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How Different Are Safeguards from Antidumping? Evidence from US Trade Policies Toward Steel

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Abstract Use of temporary trade barriers (TTBs) has proliferated across countries, industries, and even policy instruments. We construct a panel of bilateral, product-level US steel imports that are matched to a unique data set on trade policy exclusions that are associated with the 2002 US steel safeguard in order to compare the trade impacts that result from application of various TTB policies over 1989–2003. We find that the trade effects of an applied safeguard—which is statutorily expected to follow the principle of nondiscriminatory treatment—can nevertheless compare closely to the application of the explicitly discriminatory antidumping policy. Our results on trade policy substitutability complement other recent research on these increasingly important forms of import protection.

Keywords Safeguards · Antidumping · Countervailing duties · Temporary trade barriers · MFN

JEL Classification: F13

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1 Introduction

Temporary trade barriers—such as safeguards,[1] antidumping, and countervailing duties—are increasingly relevant commercial policy instruments for a diverse set of countries and industries in the rules-based trading system. As more countries liberalized by cutting applied border tariffs since the 1980s, their governments have established national regimes and adopted GATT/WTO procedures to administer temporary trade barrier (TTB) policies. While governments have been able to maintain applied border tariffs at relatively low levels, they have subsequently processed hundreds of industry and worker requests for "new" TTB protection; this has resulted in newly applied import restrictions that have affected thousands of products and covered tens of billions of dollars in annual trade.

This paper contributes to the economic literature on trade policy formation in the presence of international agreements; this is a literature that seeks to address the increasing empirical relevance of TTBs. We examine the important issue of the substitutability of two statutorily *distinct* TTB policies in antidumping and safeguards. In particular, we identify similarities in the realized trade effects that were associated with the United States' application of its safeguard policy to steel imports in March 2002 when benchmarked against the historical application of the US antidumping policy on steel over 1989–2003.

The 2002 application of the US safeguard policy came at the request of the domestic steel industry, which alleged injury that stemmed from foreign-produced steel. Conservative estimates put the aggregate trade impact of the resulting import-restricting tariff increases and new quotas as a 13.5 percent reduction in the value of US steel imports. In the 12 months that followed the safeguard imposition in the product categories that were targeted by the policy, this eliminated nearly $700 million worth of trade relative to the previous year.

However, while the aggregate trade impact of the 2002 steel safeguard is impressive in its own right, the actual impact on imports within the affected product categories may be masked by the *perception* that a safeguard (SG) policy is automatically applied so as to follow the GATT/WTO's most-favored-nation (MFN) principle: One important way through which the SG policy is statutorily distinct from other TTBs such as antidumping (AD) or countervailing duties (CVDs) is that these latter "unfair" trade laws apply new protection to imports from only one country per petition, thus allowing for differential and potentially discriminatory treatment across trading partners. The application of a safeguard policy is generally thought to result in MFN protection through nondiscriminatory treatment of imports, irrespective of the source country.[2]

[1] "Safeguards" are formally defined under the WTO's Agreement on Safeguards as "emergency" trade policy actions over specific products that governments may implement in response to import surges that have caused or that threaten to cause serious injury to an industry.

[2] This is not the only potentially important distinction between SG and AD/CVD. In addition to the issue of "fair" versus "unfair" trade, the US AD/CVD process is bureaucratic while safeguards allow for Presidential discretion; the injury threshold is higher for SG cases; the duration of safeguards is shorter than is true of AD/CVD; and the use of SG can require compensation to affected countries, while AD/CVD does not. For a discussion, see Bown (2002). From a second-best perspective that takes the implementation of some import protection as given, the MFN application of a safeguard is one frequent justification that

