What Triggers an Anti-Dumping Petition? Finding the Devil in the Detail

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Abstract

Despite a substantial literature on the anti-dumping process and its consequences, the circumstances surrounding the initiation of an anti-dumping petition are not well documented. While this is likely to be a many faceted decision, we isolate a number of common features associated with petitions using detailed monthly U.S. trade data preceding a filing. This detail allows the very precise measurement of imports and their changes. Specifically, we are able to decompose imports along a number of margins including price, quantity, number of shipments and number of customs districts served. Surprisingly, we find very little evidence of import surges, or of large reductions of import prices (typically both are relatively flat). Instead, there are significant reallocations of import market shares toward countries named in a petition. These increases are driven by both more shipments (rather than larger shipments) and an increase in geographical scope (more customs districts served). Measures of import quantities and extensive margins of trade are also important for predicting the countries that are filed against. After controlling for such effects we find that poor countries in general, and China in particular, are especially susceptible to being named in an anti-dumping case.

1 Introduction

The trade policy known as anti-dumping (AD) has as a checkered history. Originally conceived as a measure to counteract predatory foreign cartels, it has evolved into an elaborate mechanism whereby a "threatened" domestic industry can initiate an anti-dumping petition against specific foreign competitors, regardless of how competitive the industry might be. In simple terms, for the petition to be affirmed, it needs to be found that a cited foreign firm is pricing at less than fair value (LTFV) and that the domestic industry was injured or threatened with injury.

Not surprisingly such a policy mechanism is the subject of a large and ever growing literature. Much of this literature has focused on the decision making process of the bodies charged with the responsibility of assessing the claims of LTFV and injury. Of the two components, the injury criterion is the more difficult to assess, and consequently is seen as critical to the ultimate outcome of the case. From this perspective, efforts to understand the injury component naturally attempt to combine trade data with data on domestic activity (production, employment, etc). However, these two data sources have traditionally been used for different purposes and are only comparable at a relatively aggregate level. This level of aggregation implies constraints in two important dimensions; very many products typically map into a domestic industry (not all of them being subject to an AD petition) and concordance is only possible at the annual level. This has the obvious draw back that the correspondence between the information that would appropriately describe the true circumstances surrounding a case and the information publicly available to study these cases is not always what one would ideally desire. The goal of this paper is to try to overcome this lack of correspondence by using data that more closely matches the level of disaggregation in an AD case. In doing so we sacrifice information on domestic production. However, we are able to study imports at a very detailed level (over 15,000 product classification versus 450 if constrained by domestic data) and this information is available for each month. By using the fine detail in the monthly data we can offer a different perspective, one where the comparison group isn't based on domestic information but other non-named countries supplying the same product. This allows us to examine two important issues.[1]

First, given the breakdown between the named and non-named countries, how different is the evolution of observables over the preceding two years (24 months)? A natural starting point is a

[1]Prusa (1997) also conducts his analysis at the product level, though for an earlier period. However, he examines the implications of AD cases, while we are interested what changes precede an AD petition.

characterization of any import surge associated with the named countries. While we can document a pronounced increase in imports from countries named in an AD petition, we are also able to place this in a broader, but still very particular, context. Specifically, is the rise in imports from countries named in the petition matched by those not named but still selling the same product? Here we find that the differences across the two types of countries is striking, with non-named countries typically experiencing a decline in imports. Moreover, this decline is so pronounced that total imports actually fall. This naturally leads to the question of what phenomena underlie these changes. Given the price dimension of an AD case, a prime suspect would be a dramatic change in prices. However, price variations play almost no role, either absolutely or relatively. Instead all the action is in the quantity dimension. It is not a tsunami style surge, however, but rather a pronounced compositional change with two extensive margins being notable, the number of shipments and the number of customs districts. So while we cannot get at injury directly what we see are results that are consistent with market disruption rather than wholesale destruction.

The second question asks what are the factors that contribute to a country being named in a petition? This question also relates directly to the issue of cumulation, or the kind of boogeyman the petitioning industry constructs. If the petitioners include every country then they run the risk of being caught out by the fact that there is no import surge in the aggregate (which we know from the decompositions). If they include too few countries then they run the risk of not having a group that is sufficiently large to be capable of causing injury to the industry. With this trade-off in mind we find that both growth and level effects are important for a country to be selected into an AD petition. Moreover, country characteristics are also important with per capita income having pronounced effects. The identity of countries also appears to matter; NAFTA countries are less susceptible to filings while China is more susceptible.

2 Previous Literature: Determinants of Filing Behavior

The complexity of the AD process, as noted above, has generated a very large literature. However, for our purposes the most relevant papers examine the factors that are associated with the filing of an AD petition. Generally, these studies fall into two groups. The first takes as given the ability of an industry to file a petition, and consequently studies the industry level determinants of filing behavior. The seminal paper in this literature is Staiger and Wolak (1994). The establishment of injury is the

driving force in their framework, and consequently they are careful to link domestic data on industry activity to trade data. However, as noted above this raises the issue of mismatch between the level of aggregation an AD petition and that of publicly available domestic information.[2] This issue is addressed directly by a framework that aggregates over products in order to match the industry level information of the domestic data. Consequently, the question asked about filing behavior is not whether an imported product is subject to an AD petition, but the number of AD petitions that are filed by an industry over the course of a year. From this perspective, Staiger and Wolak provide evidence that the import penetration ratio, capacity utilization rate, employment and the extent of vertical integration are all statistically and economically important determinants of the number of AD petitions filed by an industry within a year.[3]

The second set of papers approaches the filing of an AD petition from a different perspective. In particular, they view the filing of a petition as a collective action problem, and attempt to identify the conditions that enable firms to overcome incentive problems (e.g. free riding) in order cover the costs associated with filing. Such a micro focus is associated with more demanding data requirements, resulting in a smaller literature to this point. Nevertheless, papers that analyze the filing decision in this way include Herander and Pupp (1991), Olson (2004)) and Reynolds (2006).

Our work is distinct from, and therefore complements, these studies in a number of important ways. In relation to the first set of papers, we conduct our analysis at the product level not at the industry level. Moreover, the data frequency we employ is monthly rather than annual. Using this more disaggregated data allows a more precise matching of import fluctuations to filing decisions. Consequently our focus is on identifying observable characteristics that are associated with filing behavior at the product level. In pursuing this strategy it is important to realize that an AD petition is very detailed with respect to who it is that is alleged to be engaged in dumping. It is typically the case that not all foreign exporters of a product are named in a petition. Hence, we can contrast the behavior of the imports of the named and non-named countries. This naturally leads to the question of the factors that lead a country to be named in a petition. Addressing this question provides a point of demarcation from the second strand of the literature. Rather than taking the

[2]The period examined is from 1980-85. At this time import products were classified under the Tariff Schedules of the United States, which contained approximately 8,000 codes. In contrast, domestic information is gathered at the 4 digit 1972 SIC level, 338 industries.

[3]Other papers that study industry level determinants of AD filing include Finger (n.d.), Herander and Schwartz (1984), Feinberg and Hirsch (1989), Hansen (1990), Krupp (1994), Lichtenberg and Tan (1994), Furusawa and Prusa (1996), Blonigen (2000), and Sabry (2000). While utilizing different methodologies (and allowing for the possibility of retaliation), the conclusions are consistent with those of Staiger and Wolak (1994).

set of countries named in a petition as given and asking which firms would want to participate in an AD petition, we examine the factors that contribute to a country being named in a petition. Hence we investigate the determinants of the filing decision with respect to who is named, without directly accounting for the collective action problem. Nevertheless the major distinction between the analysis we conduct and the papers cited above is that the analysis in this paper is conducted at the product and petition level rather than at the more aggregate industry level. Given this difference we now describe the data that facilitates this analysis.

