specific pricing of exports is known as pricing-to-market behavior. The evidence on pricing-to-market varies by industry (see Goldberg and Knetter, 1997), but the median price response to a real exchange rate change across industries studied in the literature is close to 50%—i.e., half of the movement in the real exchange rate is offset by destination-price adjustment.

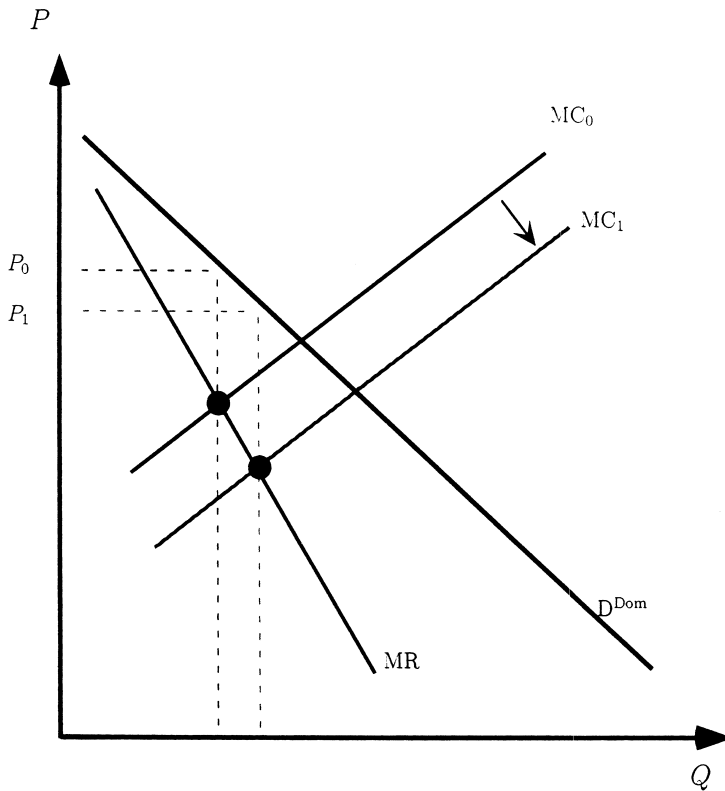


Fig. 1. Reaction of foreign supplier when its home currency weakens.

of shipments to the domestic market obviously reduces the chance that the foreign firm is guilty of LTFV pricing.

Thus, with typical pricing-to-market behavior, a strong (weak) domestic currency will increase (decrease) the chance of injury and make it less (more) likely that the foreign firm is guilty of LTFV pricing. If we presume that the incentive to file an AD case is positively related to the likelihood of affirmative decisions on the injury and LTFV criteria then in theory it is entirely possible that either exchange rate appreciations or depreciations can precipitate AD filings.

As an empirical matter, the issue is further clouded by the fact that the four major users of AD protection all have their own specific implementation of the GATT/WTO rules. The conventional wisdom for the world's heaviest user of AD protection—the United States—is that the material injury criterion is the more difficult test to satisfy. For instance, over the past 20 years only 28 of 800 U.S. cases received negative LTFV determinations; by contrast, there have been over 300 negative injury determinations. This track record suggests that more an-

tidumping cases would be filed when exchange rates or output fluctuations improve the odds of an affirmative material injury decision—i.e., when the domestic currency is strong in real terms or when the domestic country is in recession.

The other countries implement AD protection somewhat differently and so this presumption that injury drives the filings is not obvious. To begin with, the EU uses a single agency to make both determinations while Canada, Australia, and the U.S. all use two agencies. This could make the EU results more muddled. Second, EU and Australian AD regulations likely make the injury criterion easier to satisfy than in the U.S. (Santos, 1998). Both have very restrictive rules for accessing information so foreign firms have a more difficult time defending themselves. Third, Australia and the EU both use the “lesser duty” rule which dampens the importance of large margins; the U.S. has no such rule. Finally, ministerial oversight in both Australia and the EU mean their AD determinations are subject to more direct political interference. Depending upon whether political pressure is greater when injury or dumping margins are larger, this oversight could make either criterion more important.

3. Data

To investigate the relationship between antidumping filings and macroeconomic conditions, we collected data on AD filings by the four largest users: Australia, Canada, the United States, and the European Union. The filing data is available from the GATT/WTO annual reports.