The purpose of this paper is to investigate empirically one element concerning the relative substitutability of the antidumping and safeguards TTB policy instruments. We provide an econometric examination of the differential trade effects that were associated with the discriminatory treatment across export sources for the steel product categories that were affected by the 2002 US safeguard and compare them to trade effects that were associated with steel imports that were affected by US antidumping policy. We construct a panel of bilateral, product-level US steel import data that include products that were affected and unaffected by these policies, covering the period 1989–2003. [3]

Our specific empirical approach is to match the disaggregated import data to detailed information on TTB policies that is now available in the World Bank's *Temporary Trade Barriers Database* (Bown 2012). For the 2002 steel safeguard, however, we also need to match import data to a number of different forms of policy *exclusions* that arose both at the trading partner level and at the level of specific products that were tied to particular foreign firms. The information on this last set of policy exclusions has been compiled subsequently into a unique data set that derives directly from firm-specific petitions that were filed with the US Department of Commerce.

Our econometric results confirm that application of the 2002 steel safeguard policy is associated with differential trade impacts across the sources of US imports. Furthermore, we show how this impact on trade is similar to the differential trade effects of the more explicitly discriminatory protection that the US steel industry received under antidumping in earlier data that date to the late 1980s. Our evidence on antidumping is consistent with results from Prusa (1997, 2001), who uses a related approach to document the differential trade effects and potential trade diversion that resulted from an earlier period of US antidumping.[4] With respect to the 2002 US steel safeguard in particular, a comparison of different forms of discriminatory treatment across exporters suggests that while developed country exporters responded more quickly when granted an exclusion from the US safeguard, the developing-country exporters' response was longer-lived and larger over the full period that the safeguard was in effect.

Footnote 2 continued
economists give generally to advocate use of SG over AD/CVD. The alternative use of AD and CVD allows for discrimination across export sources which would be more likely to result in *trade diversion*: to importers' switching to the sourcing of products to higher cost (but non-targeted) foreign producers, thus inducing the welfare losses to the domestic economy that were initially identified by Viner (1950). Krishna (2004) surveys the literature, focusing on different theoretical elements of the interaction between preferential and multilateral policy under trade agreements more generally.

[3] During 1992–1993 in particular, the US steel industry filed a large number of antidumping (and countervailing duty) petitions that resulted in investigations and the application of new import restrictions. The full coverage of imports that were associated with these cases collectively rivaled the size of the 2002 US steel safeguard. Our econometric approach described below allows us to examine the potential similarities of the impact of the implementation of these different policy instruments across these different time periods.

[4] Bown and Crowley (2007) propose and examine an alternative way through which antidumping and safeguards may have a differential trade impact by considering the effects of application of such US trade policies on Japanese export flows to *third* country markets; this is a phenomenon that they term "trade deflection." See also Durling and Prusa (2006) for an analysis of antidumping import restrictions on hot rolled steel that were imposed by a number of countries during 1996–2001. Neither of these papers, however, examines the potential discriminatory impact of safeguard policies on the policy-imposing country's imports nor compares the impact to explicitly discriminatory policies such as antidumping.

Finally, we also use our approach to examine how distinct outcomes to AD/CVD investigations differentially impact trade flows. In particular, we find additional empirical support for the Staiger and Wolak (1994) result of a negative "investigation effect" of AD/CVD on exports; i.e., foreign countries that are investigated but that do not face new antidumping or countervailing duty import restrictions also experience an adverse effect on their exports.

Our results that statutorily distinct TTB instruments such as antidumping and safeguards can be interpreted as substitutable policies contributes to a broader literature on the role of TTBs under the WTO.[5] Bagwell and Staiger (1990) provide one particularly important theoretical lens through which to reconcile a role for TTBs in the design of trade agreements that have otherwise resulted in countries that apply low import tariffs. Their approach borrows insights from the industrial organization literature on firm collusion and repeated games by modeling two *countries* as playing a dynamic, tariff-setting game in which their governments "collude" by setting low tariffs in a cooperative equilibrium. The Bagwell and Staiger model has rich theoretical predictions for TTB use; in particular, positive trade volume shocks in sectors with low import demand and export supply elasticities generate a terms-of-trade incentive to defect. This triggers an increase in cooperative tariffs so as to avoid a reversion to noncooperative (Nash) tariffs and hence a trade war.