3 Data

Timeliness is a key feature of an anti-dumping case. There are time lines that characterize both the collection of information necessary to file a petition and also the time allocated to decide the case. Filing a petition involves presenting information that is both timely (covers the recent pattern of trade) but also puts this information in context (have imports been rising? Is the behavior typical for this time of year?). Given this emphasis on detailed information, especially in the period immediately preceding the filing of a petition, it is important that attempts to understand what drives an anti-dumping petition try to match this level of detail. Unfortunately much of the information presented in an AD petition is confidential, and therefore the petition itself cannot be used as a source of information. Nevertheless, very detailed information about trade flows is available, which allows us to at least approximate some of the detail necessary to file an AD petition. In particular, we utilize monthly data to track the changes in imports preceding the filing of an AD petition.

The analysis that follows combines information on individual anti-dumping cases with detailed U.S. trade data. Information on the individual anti-dumping cases are drawn from Bown (2009). This dataset contains information on the case numbers, countries filed against, HS codes, the date a petition is filed along with the decision at each stage of the petition. The presence of the HS codes allows us to link this information to detailed U.S. trade data. Our primary data are the HS product level information on U.S. imports available in the monthly reports of the *U.S. Imports of Merchandise Data*.[4] These data contain substantial information on the value and quantity of imports at the detailed product level. From this value and quantity information we derive unit values, providing us with a very detailed dataset for analysis. We use *Imports for Consumption*, the

[4]Despite the public availability of this data it is relatively underutilized. An exception is Schaur (2007).

classification of U.S. imports used in U.S. antidumping investigations.[5]

The value fields we employ include: 'Customs value', which measures the value of imports at the foreign port, 'Import charges', the cost of all freight and insurance and other charges, and 'calculated duties,' which represent the value of duties paid on the product. We typically identify prices by deflating these values by a quantity measure, usually the "first unit of quantity" as reported in the data. Relative price measures, such as the freight mark-up or the ad-valorem duty, can be calculated as ratios of various import value measures (because the units of quantity are held fixed across the comparison). The data also have two other dimensions of detail that we exploit; the number of individual shipments and location of unlading in the U.S. of a shipment. The number of shipments is measured in terms of 'cards', which is a count of the individual trade manifests that are processed.[6] In this sense each card represents a single shipment (i.e. unique exporter-importer pair). This allows us to identify the number of shipments and the average size of shipments. We also have information on the customs district of unlading, which provides a source of geographical information.

One issue that arises when following HS codes over time is that fact that definitions change relatively frequently. Since we analyze the shipments occurring in the previous 24 months, changes in product definitions have an enormous impact of the amount of data available (for instance if the definition of a product changes in the month before an AD case is filed then only one months worth of data is available). To mitigate these problems we pursue two strategies. First, we identify a period of time where the definitions of HS 10 products is relatively stable, 1998-2004. [7] The second strategy is to use a concordance that enables us to track HS 10 codes through time.[8] By following these two strategies we are able to track all HS 10 product codes associated with every AD case filed between 1998 and 2004 for 24 months preceding the filing of an AD petition.

[5]The U.S. also reports *General Imports* which measures total physical arrivals into the United States, including shipments bound for bonded warehouse or transshipment to other countries.

[6]A 'card' is the count of the number of Customs Entry Summary forms. These forms are required to be filed by an importer in order for the merchandise to be released by customs.

[7]Another advantage of choosing this period is that it also encompasses the Byrd Amendment, a legal change that affected the incentives to file a petition.

[8]This concordance is set out in Pierce and Schott (2009). We would like to thank Peter Schott for helping us implement the associated Stata files.

4 Changes in U.S. import composition in subject commodities

In this section we describe and implement a method for summarizing dynamic changes in U.S. imports of commodities that are destined to be involved in an anti-dumping case. We are particularly interested in distinguishing movements that are common to all imports in a targeted commodity from movements that arise only in the named (subject) country import suppliers.[9] We are also interested in efficiently describing compositional changes in U.S. imports over time. Our method adapts the *decomposition* method developed by Hummels and Klenow (2005) and since adopted by others studying the composition of trade.[10]

We decompose U.S. imports within each named commodity for each month during a 24-month window leading up to the petition filing. In order to describe dynamics, we conduct log-linear OLS regressions of each component of the decomposition against dummy variables that denote units of time (specifically, quarters before the filing). These regressions allow a concise characterization of the movement of both aggregate imports and each of its many components over time. The framework allows each movement in aggregate trade to be attributed directly to movements in the subcomponents.

4.1 Decompositions

We begin with a top-level decomposition that emphasizes the distinction between movements in total U.S. imports in a particular commodity and movements in the share of imports arriving from subject countries. We can describe subject imports as the product of total imports and the share of subject imports in total imports:

$$SM_{it} = M_{it}\frac{SM_{it}}{M_{it}} \tag{1}$$

where i indicates the product, t indicates a time period, M_{it} indicates the total value of imports in product i at time t, and SM_{it} is the value of subject imports.

Decompositions of subject country imports into relative and absolute components (as in (1)) will be a key focus of our attention. We will also be interested, however, in a complete and concise

[9] Following the language use in such disputes in the U.S. we shall refer to imports from countries named in the petition as "subject" imports.

[10] See Hillberry and McDaniel (2002), Bernard et al. (2007) and Hillberry and Hummels (2008) for subsequent applications of the method.

treatment of aggregated trade flows. We can describe total trade M_{it} as a product of three terms,

$$M_{it} = N_{it}\frac{Q_{it}}{N_{it}}\frac{M_{it}}{Q_{it}} = N_{it}\overline{Q}_{it}\overline{P}_{it} \tag{2}$$

where N_{it} represents the number of countries exporting product i to the U.S. at time t, Q_{it} measured quantities of imports, $\overline{Q}_{it}$ the average quantity of U.S. imports (per exporting country) and $\overline{P}_{it}$ the average (per unit) price, defined in delivered (cif) terms. We can apply a similar decomposition to subject imports:

$$SM_{it} = SN_{it}\overline{SQ}_{it}\overline{SP}_{it}. \tag{3}$$

Substituting (2) and (3) into (1) and rearranging terms allow us to represent subject imports as a series of comparisons between each component of aggregate imports and its relative counterpart:

$$SM_{it} = \frac{SN_{it}}{N_{it}}N_{it}\frac{\overline{SP}_{it}}{\overline{P}_{it}}\overline{P}_{it}\frac{\overline{SQ}_{it}}{\overline{Q}_{it}}\overline{Q}_{it}. \tag{4}$$

The first term on the right hand side indicates the share of import sources at time t that will ultimately be named in the case; the second term the total number of import sources observed at time t. The third and fourth terms represent, respectively, the relative average import price for subject countries and the average import price. The fifth and sixth terms represent the relative average subject country import quantity and the average quantity of imports from all sources. We can further decompose elements of (4) by extending the method to other observable characteristics of the import bundle.

We first turn our attention to import quantities. As noted above, the U.S. import data include a count of 'cards' in each month for each each commodity-country-U.S. port triplet. We use this shipment count information to characterize subject country import quantities as the product of the total number of import cards and the average quantity of imports per card. A straightforward decomposition allows changes in imports from subject countries to be put into context:

$$SQ_{it} = \tilde{SQ}_{it}SC_{it} = \frac{\tilde{SQ}_{it}}{\tilde{Q}_{it}}\tilde{Q}_{it}\frac{SC_{it}}{C_{it}}C_{it} \tag{5}$$

where SC_{it} represents the number of subject country import cards in commodity i at time t, and $\tilde{SQ}$ average subject quantities per card ($\frac{\overline{SQ}_{it}}{SC_{it}}$). C and $\tilde{Q}$ represent the counterparts of these variables for total imports. Equation (5) describes relative and absolute changes in subject country imports

in terms of both an intensive ($\tilde{Q}$) and an extensive (C) margin.