These four users accounted for more than two-thirds of all AD actions filed worldwide since 1980. For each of these four reporting regions (henceforth referred to as “reporting” or “filing” countries), we have aggregate filing data on an annual basis from 1980 to 98.⁵ For each filing, we know the filing country, the industry, the country named in the filing (i.e., the defendant), and the ultimate determination (injury or no injury). The GATT/WTO reports do not include any information on the dumping margin which precludes us from directly looking at how exchange rate changes affects margins.

Fig. 2 displays the number of filings by filing country for our 1980–98 sample period. The figures show there is considerable variation in the number of filings from year-to-year. Furthermore, it is clear that filings are related to the business cycle, especially for the United States and Australia. The recessions that began in the early 1980s and early 1990s (the only two in our sample) are associated with large spikes in the number of filings.

The level and variation of filings across filers is summarized in Table 1.

⁵Changes in antidumping law in 1979 preclude us from using filing data prior to 1980. Also, due to reporting problems we do not have Australian filings in 1980 and 1981.

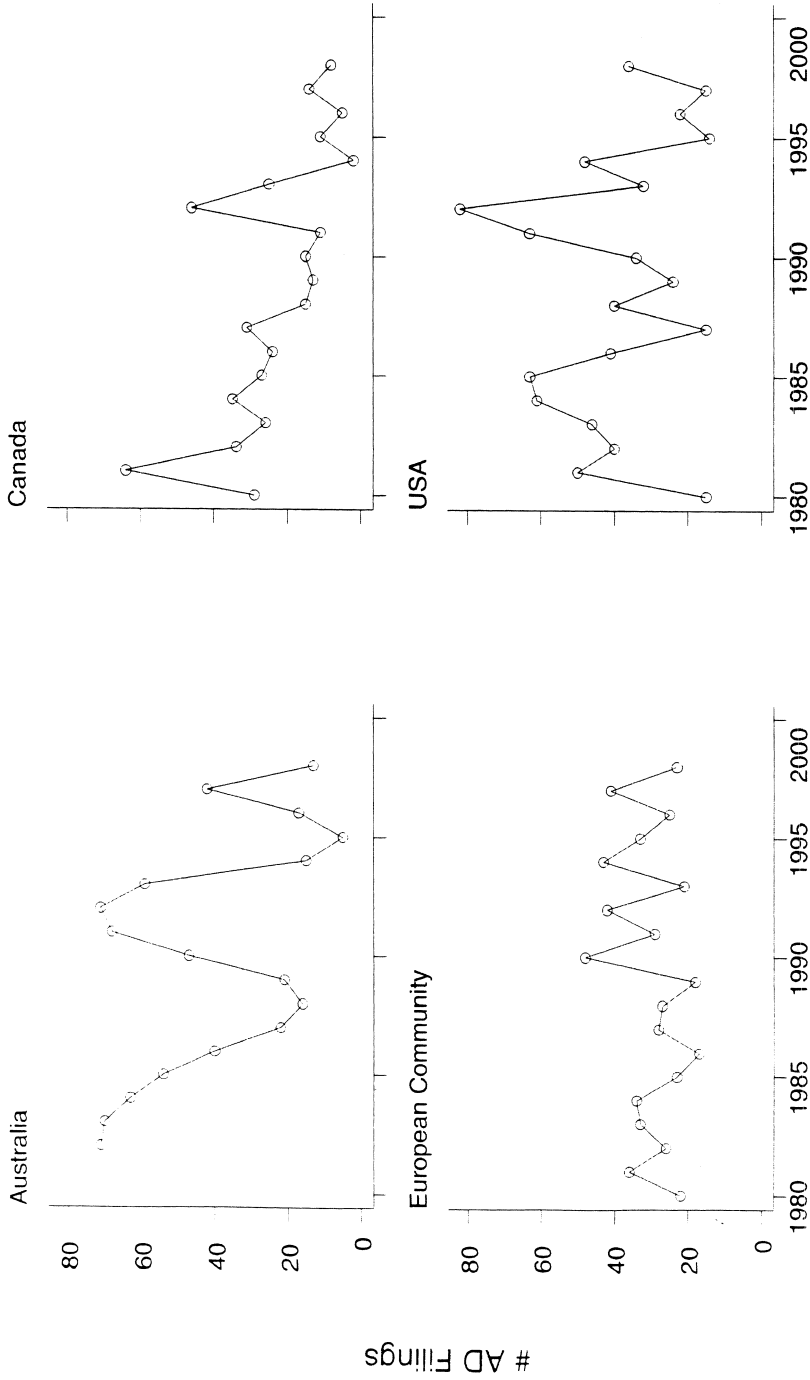


Fig. 2. AD filings per year.