The current paper's specific evidence on the substitutability of safeguard and antidumping policies, in that their application can result in similar effects on trade flows, complements other recent empirical research that also implicitly examines the relative substitutability of these TTB policies. First, Bown and Crowley (2013) interpret US TTB use as increases to the "cooperative" trade policy as in Bagwell and Staiger (1990), and they present evidence that both antidumping and safeguards can be viewed as cooperative tariff increases in response to trade volume shocks. Their estimation of the determinants of US *industry*-level use of antidumping and safeguards covers 1997–2006 and therefore also includes substantial TTB application of both policies on the US steel sector. Second, at the aggregate level, there is evidence that safeguards can be an important contributor to modern commercial policy adjustments in the face of macroeconomic fluctuations. Bown and Crowley (2011, in press) examine United States TTB policies in higher frequency data over 1988–2010 and find that, relative to models estimated on antidumping alone, the *combination* of antidumping and safeguards have both a stronger countercyclical response to macroeconomic shocks and a stronger reaction to exchange rate fluctuations.[6]

[5] A number of recent papers provide evidence of the relevance of the terms-of-trade theory of trade agreements that dates back to Johnson (1953–1954) and has most recently been formalized by Bagwell and Staiger (1999). Broda et al. (2008) have shown how such incentives affect countries' tariff levels in the absence of an international agreement that would constrain those tariffs. Bagwell and Staiger (2011) find evidence that economic incentives also affect the terms of WTO accessions as countries negotiate tariff cuts to join the agreement.

[6] Bown and Crowley (2011, in press) provide evidence of this not only for the United States, but also in a sample of data at the quarterly frequency that includes four other high-income economies over the period 1988–2010.

Our results also contribute to the body of research that examines different implications of US use of its safeguards policy. With respect to the 2002 US steel safeguard, Liebman and Tomlin (2007, 2008) provide evidence that government announcements that are associated with the policy affected share prices for at least three different types of firms: steel producers; downstream, steel-consuming industries; and firms that are otherwise unrelated to steel but are connected to the safeguard through the channel of "retaliation" against their exported products that is made possible by European Union tariff threats under a WTO trade dispute. Durling and Prusa (2003) describe the distributional impacts that resulted from the new 2002 safeguard import tariffs on steel slab, which were expected to raise the costs of not only foreign firms, but also of *domestic* rivals, thereby benefiting US mini-mills at the expense of a number of US vertically-integrated firms.

This paper also relates to other studies of more general questions regarding import protection and the US steel industry. Blonigen et al. (2013), for example, use plant-level data from the US Census Bureau that covered 1967–2002 and provide evidence that quota-based protection has market power effects, with respect to integrated and mini-mill steel plants, whereas tariff-based import protection does not. Furthermore, Blonigen and Wilson (2010) use product- and foreign country-level data to document evidence of the impact of both cyclical and structural excess capacity (which is associated with foreign subsidies) on steel exports to the US that covered 1979–2002.

Finally, research that improves the understanding of the role and implications of safeguards use is increasingly important given that application of this particular TTB has spread to so many countries. Miranda et al. (1998) and Prusa (2001) were amongst the first to document the proliferation in the adoption and use of *antidumping* across high-income and emerging economies worldwide. More recently, Bown (2011) extends the antidumping analysis and provides additional evidence regarding the economic significance of *safeguards* use for a number of countries over 1990–2009. Among the major Group of 20 (G20) economies in the WTO system, Argentina, Brazil, China, the European Union, India, and Turkey are like the United States in that they have also gone through episodes during which the application of safeguard policies affected a sizeable share of their imports. Even limiting ourselves to the 2001–2003 period that coincides with the US steel safeguard investigation and applied import restrictions, at least eight other WTO members initiated steel safeguard investigations of their own, and many resulted in the application of substantial import restrictions over a number of the same steel products as was true of the US safeguard.[7]

The rest of this paper proceeds as follows: Section 2 discusses the basic institutional background for the different TTB policies and provides a simple framework that allows for the examination of the questions of interest with regard to the differential trade effects that result from the application of such policies on imports. Section 3 presents the econometric model and a discussion of the data. Section 4 describes our estimation results, and Sect. 5 concludes.