We can also characterize the geographic scope of imports in terms of the number of customs districts that receive them at a given time. This information can be usefully compared against the number of import shipments (cards), so that growth in shipments can be characterized in terms of an increasing number of shipments per customs district or an increasing number of customs districts served. We characterize subject country cards as:

$$SC_{it} = \frac{SC_{it}}{SCD_{it}} SCD_{it}, \tag{6}$$

where SCD_{it} is the number of customs districts receiving imports from subject countries. The first term in (6) measures the average number of subject country shipments observed per customs district. The second term is the total number of customs districts receiving imports of commodity i from subject countries. This decomposition helps us to understand the nature of a change in subject import quantities. An increase in the first ratio suggests that increased imports are being observed as increased activity per customs district. An increase in the second term suggests an increase in the geographic scope of subject country imports, for these imports are being observed in more customs districts.

Next, we turn our attention to a detailed characterization of import prices.[11] The U.S. import data includes free on board (fob) valuations of imports, information on freight and insurance charges, as well as duties paid. This information can be supplemented with information on exchange rates to allow characterizations of prices in US dollar and foreign currency terms. We employ two separate decompositions of prices, focusing first on a detailed breakdown of the cif-fob gap in US dollar import prices. The second decomposition evaluates fob prices in terms of exchange rates.

Using the methods established above, we can characterize cif subject import prices in terms of components of the delivered price and relative comparisons with associated components of the price of total imports:

$$SP_{it} = \frac{sf_{it}}{f_{it}} f_{it} \frac{sd_{it}}{d_{it}} d_{it} \frac{SP_{it}^{fob}}{P_{it}^{fob}} P_{it}^{fob}. \tag{7}$$

where sf_{it} (f_{it}) indicates prices inclusive of freight *and* duties for imports from subject (all) countries, sd_{it} (d_{it}) represents average prices inclusive of duties for subject (all) countries, and SP_{it}^{fob} (P_{it}^{fob})

[11] In the interests of brevity we will not report detailed decompositions of import price movements, for these movements appear not to be quantitatively important. Nonetheless, we describe such decompositions here.

the unit price of subject country (all) imports.

We also investigate movements in exchange rates and other import prices. Blonigen and Prusa (2003) explain that exchange rate movements may affect anti-dumping activity in at least two ways. First, the lack of full pass-through of exchange rate movements might be interpreted in some cases as anti-competitive behavior. Second, determination of the anti-dumping margin by the U.S. Department of Commerce might also be affected by exchange rate movements. We characterize relative and absolute prices in terms of exchange rate indices for imports from subject countries alone and from all sources:

$$SP_{it}^{fob} = \frac{SP_{it}^{fob}}{SE_{it}} \frac{SE_{it}}{E_{it}} \frac{E_{it}}{P_{it}^{fob}} \frac{P_{it}^{fob}}{P_{i}^{imp}} P_{t}^{imp}. \tag{8}$$

In (8), SP_{it}^{fob} and P_{it}^{fob} represent (as above) the average US dollar fob price of subject imports, SE_{it} is a trade-weighted exchange rate index for subject imports of i, E_{it} an exchange rate index for all imports of i, and P^{imp} an import price index calculated by the BLS that captures movements in import prices across all commodities.

4.2 Regression analysis

We employ the components of the above decompositions as the independent variables in a series of simple log-linear regressions that summarize the evolution of the U.S. imports (and their composition) over time. We calculate the decompositions described above for each HS-10 digit commodity that will be part of an anti-dumping action, for each month, in a 24-month window leading up to the date of the filing of the case. The analysis involves a simple regression of each of the variables in the decomposition against a series of time dummy variables that indicate shifts in the conditional mean values of each variable at a given distance in time before the filing date.

Our regression takes the form:

$$ln(X_{ikst}) = \sum_{s=1}^{8} \beta_s lag_s + \alpha_i + \eta_k + \psi_t + \epsilon_{iks}, \tag{9}$$

where X_{ikst} is the each of the terms in the decomposition, lag_s is a quarterly dummy capturing three months in the s^{th} lag from the filing date.[12] α_i is a dummy variable indicating the 10-digit

[12]We retain the monthly detail in the data, but report quarterly averages defined by the coefficients on quarterly dummy variables. Import shipments are lumpy when observed at this level of detail. The move to quarterly averages allows us to smooth out this lumpiness without aggregating the data over time. Quarterly movements are still sufficient

HS-10 tariff line code, and η_k is a dummy variable associated with the 'product' k as defined in the dumping case.[13] ψ_t is a dummy variable associated with the month of observation, and ϵ_{iks} a normally distributed error term.[14] We drop the dummy variable representing the 8th quarter before the filing, treating the initial quarter in our sample as the reference point. Coefficients on the other quarter dummies can then be interpreted as percentage changes in the level of each variable since the initial quarter in our 24 month window. This mechanism allows us to describe dynamic changes in each variable in our decomposition.

As noted in Hummels and Klenow (2005), log-linear regressions of this sort have a quite useful property. Consider the components of (1). Let β_s^{SM} be the estimated coefficient associated with the s^{th} lag of the SM term, β_s^M the estimated coefficient associated with the M term, and β_s^{sm} the coefficient associated with the share of subject imports ($\frac{SM}{M}$). Independent regressions of each of these terms using (9) will produce estimated coefficients such that the coefficients on the two right hand side variables will add up the coefficient on the left hand variable, $\beta_s^{SM} = \beta_s^M + \beta_s^{sm}$. We could thus describe movements in the left hand side variable (movements summarized by β_s^{SM}) in terms of shares attributable to each of the components on the right hand side. This feature applies to all of the decompositions that we have described so far.

4.3 Results

Our regression analysis over the subcomponents allows us to answer a series of questions about the nature of U.S. import movements in the run-up to the anti-dumping filing. Our primary focus is a qualitative description of changes in the sources of U.S. trade, as well as changes in the composition in trade. Our regressions also allow us to capture the timing of these movements. Regressions over partitions of the data allow us to evaluate differences across cases in the way in which changes in trade composition are observed.

to represent the relevant dynamics of each variable.

[13] The product described in an anti-dumping petition frequently encompasses more than one HS10 code. α_i controls for cross-commodity differences at the HS10 level, while η_k accomplishes the same for the broader commodity defined in the case.

[14] Our monthly dummy is defined in terms of absolute units of time (t) whereas most of our units of time are measured as (s), months prior to the filing of the case. In this case our monthly dummy variable captures seasonal factors such as Christmas and/or month length effects (i.e. February).

Table 1: Just a surge from subject countries or from all sources?