Table 1
Mean and standard deviation of filings by source country, 1980–98

	Avg. filings per year	Std. Dev.
Australia*	41	24
Canada	23	15
EU	30	9
USA	39	19

*1982–98.

Adjusting for the fact that its filing data is missing for 1980–81, we find that Australia is the heaviest filer of the four regions. This is surprising given that it is the smallest of the four countries by a fairly large margin (e.g., Canada has a population about 50% greater than Australia, while the U.S. and EU are about 10 times the size of Canada). Table 2 shows the pattern of bilateral filings across countries. As is readily apparent there is substantial variation in filing across countries. The US and EU have frequently targeted Japanese products while Australia and Canada have both made the US a prime target.

The International Monetary Fund *International Financial Statistics* CD-ROM provided real GDP data for both the filing countries and the named countries. In our empirical work we perform tests using both aggregate filings and also the number of filings against individual countries. For the aggregate filing behavior, we use the real effective exchange rate index (based on labor costs) for the filing country as reported by the IMF. In our examination of filings against individual foreign countries (i.e., “bilateral filings”), we used bilateral real exchange rates between each of the four filing countries and each country named in at least one antidumping case since 1980. The Economic Research Service of the U.S. Department of Agriculture was a convenient source for bilateral real exchange rates since they report exchange rates in a consistent fashion for virtually all countries in the world. The exchange rate is defined as foreign currency per unit of domestic currency so that an increase in the exchange rate reflects an appreciation of the filing country’s currency. Also, we normalize each country’s exchange rate by dividing by the sample average.

4. Empirical specification and results

The preceding discussion motivates how filings might be affected by real exchange rates, filing country GDP, and rest of world GDP. The dependent variable in our econometric work will be the number of filings occurring in a year.

Since the number of filings is a non-negative count variable, we will estimate the relationship between number of filings and macroeconomic factors using negative binomial regression which is essentially a Poisson model with a more flexible error structure.

Table 2
Bilateral filing patterns

Affected country	Reporting country				Total
	Canada	USA	European union	Australia	
Japan	26	88	53	45	212
USA	83	0	30	63	176
South Korea	25	47	37	47	156
PR-China	14	60	45	37	156
Taiwan	16	50	11	49	126
Germany	31	43	0	47	121
Brazil	15	43	20	23	101
Italy	22	35	0	28	85
United Kingdom	25	27	0	31	83
France	24	29	0	28	81
Spain	18	18	18	9	63
Canada	0	41	8	11	60
Thailand	2	10	17	25	54
Czechoslovakia	8	1	37	7	53
Poland	8	8	28	6	50
Belgium–Luxembourg	11	16	0	22	49
India	5	14	21	7	47
Romania	9	9	25	2	45
Mexico	6	21	8	4	39
Singapore	5	5	6	21	37
Sweden	10	8	7	11	36
Hungary	1	5	22	6	34
Netherlands	5	12	0	16	33
Malaysia	5	3	11	13	32
Indonesia	2	3	11	15	31
South Africa	3	6	5	15	29
Hong Kong	5	4	10	10	29
Turkey	0	6	14	4	24
Argentina	3	13	1	6	23
Austria	3	7	5	8	23
New Zealand	2	3	0	17	22
Venezuela	1	17	1	2	21
All other countries	24	58	58	56	196
Total	417	710	509	691	2327

The Poisson regression model assumes that the incidence rate v (the rate per unit time at which happenings occur) is a function of some underlying variables as follows:

$$v_j = e^{\beta_0 + \beta_1 x_{1j} + \beta_2 x_{2j} + \dots + \beta_k x_{kj}}$$

The expected number of occurrences is equal to this incidence rate multiplied by the exposure (the number of units of time over which observations are measured).

The exposure is uninteresting in our case since each observation in the data set is the number of AD filings in a 1-year interval. We believe that the incidence rate is a function of GDP growth in the home and foreign countries, the real exchange rate, and possibly other factors.