[7] This includes Bulgaria, Canada, Chile, China, Czech Republic, EU, Hungary and Poland (Bown 2012).

2 Institutional Background

2.1 The GATT, WTO, and US Rules on Safeguards, Antidumping, and Countervailing Duties

The use of safeguards, antidumping, and countervailing duties is authorized under the rules of the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO), as well as the laws of the United States.[8] Under the GATT 1947, safeguards were authorized under Article XIX, while antidumping and countervailing duties were authorized under Article VI. With the establishment of the WTO in 1995, these simple Articles that lay out the framework for AD, CVD, and SG have been expanded into formal agreements: the Agreement on Safeguards, the Agreement on Antidumping, and the Agreement on Subsidies and Countervailing Measures. In the United States, the TTB statutes authorized under the WTO are implemented under Section 201 (for safeguards), Section 731 (for antidumping), and Section 701 (for countervailing duties) of the US trade law.

2.2 The US Steel Industry's Use of Antidumping, Countervailing Duties, and Safeguards Over 1989–2003

The US steel industry has frequently sought government intervention to shield it from imports since the 1960s (Rosegrant 2002), and it has been among the most frequent US users of TTBs since at least the early 1980s. Over the 1989–2003 period of our sample, the US steel industry and its unions filed hundreds of petitions against firms from dozens of exporting countries over thousands of steel products alleging that foreign steel was dumped into the US, subsidized by the foreign government, or otherwise a threat to injure the domestic industry.

Table 1 describes the dozens of investigations that have resulted in the imposition of duties over hundreds of different 10-digit Harmonized Tariff Schedule (HTS) steel product categories during this period. For a comparison of the frequency of these actions, as we describe below, we have a panel of 1471 unique 10-digit HTS steel product codes from chapters 72 and 73 that are represented in the US trade data over the same 1989–2003 period. The first row of this table, for example, suggests that roughly 1 in 6 of these 10-digit steel products were hit with a safeguard during this time period, 1 in 5 were hit with a countervailing duty (CVD), and 1 in 4 products were hit with antidumping.[9] In many instances antidumping and countervailing duties end up being "redundant" policies—in the sense that they are applied against the same

[8] Blonigen and Prusa (2003) provide a survey of the economics research literature on antidumping as well as a more detailed description of the US antidumping process. Bown and Crowley (2005) survey the literature on safeguards.

[9] After 1998, only 1035 unique 10-digit HTS categories from chapter 72 or 73 are in our sample of trade data, which suggests that the ratio for the three safeguard actions (all implemented since 1998) is even higher if we factor into account administrative changes in the HTS schedule over time.

Table 1 The US steel industry's use of antidumping, countervailing duty and safeguard laws, 1989–2003: numbers of investigations and 10-digit HTS codes

	Antidumping (Section 731)	Countervailing duties (Section 701)	Safeguards (Section 201)
Investigations resulting in imposition of final duties [total number of unique affected 10-digit HTS codes]	162 [421]	46 [345]	3 [277]
Investigations failing to result in imposition of final duties or other trade restricting measures [total number of unique affected 10-digit HTS codes]	160 [405]	36 [314]	0
Investigations resulting in suspension agreements [total number of unique affected 10-digit HTS codes]	8 [367]	1 [54]	0
Investigations removing final duties after revocation orders or sunset reviews* [total number of unique affected 10-digit HTS codes]	39 [197]	38 [204]	3 [277]
Number of unique 10-digit HTS codes in chapter 72 or 73 of the HTS, 1989–2003		1471	