VARIABLES	(1) $\ln(SM_{it})$	=	(2) $\ln(\frac{SM_{it}}{M_{it}})$	+	(3) $\ln(M_{it})$
1 Qtr before file	0.11***		0.17***		-0.06***
	(0.03)		(0.02)		(0.02)
2 Qtrs before file	0.15***		0.16***		-0.01
	(0.03)		(0.02)		(0.02)
3 Qtrs before file	0.15***		0.11***		0.03*
	(0.03)		(0.02)		(0.02)
4 Qtrs before file	0.14***		0.07***		0.07***
	(0.03)		(0.02)		(0.02)
5 Qtrs before file	0.10***		0.06***		0.04**
	(0.03)		(0.02)		(0.02)
6 Qtrs before file	0.03		0.05**		-0.02
	(0.03)		(0.02)		(0.02)
7 Qtrs before file	-0.04		-0.01		-0.03
	(0.03)		(0.02)		(0.02)
Constant	12.76***		-0.85***		13.55***
	(0.15)		(0.12)		(0.07)
Observations	17135		17135		17135
R^2	0.824		0.779		0.884

Estimates include month, year, petition and HS10 fixed effects
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.3.1 Basic changes and timing

We begin by simply looking for common movements across all cases in the level of imports. We employ the decomposition in (1) to evaluate changes in the value of subject country imports. This allows us to understand the degree to which filers are responding to a general surge of imports, or to specific pressure from the subject importers. We focus on issues of timing in this decomposition as well.

The results of these initial regressions appear in Table 1. This table illustrates a number of the key findings of the paper. First, we see that there are significant increases in the value of subject imports during the 2-year window, as one might expect. The β^{SM} coefficient on the dummy variable associated with the last quarter before the filing date indicate, on average, an 11 percent increase in subject country imports across all HS-10 codes that were part of an AD petition. The timing of this increase is also quite distinct, beginning about five quarters before the filing, peaking about two

quarters before the filing, and then subsiding to the level of an 11 percent increase. In any case, the regressions show a sustained higher level of imports from subject countries over the time covered by our window.

We can also use Table 1 to characterize the context of the increase in subject imports. One might imagine that a sustained increase in subject country imports might come about in the context of a general surge of imports in the commodity, with subject country imports reflective of the general trend.[15] In that case, one might expect to observe much of the increase in subject imports alongside an increase in imports from all sources. We do not observe this, however, the total value of imports from all sources falls, on average, by about six percent through the 2-year window.

What we observe instead is a substantial shift in market share, with the subject country share of total imports in the commodities of interest rising by 17 percent. Some back-of-the-envelope calculations let us put this shift in context. The simple average subject-country market share across the included HS10 commodities the reference period, quarter 8, is 0.47.[16] A 17 percent increase in market share over the window we consider would raise the average market share to approximately $0.47 * e^{0.17} = 0.56$. Thus, it appears that subject country imports typically represent a large and growing share of total imports in a commodity.

The dynamics visible in Table 1 allow us to tell this story in a bit more detail. It appears that the surge in subject country imports five quarters before the case is initially associated with an increase in total imports. About half of the increase in subject country imports in the periods five and four quarters before the filing can be attributed to increased market share, while the other half appears as an increase in total imports. As we approach the filing, however, imports from non-subject countries fall. Subject country imports fall off somewhat from their peak, but their market share rises substantially, as the slight reduction in subject country imports does not match the reduction in total imports.

The results so far offer an important lesson about the incentives to file an anti-dumping petition. The decrease in overall imports observed in the typical case suggests that the proximate cause of the filing decision is not a general import surge.[17] Instead, it appears that the reallocation of import market share is the key phenomenon of interest. The regressions indicate that subject countries are

[15] This situation might arise, for instance, through a general increase in the demand for a particular product in the United States.

[16] The distribution of market shares is skewed right. The median market share is 0.40.

[17] There does appear to be an increase in overall imports during the fifth and fourth quarters before the filing, but this subsides by the time of the filing, as the exit of non-subject importers accomplishes an overall decline in total imports.

replacing other import sources in the market, not adding to them.

Our next exercise allows a better understanding of how the increase in subject country imports is typically observed. We use a decomposition (eq. 4) to determine the degree to which changes in subject country imports are observed as changes in relative and absolute numbers of countries exporting to the US, relative and absolute average quantities (per country), or relative and absolute unit prices. These results appear in Table 2.

The decomposition suggests that most of the increase in subject country imports are attributable to relative increases in the quantities shipped per country, and in the number of countries shipping the commodities of interest in the given month. The relative average quantity per country ($\frac{\overline{SQ}_{it}}{\overline{Q}_{it}}$) is 1.30 in the base period, which indicates that subject countries are somewhat larger than the typical source of subject imports.[18] An increase of 12 percent would raise this to $1.30 * e^{0.12} = 1.47$. In the base period, the simple average of ($\frac{SN_{it}}{N_{it}}$) is 0.43, which rises to $0.43 * e^{0.08} = 0.47$ in our back-of-the-envelope calculation. Thus, subject countries typically account for a relatively large share of import sources.[19]

One might expect that anti-dumping cases would be associated with large changes in import prices. Our decomposition allows us to see whether this is true, and whether price changes occur in general, or only among subject country importers. The results in Table 2 suggest that both relative and total price movements are quite small. Relative prices fall by only three percent over the period, and are not significantly different from the initial level until the final quarter. Overall import prices fall slightly through the window (by two percent), but the changes are only significant at the 10 percent level, and only in the final period. In our view the lack of significant movements in relative or average prices during this period is surprising.

[18]The median value of ($\frac{\overline{SQ}_{it}}{\overline{Q}_{it}}$) in the base period is 1, so this estimate should not be overinterpreted.

[19]The distribution of the ($\frac{SN_{it}}{N_{it}}$) statistic is also right-skewed, with a median value of 0.33 in the reference period.

Table 2: Is the surge driven by more sources, lower prices or higher quantities per source?

VARIABLES	(1) $\ln(SP_{it}SQ_{it})$ =	(2) $\ln(\frac{SN_{it}}{N_{it}})$ +	(3) $\ln(N_{it})$ +	(4) $\ln(\frac{\overline{SP}_{it}}{\overline{P}_{it}})$ +	(5) $\ln(\overline{P_{it}})$ +	(6) $\ln(\frac{\overline{SQ}_{it}}{\overline{Q}_{it}})$ +	(7) $\ln(\overline{Q_{it}})$
1 Qtr before file	0.11***	0.08***	0.01	-0.03**	-0.02*	0.12***	-0.06***
	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)	(0.02)
2 Qtrs before file	0.15***	0.08***	0.02**	-0.02	-0.00	0.10***	-0.02
	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
3 Qtrs before file	0.15***	0.05***	0.03***	-0.04**	-0.00	0.10***	0.01
	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)	(0.02)
4 Qtrs before file	0.14***	0.03***	0.05***	-0.02*	0.01	0.06***	0.01
	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
5 Qtrs before file	0.10***	0.03***	0.05***	-0.01	0.01	0.05*	-0.02
	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)	(0.02)
6 Qtrs before file	0.03	0.01	0.01	-0.00	0.00	0.04	-0.03
	(0.03)	(0.01)	(0.01)	(0.02)	(0.01)	(0.03)	(0.02)
7 Qtrs before file	-0.04	-0.00	-0.02**	0.01	0.01	-0.02	-0.02
	(0.03)	(0.01)	(0.01)	(0.02)	(0.01)	(0.03)	(0.02)
Constant	12.70***	-0.59***	2.29***	0.28***	0.95***	-0.54***	10.26***
	(0.15)	(0.03)	(0.04)	(0.04)	(0.05)	(0.13)	(0.12)
Observations	17135	17135	17135	17135	17135	17135	17135
R^2	0.824	0.880	0.934	0.555	0.979	0.599	0.918

Estimates include month, year, petition and HS10 fixed effects
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In the interests of brevity, we do not report the full decompositions of import prices we describe in (7) and (8). (7) reveals statistically significant, but quantitatively unimportant, shifts in relative and absolute freight and duty margins. It is clear from this decomposition that most of the observed shift in subject country import prices is observed as smaller (three percent smaller) relative fob prices. A decomposition based on (8) reveals the change in relative country fob prices can be attributed primarily to an increase in the foreign currency prices of total imports, amidst the overall slight decline in average US dollar prices.