One feature of the Poisson model that is frequently violated in applications is the equivalence of the expected value and variance of a Poisson random variable. Often, count data exhibit overdispersion with respect to the Poisson model—i.e., the variance of the observed counts exceeds their mean. This is certainly true regarding the data reported in Table 1. In such cases, an alternative is to assume that the data are generated by a negative binomial random variable, which allows for a variance that is greater than the expected value of the distribution. While we present conclusions based on the negative binomial (NB) regression model, we also estimated the models using Poisson and found similar results in terms of the statistical and economic significance of the macroeconomic factors on AD filings.

In addition to method of estimation, another important specification issue is the lag structure of the regressors. The legal framework for determining LTFV and material injury offers some guidance here. While not specified under WTO rules, all of the reporting countries generally analyze pricing behavior over the year prior to the filing of the case in order to assess LTFV. By contrast, all of the reporting countries evaluate injury over a longer time horizon. In general, injury is determined over the 3 years preceding the filing. Given these features of the law, it seems plausible to consider lags from 1 to 3 years for our variables. We report results with a 1-year lag on the real exchange rate (since we conjecture that exchange rates may be more important for LTFV which is assessed over the 1-year period) and 3-year lags on real GDP growth. We have experimented with other lag structures (and contemporaneous values) and are confident that none of our main results is affected by the choice of lag structure.

4.1. Annual data on aggregate filings

Our first set of results is based on the annual number of filings for each of our four reporting units (Australia, Canada, EU, and US). We estimate the number of filings as a function of the real exchange rate, domestic real GDP growth, and rest of world real GDP growth using the NB regression. The real exchange rate variable is normalized by dividing each exchange rate series by its sample mean before taking logs. The real GDP growth variable is the 3-year growth rate from $t-3$ to t (i.e., the 3 years prior to the filing date).

In Tables 3–5, we report “incidence rate ratios” associated with the parameter estimates. The incidence rate ratio (IRR) is the ratio of the counts predicted by the model when the variable of interest is one unit above its mean value and all other variables are at their means to the counts predicted when all variables are at their means. Thus, if the IRR for the real exchange rate is 1.50, then a one unit increase in the real exchange rate (a 100% real appreciation given that we use the log of the

Table 3
Negative binomial estimation of aggregate filings

Model	(1)	(2)	(3)	(4)
rxr (-1)	4.18 (2.75)	4.69 (3.40)	3.67 (2.80)	3.91 (2.96)
FGDP (avg)			0.93 (-2.05)	0.97 (-0.61)
WGDP (avg)				0.89 (-1.21)
Random effects	NO	YES	YES	YES

Notes: rxr (-1) is the log of the real exchange rate, lagged 1 year; FGDP (WGDP) is percentage growth in real GDP of filing country (rest of world) over prior 3 years. Estimates are reported as “incidence rate ratios”. *t*-statistics reported for a test of no effect on filings (which corresponds to an IRR value of 1.0). Number of observations = 74.

Table 4
Negative binomial estimation of aggregate filings-country specific exchange rate and domestic GDP response

Model	(1)	(2)	(3)	(4)	(5)
rxr (Australia)	51.6 (4.46)	30.4 (3.58)	38.2 (4.09)		36.2 (4.43)
rxr (Canada)	2.22 (0.55)	0.93 (-0.05)	1.17 (0.11)		0.11 (-1.33)
rxr (EU)	2.16 (0.56)	2.04 (0.55)	1.68 (0.39)		1.98 (0.55)
rxr (US)	2.51 (1.57)	2.62 (1.67)	2.60 (1.70)		2.61 (1.79)
FGDP (avg)		0.94 (-1.56)	1.00 (0.08)		
WGDP (avg)			0.86 (-1.73)		
rxr				3.56 (2.75)	
GDP (Australia)				0.97 (-0.99)	0.96 (-1.01)
GDP (Canada)				0.82 (-2.99)	0.79 (-3.50)
GDP (EU)				0.92 (-1.28)	0.90 (-1.67)
GDP (US)				0.97 (-0.63)	0.95 (-0.90)

Note: All regressions include random effects. All variables defined as in Table 3. Estimates are reported as “incidence rate ratios”. *t*-statistics reported for a test of no effect on filings (which corresponds to an IRR value of 1.0). Number of observations = 74.