* Also includes temporary trade barrier investigations that resulted in the imposition of final duties *before* 1989 and thus countervailing duty investigations under section 303 or 753 of the US trade law

Source Data involved imported products classified under chapters 72 or 73 of the US Harmonized Tariff Schedule (HTS), compiled by the author from the *Federal Register*, the ITC's *The Year in Trade* (various years), and the ITC's *DataWeb*

product from the same trading partner at the same time.[10] In our formal investigation below we consider antidumping, countervailing duty, and suspension agreement outcomes *jointly*; furthermore, we sometimes use shorthand to refer to them solely as "antidumping" in our comparison of the results for safeguards.

In addition to the 2002 steel safeguard (described below) that affected some 272 unique 10-digit HTS categories, in 2000 the US also imposed much smaller tariff-rate quota safeguards on five different 10-digit HTS product categories of steel wire rod and circular welded pipe.[11]

[10] More generally and for the full sample of all US use of antidumping and countervailing duties over 1990–2009, Bown (2011) reports that it is relatively rare for a product to be subject to a CVD and not also be subject to antidumping. Nevertheless the converse is not true as most use of antidumping is not necessarily accompanied by a simultaneous CVD.

[11] Note that while the United States excluded Canada and Mexico from application of these particular safeguards in 2000, it excluded no other developing countries. Furthermore, Korea filed a formal WTO trade dispute over the US safeguard on circular welded pipe; and, as part of the settlement, the US granted Korea additional access to the quota in September 2002. We examine the impact of this directly in the estimation results described below.

2.3 The 2002 Steel Safeguard

Table 2 illustrates the essentials of the process for the events that surrounded the United States' imposition of safeguard protection in 2002. In July 2001, the US Trade Representative (USTR) requested that the US International Trade Commission (ITC) commence a formal safeguard investigation under Section 201 of the US trade law. The USTR requested specifically that the ITC determine whether steel imports under 612 different 10-digit HTS product categories were a substantial cause of serious injury to the domestic steel industry. In October 2001, the ITC made its announcement that it had found that imports in a substantial number of product categories had caused injury to the domestic steel industry, and in December 2001, the ITC announced its non-binding recommendation for safeguard tariffs and quotas.

During this time, the USTR was also requesting that US steel-consuming industries and foreign exporters begin submitting petitions to have particular products *excluded* from application of any upcoming steel safeguard. They could receive an exclusion provided that they could illustrate to the USTR's satisfaction that domestic US production of that particular variety of steel was insufficient to meet domestic demand.[12]

In March 2002, a US Presidential Proclamation ordered the application of safeguard tariffs and quotas on 272 different 10-digit HTS product categories.[13] All exporters of a product within a particularly affected 10-digit category would face the same tariff rate that was assigned to that category unless their country or product were subject to an *exclusion* from the policy, in which case it would not face any SG restrictions at all. The US safeguard policy ultimately excluded three different categories of imports from the safeguard: two categories that were based on country definitions, and one in the form of discretionary firm-specific product-level exclusions that were administered by the USTR.

2.3.1 Developing Country Exclusions from the 2002 Safeguard

The first example of countries that were excluded from the steel safeguard includes a list of 100 developing countries. These developing country exclusions are mandated by the rules of the WTO, where Article 9.1 of the Agreement on Safeguards requires that a safeguard-imposing country exclude developing country suppliers that have less than a 3 percent share of the affected import market, provided that they collectively

[12] Specifically, the USTR announced that it would use the following criteria in making its decisions as to which product exclusion requests to accept:

> "We will grant only those exclusions that do not undermine the objectives of the safeguard measures. In analyzing the requests, we will consider whether it is currently being produced in the United States, whether substitution of the product is possible, whether qualification requirements affect the requestor's ability to use domestic products, inventories, whether the requested product is under development by a U.S. producer who will imminently be able to produce it in marketable quantities, and any other relevant factors. Where necessary, we will meet with parties to discuss the information that was submitted and/or to gain additional information." (USTR 2004a).