One might imagine that the nature of a surge in subject import quantities might affect the degree to which the domestic industry feels threatened by it. If buyer-seller relationships remain stable throughout the period, with increased subject imports simply reflecting more purchases from their already established customers, the domestic industry might not see the increased imports as especially threatening. If, however, subject imports are being purchased by new customers - customers that once purchased domestic product - then the domestic industry might well see the import surge as threatening or injurious.

While we are unable to look directly at the buyer-seller relationships, our data are quite informative about the nature of the increase in subject import quantities. We have already seen, in Table 2, that increased quantities can be attributed to growth along an extensive margin. More than two-thirds of the growth in subject imports (0.08/0.11) can be attributed to an increase in the relative number of subject countries exporting a given HS10 commodity to the U.S. in a given month. While not definitive, this information raises the possibility that new sellers are present in the market.

Our evidence on the buying side is also intriguing, if not conclusive. Columns 2 and 3 of Table 3 reveal that increases in subject import quantities are observed primarily as in increase in the number of shipments, rather than as an increase in the average size of shipments. This need not indicate that firms in subject countries are selling to more customers in the U.S., but it may.

Table 3: More per shipment or more shipments?

VARIABLES	(1) $\ln(SQ_{it})$	=	(2) $\ln(\tilde{SQ}_{it})$	+	(3) $\ln(SC_{it})$	=	(4) $\ln(\frac{\tilde{SQ}_{it}}{\tilde{Q}_{it}})$	+	(5) $\ln(\tilde{Q}_{it})$	+	(6) $\ln(\frac{SC_{it}}{C_{it}})$	+	(7) $\ln(C_{it})$
1 Qtr before file	0.16***		0.03		0.13***		0.05**		-0.02		0.15***		-0.02
	(0.04)		(0.03)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)
2 Qtrs before file	0.18***		0.03		0.15***		0.04*		-0.01		0.14***		0.00
	(0.03)		(0.03)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)
3 Qtrs before file	0.18***		0.04		0.15***		0.06***		-0.02		0.09***		0.06***
	(0.03)		(0.03)		(0.02)		(0.02)		(0.02)		(0.02)		(0.01)
4 Qtrs before file	0.15***		0.00		0.15***		0.02		-0.02		0.07***		0.08***
	(0.03)		(0.03)		(0.02)		(0.02)		(0.02)		(0.02)		(0.01)
5 Qtrs before file	0.10***		-0.02		0.12***		0.01		-0.02		0.07***		0.05***
	(0.04)		(0.03)		(0.02)		(0.02)		(0.02)		(0.02)		(0.01)
6 Qtrs before file	0.03		-0.03		0.06***		0.00		-0.03**		0.04***		0.01
	(0.04)		(0.03)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)
7 Qtrs before file	-0.06*		-0.05*		-0.01		-0.00		-0.05***		-0.02		0.01
	(0.04)		(0.03)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)
Constant	11.46***		8.56***		2.92***		-0.55***		9.11***		-0.57***		3.58***
	(0.18)		(0.16)		(0.10)		(0.14)		(0.08)		(0.09)		(0.05)
Observations	17135		17135		17135		17135		17135		17135		17135
R^2	0.852		0.883		0.876		0.555		0.945		0.858		0.922

Estimates include month, year, petition and HS10 fixed effects
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Further evidence on this point appears in Table 4, which decomposes the increase in the number of subject country cards arriving in a given commodity-month pair. One might observe an increase in cards associated with subject country shipments as an increase in the number of cards per customs district, or as an increase in the number of customs districts where subject country imports arrive. The latter would suggest strongly that the geographic scope of subject country imports is increasing, which further suggests a strong possibility that the number of customers served by subject importers is increasing.

Indeed, the evidence in Table 4 suggests that more than half of the increase in number of subject import shipments appears as an increase in the number of customs districts receiving subject country imports. If, as suggested, this indicates growth in the number of customers served, and/or the number of geographic markets in which subject country firms are active, these imports might well be understood as threatening the domestic industry in a particular manner. The growth in the number of customs districts served by subject countries suggests that the increase is not limited to particular geographic regions that were already being served by such exports. The import growth appears to occur as entry into new geographic markets.

Overall our lessons from the decompositions so far seems to be that they are observed as an increase in subject country market shares, beginning approximately five quarters before the initiation of the case. The increase in subject country imports is more than offset by a reduction in non-subject country imports, so that overall imports are reduced over the two year window. Subject country market share rises significantly in percentage terms, though the overall change in market share is modest.

These changes appear to be attributable in large part to shifts in the relative number of subject countries shipping to the U.S. in any given month, and in the relative average quantity of goods coming from subject countries. These movements are observed alongside small relative price movements that only emerge late in the episode. Our next exercise is an examination of partitions of the data that allow us to understand the generality (or lack thereof) of the results we have observed so far.

Table 4: More shipments per customs district or more customs districts served?

VARIABLES	(1) $\ln(SC_{it})$	=	(2) $\ln(\frac{SC_{it}}{SCD_{it}})$	+	(3) $\ln(SCD_{it})$
1 Qtr before file	0.13***		0.05***		0.07***
	(0.02)		(0.02)		(0.01)
2 Qtrs before file	0.15***		0.06***		0.08***
	(0.02)		(0.02)		(0.01)
3 Qtrs before file	0.15***		0.09***		0.05***
	(0.02)		(0.01)		(0.01)
4 Qtrs before file	0.15***		0.09***		0.06***
	(0.02)		(0.01)		(0.01)
5 Qtrs before file	0.12***		0.06***		0.06***
	(0.02)		(0.01)		(0.01)
6 Qtrs before file	0.06***		0.04***		0.01
	(0.02)		(0.02)		(0.01)
7 Qtrs before file	-0.01		0.00		-0.02
	(0.02)		(0.02)		(0.01)
Constant	2.97***		1.55***		1.43***
	(0.09)		(0.08)		(0.04)
Observations	17135		17135		17135
R^2	0.876		0.825		0.804

Estimates include month, year, petition and HS10 fixed effects
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.4 Data partitions

In this section we compare cases, using a number of dichotomous partitions of our case data. The purpose is to better understand qualitative differences amongst cases with differences in characteristics. We collapse all this information into a single table, removing the dynamics and reporting only the coefficient on the dummy variable associated with the final quarter. These coefficients measure percentage changes over the entire sub-sample. We also use this section to investigate the nature of increases in the quantity of subject country imports.

We consider three partitions of the data that allow useful comparisons. We first consider affirmative cases and non-affirmative cases. Next, we consider cases involving the steel industry, which is a heavy user of the anti-dumping law. Finally, we separate the data based on the time of filing; those cases filed before 2001, and those filed from 2001-2004. This partition identifies a significant change in firms' expected returns from case filings as the result of a change in the anti-dumping law.

The process of an anti-dumping case includes preliminary and final decisions in two legal venues, the US Department of Commerce and US International Trade Commission. There are also opportunities along the way for filing firms to withdraw or modify their petitions (dropping one or more subject countries, for example). Rather than investigate all possible outcomes of a case, we split the sample into two, characterizing separately the cases that finish the entire process with an affirmative decision, and those that do not. It seems likely that those cases that receive, in the end, a final affirmative determination will be qualitatively different than those that do not.

The first two rows of Table 5 demonstrates that the two types of cases are indeed different. Cases with an affirmative determination see increases in subject import value of approximately 24 percent over the two year window, while cases with a negative determination see a slight decrease. Like the figures for all cases, the increase in subject imports is observed primarily as an increase in relative number of subject countries shipping to the U.S. in a given month, and as an increase in the relative average quantity (quantity per country). In the affirmative cases, we also see a significant decrease in the relative (delivered) subject country import prices.