Table 5
Negative binomial estimation of bilateral filings

Model	(1)	(2)	(3)	(4)	(5)
rxr (-1)	3.28 (7.98)	3.30 (8.14)	3.37 (8.02)		
rxr (Australia)				7.80 (6.29)	7.57 (6.14)
rxr (Canada)				2.37 (2.54)	2.37 (2.55)
rxr (EU)				4.23 (4.47)	4.22 (4.43)
rxr (US)				2.09 (2.93)	1.97 (2.66)
FGDP (avg)		0.97 (-6.12)	0.97 (-5.93)	0.97 (-5.36)	
AGDP (avg)			1.00 (-0.43)	1.00 (-0.48)	1.00 (-0.56)
GDP (Australia)					0.96 (-5.01)
GDP (Canada)					0.98 (-1.81)
GDP (EU)					0.96 (-1.74)
GDP (US)					0.98 (-1.71)
No. Obs.	3469	3469	3397	3397	3397

Note: All specifications include random effects for each reporting country-affected country pair. Estimates are reported as “incidence rate ratios”. *t*-statistics reported for a test of no effect on filings (which corresponds to an IRR value of 1.0). The number of observations falls in specifications (3)–(5) due to missing values for affected country GDP.

real rate) would increase counts by 50% when all other variables are at their means. The *t*-statistics are reported for a test of the null hypothesis that the IRR = 1, which would imply no relationship between the dependent variable and the regressor.

The most basic results based on aggregate filings are presented in Table 3. In all of the models the exchange rate has a statistically significant impact at the 1% level. The aggregate filing data unambiguously indicate that AD filings increase substantially when the filing country currency strengthens in real terms, which contrasts with Feinberg’s (1989) result that U.S. filings rise with a weakening currency. We will analyze the sources of this difference later in the paper.

Domestic GDP growth is negatively related to filings when it is included alone, but when domestic and world GDP growth are both included, neither variable is statistically significant, although both have the expected negative relationship.

In Table 4 we report results on aggregate filings that include a filing-country specific real exchange rate effect. This allows us only 19 annual observations (17

for Australia) with which to detect a relationship, and more importantly, only a few big swings in the real exchange rate series for each filing country. Here we find that Australia has by far the most pronounced exchange rate effect. The IRR values exceed 50 in some cases and the coefficients are significant at the 1% level. The U.S. results are “borderline significant” with t -values ranging from 1.6 to 1.8 and IRRs between 2.5 and 2.6. Canada and the EU are never close to being statistically significant and the IRRs tend to be quite small. Part of the problem may be the limited number of observations, which we can rectify by examining filings by “affected country” (i.e., those countries named in a suit as “defendants”) for each of our filing countries. These results are discussed below. All of the countries have the expected negative relationship between own GDP growth and filings, but only Canada’s is statistically significant.

Our findings in Tables 3 and 4 are based on pooling all data on AD filings across our four filing countries for all industries. Given that the steel industry files a large fraction of U.S. and Canadian cases, we felt it was important to verify that our findings are not being driven by the steel industry’s behavior. Unfortunately, the GATT/WTO reports have only identified industry since 1987, thereby limiting our ability to drop steel cases from the entire dataset. Using the data available, we performed the above analysis eliminating the steel industry and we find that the statistical significance of the real exchange rate effects is similar and the economic significance (given by the magnitude of the IRR in NB regression) is much greater. The real GDP growth effects become insignificant (although the point estimates are still negative) when steel cases are excluded from the data. The impact on exchange rates and GDP from excluding steel suggests that AD filings in steel are heavily influenced by the business cycle, but not so much by exchange rates.⁶

4.2. Annual data on bilateral filings

In constructing the database with filings broken down by affected country, we lost a relatively small number of observations due to the inability to construct real exchange rates or real GDP growth over the sample period. Most of the cases involved countries that were part of the former Soviet Union. Once these observations were eliminated, we had a panel dataset with 4 filing countries, 48 affected countries (47 for each filing country), and 19 years (17 for Australia).⁷ We model the number of cases against an affected country by a filing country in each year as a function of the bilateral real exchange rate, filing country real GDP growth, and affected country real GDP growth. The advantage of this dataset, which we believe is substantial, is that the exchange rate and foreign GDP growth variables are more precisely targeted to match the country named in the filings.

⁶These results are available upon request.

⁷There are still a small number of missing observations for certain affected countries due to missing GDP data.

Following the findings with aggregate filing data, we apply the negative binomial regression model to the data.