Table 5: Which margins matter in different sub-samples?

Sub-samples	(1) $\ln(SP_{it}SQ_{it})$ =	(2) $\ln(\frac{SN_{it}}{N_{it}})$ +	(3) $\ln(N_{it})$ +	(4) $\ln(\frac{\overline{SP}_{it}}{\overline{P}_{it}})$ +	(5) $\ln(\overline{P_{it}})$ +	(6) $\ln(\frac{\overline{SQ}_{it}}{\overline{Q}_{it}})$ +	(7) $\ln(\overline{Q_{it}})$
Affirmative	0.24***	0.11***	0.05***	-0.04***	-0.01	0.17***	-0.03
	(0.04)	(0.01)	(0.01)	(0.02)	(0.01)	(0.03)	(0.03)
Non-Affirmative	-0.02	0.03**	-0.01	-0.02	-0.02*	0.07*	-0.08***
	(0.04)	(0.01)	(0.01)	(0.02)	(0.01)	(0.04)	(0.03)
Steel	0.15***	0.08***	0.03**	-0.03	-0.03**	0.14***	-0.04
	(0.04)	(0.02)	(0.02)	(0.02)	(0.01)	(0.04)	(0.03)
Steel Affirmative	0.30***	0.12***	0.04**	-0.05**	-0.02*	0.21***	-0.01
	(0.06)	(0.02)	(0.02)	(0.02)	(0.01)	(0.05)	(0.04)
Steel non-affirmative	-0.03	0.01	0.03	0.00	-0.05**	0.05	-0.07
	(0.07)	(0.03)	(0.02)	(0.02)	(0.02)	(0.06)	(0.05)
Byrd Amendment	0.03	0.08***	0.01	-0.02	0.01	0.06**	-0.11***
	(0.04)	(0.01)	(0.01)	(0.02)	(0.01)	(0.03)	(0.03)
Pre-Byrd	0.23***	0.08***	0.03*	-0.05**	-0.05***	0.21***	0.01
	(0.05)	(0.02)	(0.02)	(0.02)	(0.01)	(0.04)	(0.03)

Estimates include month, year, petition and HS10 fixed effects
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The steel industry is known as a common user of the U.S. anti-dumping law. Studies of anti-dumping activity have shown differences between cases involving the steel industry and other cases. We break out cases involving the steel industry, which we define as those that include commodities in the 2-digit HS categories 71 and 84. In general, the trade pattern evolves similarly in the run-up to a steel case as it does in the broader set of cases. Most of the increase in subject import value is observed as a greater quantity of shipments, with increases in the relative number and relative average size of subject country shipments accounting for much of the growth in subject import value. A small but significant reduction in the unit prices of steel imports from all sources (3 percent) precedes the filing. The estimated changes in relative unit prices are not statistically significant.

As we did with all cases, we split the steel cases into those with an affirmative decision and those without such a determination. Again, the pattern is broadly similar to what appears in the broader set of cases. In affirmative cases, there are large increases in the value of subject imports. This increase is experienced as significant shifts in most of the elements of the decomposition. In negative cases, there is no increase in subject import value. The only significant shift that occurs through our two-year window is a moderate reduction in average unit prices.

Our final cut of the data divides the data into two periods defined by a significant change in the law. The *Continued Dumping and Subsidy Offset Act of 2000*, also known as the "Byrd Amendment" significantly changed the incentives to file anti-dumping cases, as it directed the collected tariff revenues to the filing firms.[20] We split the sample into cases filed before or after January 1, 2001, the day the legislation went into effect.

The results offer suggestive evidence that the Byrd Amendment led to the filing of weaker cases.[21] Before the Byrd Amendment, anti-dumping cases were associated with significant increases in subject value, as well as significant changes in most of the elements of the decomposition. By contrast, cases filed in the 2001-2004 period had insignificant changes in subject value. Relative import quantities rose in the later cases, but in an environment where the overall quantity of imports is falling.

[20] Reynolds (2006) finds evidence that the Byrd Amendment increased the number of petitions filed. Reynolds and Liebman (2006) identify a relationship between firms that gain from the amendment, their contributions to members of Congress and members' support for the Amendment. Reynolds and Liebman (2006) contains a description of the amendment as well as a useful legislative history.

[21] We cannot attribute the differences we observe here solely to the Byrd Amendment, as the sample split may also capture important differences across time such as the state of the macroeconomy or the identity of the officials sitting in judgement of the claims, as well as the industry's perception of their propensity to decide in the affirmative.

5 The determinants of subject country status

Our use of detailed trade data allows us an opportunity to explore a second question in some depth: what determines the inclusion of a country in an industry petition? We address this problem with an econometric model that treats a country's inclusion in a petition as a function of characteristics of the import bundle from each country and country characteristics.[22] As above, we find that measures of import quantities, including growth of imports along an extensive margin, matter for the filing decision. We also find evidence that country characteristics affect this decision.

5.1 Trade characteristics as independent variables

Our primary goal in this section is to gain a better understanding of the domestic (U.S.) industry's decision to include imports from a given country in its filing of an anti-dumping case. As the above section makes clear, our import data include substantial information about the characteristics of imports. In this section we describe characterizations of this information as independent variables for inclusion in our econometric model.

As above, our aim is to define a comprehensive yet parsimonious treatment of the characteristics of the import bundle. We include variables measuring the value, unit prices, and several measures of import quantity from each of the countries that appear in our sample. Our challenge is to calculate informative measures that capture both the level of and changes in these variables over time. This is difficult because import flows are lumpy (arriving in some months, but not in others), and because characterization of the changes in import flows over time depend on a choice of the relevant base from which such changes might be measured. Furthermore, our efforts to estimate the effect of multiple components of the import bundle (i.e. unit prices and several measures of quantity) leaves us with a potentially very large number of parameters to be estimated. These challenges lead us to choose a parsimonious form for our measures of both levels and changes of each variable of interest. We describe two indices that allow a succinct treatment of both levels and changes in the variables of interest.

Once again, we begin with a decomposition of import value. In the previous decomposition, we subsumed cross-country information and focused on within-commodity variation over time. In

[22] At this stage we forgo an analysis of a related, but quite difficult question: how many countries are named? This question gets to the issue of cumulation, a legal process whereby the injurious effects of imports are judged jointly. Just how a portfolio of countries is chosen to meet the aggregate conditions necessary for an anti-dumping action is, for the moment at least, beyond the scope of the paper.

this case, we wish to retain country-specific information from the trade data. We subsume cross-commodity (that is, HS10) variation within each case, though we count the number of HS10 commodities in a given case that are imported from each country at a given point in time. Our variable of interest is a summary index that measures the average level of each variable throughout our two-year window.

Our decomposition of import value is as follows

$$M_{it} = \frac{M_{it}}{Q_{it}} \frac{Q_{it}}{C_{it}} \frac{C_{it}}{CD_{it}} \frac{CD_{it}}{H_{it}} H_{it}, \tag{10}$$

where M, Q, C, and CD are defined as above, and H_{it} is the number of HS10 commodity codes in which exports from country i appear in time t. For what follows, we note again that the first term on the right hand side can be defined as $\overline{P}_{it} = \frac{M_{it}}{Q_{it}}$.