The main results are presented in Table 5. These regressions use random effects for each filing-affected country pair. When we estimate a common response to exchange rates across all filing countries, we find the real exchange rate variable is significant at the 1% level in all models, with an IRR ranging from 3.28 to 3.37. Although the estimated IRR values are somewhat lower than with aggregate filings, one must keep in mind that the bilateral exchange rate series are much more volatile than the trade-weighted exchange rates used in the aggregate filings (e.g., the standard deviation tends to be about twice as big).

The results when we allow for a filing-country specific response to the real exchange rate with random effects and real GDP growth are reported in column (4). We find that the real exchange rate impact is significant at the 1% level for Canada (with an IRR of 2.37), the U.S. (IRR equal to 2.09), the EU (IRR equal to 4.23) and Australia (IRR equal to 7.80). The increased detail of the observations has the greatest impact on our results for the EU, which with the aggregate data showed no indication of increased filings when the trade weighted real exchange rate appreciated. In the bilateral data, it is clear that filings rise systematically against countries whose real exchange rates have depreciated against the countries of the EU. The exchange rate impacts are very similar when we allow reporting country-specific real GDP growth effects (column 5). It is worth noting that the country that has filed the most AD cases, Australia, also has the greatest estimated increase in filings in response to a currency appreciation.

In the bilateral filings database, it is also apparent that filing country real GDP growth is negatively and significantly related to the number of filings. In the model with random effects and a common real exchange rate response in column (2), we find that a one percentage-point increase in filing country 3-year real GDP growth leads to a 3% decrease in the number of filings (i.e., the IRR is 0.97). Adding real GDP growth of the affected countries in column (3) does not affect this estimate. Affected country real GDP growth now appears to be unrelated to the number of filings. The IRR estimates are very close to 1.00 and are never close to being statistically significant. This change in the impact of reporting country and affected country real GDP growth on the number of filings is the main difference from the results obtained with the aggregate filings data. It appears that domestic, but not foreign, recessions systematically provoke more filings.

In terms of the economic significance of the macro factors in the bilateral filings data, we find that for the specifications in columns (1) and (2) of Table 5, a one-standard deviation real appreciation of the domestic currency leads to a 33% increase in filings, while a two-standard deviation real appreciation results in a 77% increase. In column (2), the estimated real GDP impact implies that a one standard deviation reduction in real GDP growth leads to a 23% increase in filings. Based on these estimates, we conclude that both variables are economically significant in explaining the pattern of filings across countries and over time, and that real exchange rates are somewhat more important.

Table 6
Tobit estimation of bilateral filings

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Years	1982–1987	All	1982–1987	All	All	1982–87	All
Reporting countries	U.S.	U.S.	U.S.	U.S.	All	All	All
Affected countries	Feinberg 4	Feinberg 4	All	All	Feinberg 4	All	All
rxr	-1.94 (-0.46)	2.09 (1.21)	2.44 (2.52)	1.63 (2.87)	3.59 (3.61)	3.82 (6.46)	2.05 (6.13)
Constant	3.55 (3.91)	2.35 (7.36)	-0.87 (-3.39)	-1.22 (-7.51)	0.97 (5.34)	-1.65 (-9.65)	-2.05 (-18.89)
No. Obs.	24	76	281	890	304	1094	3465

Note: *t*-statistics in parentheses.

The more robust link between filings and macro factors (especially for filing country specific responses to exchange rates) in the bilateral data is no doubt attributable to the increased number of observations and the reduction in noise associated with the real exchange rate. The latter results from the fact that the real exchange rate is matched to a specific affected country, rather than being a trade-weighted average rate as it was for the regressions based on aggregate filings. This appears to be a case where aggregation over the affected countries and studying total filings in relation to a trade-weighted exchange rate obscures some interesting information. We place more faith in the bilateral results.

Given the robustness of our findings we want to address the discrepancy between our results and Feinberg's finding that U.S. AD filings increase when the dollar is weak. Feinberg's analysis differs from ours in two important ways. First, he uses a Tobit model. Second, his sample is much smaller than ours. He uses quarterly data to analyze U.S. filings against Korea, Mexico, Brazil, and Japan for the 1982–87 period. Either the estimation approach or some aspect of his sample selection could explain the difference in our findings.

In order to identify why our findings differ, we estimated the impact of the exchange rate on filings using Tobit analysis with our annual bilateral filings sample. We report results in Table 6. In column one we report results using only U.S. filings against the same four countries for the same time period Feinberg studied. Although the results are not statistically significant, we find the same qualitative result as Feinberg—namely, filings increase when the dollar is weak. This suggests that the difference in our findings is not being driven by estimation procedure. In columns 2–7 we expand the sample, allowing more affected countries, more years, and more filing countries. The results are quite striking. In *all* cases we find that filings increase when home currency is strong. In other words, Feinberg's finding is very sensitive to the sample chosen. For instance, in column two we study U.S. filings against the countries in Feinberg's study but for the entire time period. We find that Feinberg's result is reversed, albeit the estimate is statistically insignificant in both samples. In column three we examine U.S. filings against all affected countries for the Feinberg time period, 1982–87. Again, we find that Feinberg's result is reversed. In the other columns we progressively broaden the sample and we continue to find strong support for the finding that AD filings increase when the home currency is strong. We interpret these results as indicating that our finding is highly robust.

5. Conclusion

Antidumping suits have become an increasingly popular form of protection for firms engaged in international markets. This paper has examined how macro-economic factors in general and the real exchange rate in particular, can influence the probability of affirmative findings for the LTFV and material injury criteria.

Our empirical work uses data on AD filings from Australia, Canada, the European Union, and the United States. We find that a real appreciation of the filing country's currency will lead to a significant increase in AD filings. This result is at odds with existing research on the subject, but is robust to the method of estimation, to the inclusion of other macroeconomic variables such as real GDP growth, and to the elimination of steel cases in the filing data. The results are strongest when we examine bilateral filings. The economic significance is substantial—a one (two) standard deviation real appreciation of the filing country currency leads to a 33% (77%) increase in AD filings in our specification that constrains the response to be common across filing countries. We also find that a one standard deviation fall in domestic real GDP growth leads to a 23% increase in AD filings.

In addition, our research resolves the tension between Feinberg's result that a weak domestic currency encourages filings and the belief within the business community that a strong domestic currency precipitates filings. We find that Feinberg's result is quite fragile, severely dependent on the particular sample he used.

The link between real exchange rates and filings suggests that either foreign firms are being held responsible for factors outside of their control or that foreign firms behave in a "predatory" manner when conditions favor them most.⁸ Given the findings of other related literature (Boltuck and Litan, 1991) we are more inclined to believe the former hypothesis, which casts further doubt on the fairness of AD law.

The fact that we find that filings for all four major users of antidumping protection are significantly influenced by exchange rate fluctuations suggests that the problem with countries abusing antidumping rules is not simply a U.S. or EU problem. Rather, it indicates that GATT/WTO rules governing antidumping law allow abuses of the statute. Our findings support the notion that current (and perhaps future) rounds of the WTO must include antidumping reform on the negotiating agenda.

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⁸This view is echoed in the Goldman Sachs *Economic Analyst* which claims that "the correlation between the number of AD cases initiated and the change in the G7 trade-weighted dollar index suggests that domestic producers have been seeking protection against adverse market conditions, not against anti-competitive dumping."

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References

- Baldwin, R.E., Steagall, J.W., 1994. An analysis of ITC decisions in antidumping, countervailing duty, and safeguard cases. *Weltwirtschaftliches Archiv* 130 (2), 290–308.
- Blonigen, B.A., Haynes, S.E., 1999. Antidumping Investigations and the Pass-Through of Exchange Rates and Antidumping Duties, NBER Working Paper No. W7378.
- Boltuck, R., Litan, R.E., 1991. Down in the Dumps. The Brookings Institution, Washington, DC.
- Feinberg, R.M., 1989. Exchange Rates and Unfair Trade, *Review of Economics and Statistics*, 71, 704–707.
- Goldman Sachs, 1999. *Economic Analyst*, March 26.
- Goldberg, P., Knetter, M.M., 1997. Goods prices and exchange rates: What have we learned? *Journal of Economic Literature* 35, 1243–1272.
- Hens, T., Jäger, E., Kirman, A., Philips, L., 1999. Exchange rates and oligopoly. *European Economic Review* 43, 621–648.
- Knetter, M.M., Prusa, T.J., 2000. Macroeconomic factors and antidumping filings: Evidence from four countries, NBER Working Paper No. 8010.
- Krupp, C., 1994. Antidumping cases in the U.S. chemical industry—A panel data approach. *Journal of Industrial Economics* 42 (3), 299–311.
- Santos, L.E. (Ed.), 1998. *The Compendium of Foreign Trade Remedy Laws*. The American Bar Association, Washington, DC.