Given fluctuations in the level and composition of trade, each of these terms will fluctuate over time and across countries. In order to allow a parsimonious treatment of these phenomena, we calculate a geometric mean of each component. Define X_{is} as an element of the decomposition in (10), defined for country i and lag s. We calculate an index for each element as follows:

$$X_i^{simp} = \left(\prod_{s \in S_i} X_{is} \right)^{\frac{1}{\sum_{s \in S_i} 1}} = exp \left(\sum_{s \in S_i} lnX_{is} \frac{1}{\sum_{s \in S_i} 1} \right) \tag{11}$$

where S_i defines the lags in which imports from country i are observed. The geometric mean of observed flows defines the index of each compositional unit.

Because the time path of imports is also of interest in anti-dumping investigations, we must also define a mechanism for efficiently summarizing movements over time. We limit our study to the first derivative, asking whether the movement of each variable is positive or negative. In order to accomplish this, we define a lag-weighted geometric mean for each variable, redefining (11) as follows:

$$X_i^{wgt} = \left(\prod_{s \in S_i} X_{is} \right)^{\frac{s}{\sum_{s \in S_i} s}} = exp \left(\sum_{s \in S_i} lnX_{is} \frac{s}{\sum_{s \in S_i} s} \right). \tag{12}$$

The key difference between (11) and (12) is that, in the latter, values of X_{is} are weighted by the lag

(in months) from the date of the filing. Elements of the decomposition that tend to fall over time will take larger values in (12) than in (11), because the earlier values are weighted by larger values of the lag. The two indices together offer a succinct description of both the levels and the direction of change of each variable.

One might plausibly hope to include the weighted indices of X_i^{wgt} along with values of the simple indices X_i^{simp} with the former index summarizing changes over time. Unfortunately, the two indices tend to be quite highly correlated. Instead, we define the difference of the two (logged) indices as our summary indicator of each variable's direction of change. Define dx_i as follows:

$$dx_i = lnX_i^{wgt} - lnX_i^{simp} = \sum_{s \in S_i} lnX_{is} \frac{s}{\sum_{s \in S_i} s} - \sum_{s \in S_i} lnX_{is} \frac{1}{\sum_{s \in S_i} 1} = \sum_{s \in S_i} lnX_{is} \frac{(s-1)}{\sum_{s \in S_i} s \sum_{s \in S_i} 1} \tag{13}$$

Positive values of dx_i indicate that the lag-weighted index exceeds the simple index, which means that the general time path of variable X_{is} is falling over time. We include dx_i in an empirical model that investigates the effect of dx_i on the probability that a country is included in the petition. A positive coefficient suggests that declining values of X_{is} raise the probability of inclusion in the case.

5.2 Other country characteristics

Our investigation of the naming decision focuses primarily on the characteristics of the import bundle from each country. If the system of administered protection were blind, the decision to file against a particular subset of countries should be driven exclusively by the nature of the trade flows. In practice, of course, the process is a political one, and so decisions are driven in part by the characteristics of the countries in question. We focus on a few country characteristics that may be salient in such decisions.

We include two continuous variables that measure country characteristics, per capita gross domestic product and manufactured value added in a country. The first variable is a measure of average income in the country, and captures any tendency for filing industries to file against poor countries. Poor countries might be perceived as more threatening to domestic industry because of lower average wages. Firms in poor countries may also have less experience/competence dealing with the system of administered protection in the U.S. The measure of manufacturing value added is included as an indicator of each country's total manufacturing capacity. We conjecture that countries that are larger producers of manufacturing output might also be seen as more threatening by domestic

actors, and so be more likely to be filed against.[23]

We also include three dummy variables that identify countries of interest. We include a NAFTA dummy for Canada and Mexico.[24] A second dummy variable identifies non-market economies in the sample. These countries are subject to alternative procedures for establishing estimated anti-dumping margins at the Department of Commerce.[25] Finally, we include a China dummy variable. China remained a non-market economy throughout the period, but we are looking for an extra China effect. As the world's largest low-wage manufacturer, China is plausibly threatening to domestic industries in ways that other countries are not. To the extent that filing decisions are driven by political considerations, China may also be more likely to be filed against.

5.3 Empirical Model

We use a simple linear probability model with product level fixed effects:[26]

$$Filed_{il} = \beta_x X_i + \beta_D D_i + \alpha_l + u_{il} \tag{14}$$

where $Filed_{il}$ is a binary dependent variable that takes the value of 1 when country i is listed in case l, X_i are standardized continuous variables associated with country i, D_i are dummy variables indicating country characteristics, α_l a case-specific fixed effect, and u_{il} normally distributed error term. We report standardized coefficients on the continuous variables to consider relative contributions of our measures of interest.

5.4 Results

We begin with regressions that treat the components of the trade pattern as the only determinants of petitioners' decision to include a country in the case. Our indices collapse monthly observations of each unit of the decomposition into a single observation for each country. We also include the (log)

[23] We use log values of these variables, and our data are taken from the World Development Indicators. Not all countries report these data, so some observations are missing from the specification that include them. The measures of these variables that we employ are not indices as in the trade data, but the log levels of each variable reported in the year of the filing.

[24] Blonigen (2005) finds evidence suggesting that these countries may be less susceptible, on average, to U.S. anti-dumping filings and findings than other countries, conditional on variables such as import penetration and a measure of the real exchange rate.

[25] Several countries' *non-market economy* status changes during this period, and we track these changes. Countries with such changes include several former communist countries.

[26] While the linear probability model does not constrain predicted values to be between zero and one, it does allow the inclusion of fixed effects (for other applications see Bernard and Bradford Jensen (1999)). In contrast, the probit model is biased and inconsistent with fixed effects.

number of months in which shipments arrive from from country i. This is an extensive margin that is lost during our creation of the index. In some specifications we include the dx_i index to account for changes in each variable. All specifications include case-specific fixed effects. All variables are standardized in these specifications so as to allow straightforward comparisons across the variables.

Column 1 of Table 6 reports the impact of a simple measure of import value. The variable of interest is an X^{simp} index as described by (11), with the total value of imports from i used in the calculation of the index. Our results suggest that a one standard deviation increase in the monthly average value of imports from i raises the probability that country i is named in the petition by 9 percentage points. An increase in the number of months in which imports from i are observed also has a statistically significant effect on the filing decision. A one standard deviation increase in this variable raises the probability that country i is included in the petition by 2 percentage points.

In column 2 we include the dx_i variable associated with import value. The negative and statistically significant coefficient we estimate indicates that countries with rising import values are more likely to be filed against than other countries. A one-standard deviation change in the dx_i index for value has an effect on the filing decision that is approximately as large as a one standard deviation increase in the number of months imports from i are observed.

In column 3 we isolate the effect of cross-country variation in import unit price levels on the filing decision. The positive coefficient on the constant term in column 2 of Table 2 suggests that (within an HS10 commodity) subject country import prices exceed import prices of the typical country. The unit price variable used in Table 6 calculates unit import price information differently, summarizing unit prices *within* countries, but *across* HS10 commodities and time. The negative coefficient associated with this variable in column 3 suggests that countries with lower values of the unit price variable are more likely to be included in an anti-dumping petition.

In column 4 we include measures of import quantities from (10), and find that the coefficient on the unit price variable changes sign. Several of the quantity variables affect the filing decision, including average quantity per card, cards per customs district and the number of HS10 commodities exported to the U.S. within the product definition defined in the petition. The last of these variables, the count of HS10 commodities, is particularly interesting, as it captures an extensive margin of trade that was only indirectly visible in our initial decomposition.[27] The positive and statistically significant coefficient on the number of HS10 commodities suggests further evidence that an extensive

[27]Changes in the number of HS10 commodities imported from i would be observed in our initial decomposition as changes in N_{it}, the number of import sources present in a given HS10 code.

Table 6: Trade characteristics and inclusion in anti-dumping cases

Linear probability: Subject countries = 1					
VARIABLES	(1) subj_cty	(2) subj_cty	(3) subj_cty	(4) subj_cty	(5) subj_cty
average value	0.09***	0.09***			
	(0.01)	(0.01)			
difference in value		-0.02***			
		(0.00)			
price			-0.03***	0.06***	0.05***
			(0.01)	(0.01)	(0.01)
difference in p					-0.01*
					(0.01)
average quantity per card				0.08***	0.08***
				(0.01)	(0.01)
difference in q					-0.01
					(0.01)
cards per customs district				0.03**	0.03**
				(0.01)	(0.01)
difference in c/cd					-0.01**
					(0.01)
customs districts per hs10				-0.01	-0.01
				(0.01)	(0.01)
difference in cd/n					-0.01
					(0.01)
hs10 count				0.05***	0.05***
				(0.01)	(0.01)
difference in hs10					-0.02***
					(0.01)
months observed	0.02***	0.02***	0.07***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	0.15**	0.15**	0.15***	0.17**	0.16**
	(0.07)	(0.07)	(0.06)	(0.07)	(0.07)
Observations	3768	3768	3768	3768	3768
R^2	0.236	0.241	0.190	0.240	0.250

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Estimates include petition fixed effects

margin of trade affects the industry's filing decision.

In the last column of Table 6 we include the dx_i variables associated with each variable in the decomposition described in (10). It appears that growth over time in both cards per customs district and in the number of HS0 commodities in imports from country i increases the probability that country i is filed against. Somewhat counterintuitively, it appears that growth in unit prices is also associated with an increased probability of being filed against, though this effect is only significant at the 10 percent level. One explanation for these results might be that the entry of imports into higher priced HS10 commodities is an event that provokes a filing.

In Table 7 we investigate the effect of country characteristics on the filing decision. We include a NAFTA dummy for Canada and Mexico, two large U.S. trading partners with which the U.S. shares a comprehensive regional trade agreement. In all of our specifications we find that the NAFTA countries are less susceptible to a filing than is the typical country.

We also include a dummy variable indicating countries that are designated by the U.S. as "non-market economies" (NMEs). NME status can affect the estimated dumping margin calculated at the Department of Commerce, and so also affect the injury inferred by the International Trade Commission. We find that countries designated as NMEs are more likely to be filed against in our initial regression. This effect disappears, however, when other country characteristics are included in the specification.

We conjecture that a single NME might be driving much of the estimated NME effect we observe in column 1, so we include a China dummy alongside the NME dummy in columns 2 and 3. Our estimates suggest that China is much more susceptible to a filing than is the typical country (or even the typical NME country). The China effect holds up even when additional country characteristics such as per capita income and manufacturing value added are included in the regression.

Column 3 shows that per capita income affects the filing decision, though the size of a country's manufacturing sector does not. The negative coefficient on the GDP per capita variable indicates that poor countries are more likely to be included in an anti-dumping petition, conditional on the other variables. A one-standard-deviation reduction in a country's per capita income raises the conditional probability that a country is filed against by four percentage points.

We check the robustness of these conclusions to the nature of the trade controls included in the regression. We re-rerun each of the specifications in Table 7 using the decomposition variables employed in the final column of Table 6. The signs and the magnitudes of all the significant variables

Table 7: Country characteristics and inclusion in anti-dumping cases

Linear probability: Country characteristics

VARIABLES	(1) subj_cty	(2) subj_cty	(3) subj_cty
average value	0.09***	0.08***	0.08***
	(0.01)	(0.01)	(0.01)
difference in value	-0.02***	-0.02***	-0.02***
	(0.00)	(0.00)	(0.00)
months observed	0.02***	0.02***	0.03***
	(0.00)	(0.00)	(0.01)
NAFTA	-0.07***	-0.06**	-0.07***
	(0.02)	(0.02)	(0.02)
Non-market economy	0.15***	0.07***	0.02
	(0.02)	(0.02)	(0.02)
China		0.23***	0.21***
		(0.05)	(0.05)
per capita income			-0.04***
			(0.01)
mfg value added			0.00
			(0.01)
Constant	0.15**	0.14**	0.18**
	(0.07)	(0.06)	(0.07)
Observations	3768	3768	3277
R^2	0.264	0.276	0.297

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Estimates include petition fixed effects

are quite similar across the specifications. For reasons of space we do not report these estimates, but conclude that the results with respect to country characteristics are robust.

One issue that we have not been able to address is cumulation across countries supplying imports to the United States. An assessment of injury may take the joint impact of imports from several countries into account. This presents the petitioning industries with a complex problem: what portfolio of countries can be filed against most successfully? An optimal portfolio might, for example, include a low-priced exporter along with an importer with growing market share. Our econometric model addresses this question in an imperfect way, suggesting a single index of trade and country characteristics that drives the decision to include a country in the petition. We hope to address the question of cumulation more successfully in a subsequent draft.

6 Conclusion

One of the outstanding questions in the anti-dumping literature is why so few industries choose to file cases. In order to better understand the decision to file an anti-dumping case we investigate detailed U.S. import data in the run-up to the filing of a petition. Our particular aim is to document observable differences between subject and non-subject imports. This exercise can help us understand what sorts of changes in the import bundle are sufficiently unsettling to the domestic industry to induce the filing of a petition.

It appears that anti-dumping actions should not be understood, in general, as a protectionist response to increased imports. Within the two-year window we consider, we observe an overall reduction in the value of imports from all sources in the commodities of interest. This reduction hides, however, a substantial reallocation of import market share from non-subject to subject countries. On average, the subject country share of U.S. imports rises by 17 percent over the two-year period we consider.

We employ further decompositions to better understand the nature of these changes. We find that the growth of subject country imports occurs primarily as growth along a number of extensive margins. First, the number of subject country sources of imports in a given commodity at a given time rises over the period we consider. The number of subject countries shipping a given commodity also rises over this period. Approximately half of the growth in these shipments occurs along yet another extensive margin, the number of customs districts in which subject imports are received.

This last margin might well suggest that anti-dumping cases are a response to a particular form of import competition, entry into new geographic markets within the U.S.

In order to investigate important differences across cases, we split the sample several ways and re-run the decompositions. We find that cases with a final affirmative decision were markedly different than other cases, with larger subject country import growth, larger shifts of market share, and larger relative price reductions, among other things. Cases involving the steel industry were largely similar to our findings for all cases. The results of a split between affirmative and non-affirmative cases in steel were also quite similar to results from an equivalent split over all cases. A further split of the sample to differentiate cases filed before the Byrd Amendment from those filed under it revealed significant differences, with cases filed under the Byrd Amendment experiencing much more moderate changes in the trade pattern prior to the filing.

Our decompositions of all cases reveal important differences in imports from the set of countries that were filed against and imports from the set of other countries. We also employ an econometric model to investigate the allocation of countries into these groups. We find that countries with large and/or growing import values are most likely to be filed against. A number of import quantity measures can also help to predict a filing. Conditional on the characteristics of the import bundle, we also investigate the effect of country characteristics on the filing decision. It appears that poor countries, especially China, are susceptible to being filed against. NAFTA members are less likely to be filed against than the typical country.

The general impression that one takes from these results is that industries appear to use the anti-dumping process as a response to growth in imports from particular countries, rather than as a form of broad-based protection. Apparently, substantial reallocations of market share can be viewed as threatening and/or injurious, even when total imports of a commodity are flat or falling. It appears that growth of subject country imports along a number of extensive margins typically precede a case-filing. One of these margins is entry into new customs districts, which we view as an indicator that subject country imports may be entering new geographic markets. Our analysis of the choices of countries to include in the anti-dumping petition finds that poor countries, especially China, are popular targets.

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