[13] There were also a handful of products in chapter 84 of the US HTS that we omit, as our focus is only on trade policies that affected products in HTS chapters 72 or 73.

Table 2 The timing of events around the 2002 US safeguard application

Date	Event related to the 2002 US steel safeguard
June 2001	US Trade Representative (USTR) requests the US International Trade Commission (ITC) initiate a "comprehensive steel investigation" under Section 201 of the US trade law (the "safeguards" law)
	Request identifies 612 different 10-digit Harmonized Tariff Schedule (HTS) import product codes to investigate as a source of serious injury to the US steel industry
October 2001	ITC finds that the US domestic industry is seriously injured in 8 out of 12 categories of steel under investigation and that imports are a substantial cause of the injury; ITC vote is split on the other 4 categories
December 2001	ITC announcement of steel tariff/quantitative restriction remedy recommendations
	Affirmative: 261 different 10-digit HTS codes
	Tied: 48 different 10-digit HTS codes
	Negative: 303 different 10-digit HTS codes
March 2002	US Presidential Proclamation announces final applied safeguard tariff rates and quantitative restrictions on imports of steel under Section 201 of US trade law
	Tariff: 267 different 10-digit HTS codes affected
	Quantitative restrictions: 5 different 10-digit HTS codes affected
	Proclamation announces that steel imports from Canada, Mexico, Jordan, Israel and 100 other small developing countries* not satisfying the WTO's *de minimus* standards would be excluded from the safeguard; USTR announces first round of excluded products
June 2002	USTR announces second, third, fourth, and fifth rounds of excluded products
July 2002	USTR announces sixth and seventh rounds of excluded products
August 2002	USTR announces eighth and ninth rounds of excluded products
March 2003	USTR announces tenth round of excluded products
March 2003	Scheduled reduction of safeguard tariffs and expansion of quantitative restrictions goes into effect on the 1-year anniversary of the March 2002 safeguard application
December 2003	US Presidential Proclamation terminates safeguard tariffs and quantitative restrictions

* A subset of steel products that are imported from seven of these developing countries (Brazil, India, Turkey, Moldova, Romania, Thailand, and Venezuela) was exempted from the country exclusions and thus faced the safeguard protection

Source Compiled by the author from USTR website, "President Bush Takes Action on Steel," available at http://www.ustr.gov/sectors/industry/steel.shtml, last accessed on 19 February 2004

also have a less than 9 percent market share. To comply with this element of the rules, the US excluded potential imports from 100 developing countries from the safeguard tariffs and quotas.[14]

[14] There is a similar *de minimus* requirement under the WTO's Agreement on Antidumping that duties should not be imposed on small suppliers. The question of whether that provision is followed in practice is not under investigation here. A subset of steel imports from seven of these developing countries (Brazil, India, Turkey, Moldova, Romania, Thailand and Venezuela) were "exempted" from the country exclusions in the safeguard and thus *faced* the new import protection in 2002.

2.3.2 Preferential Trade Agreement Country Exclusions from the 2002 Safeguard

The second way through which the US excluded imports from the safeguard tariffs and quotas was by exempting steel products that were imported from members of its preferential trade agreements (PTAs): Canada, Mexico, Israel, and Jordan. The WTO-legality of such a PTA-country exemption was unclear and had been questioned in a number of formal trade disputes that were litigated under the WTO, without a definitive answer as to the process for its legitimacy. Nevertheless, the PTA-country exclusions by the US in this case were not unprecedented; the US had exempted PTA members in at least five earlier safeguard actions since 1995 (brooms, wheat gluten, lamb meat, steel wire rod, and circular welded pipe) as had countries such as Argentina and Brazil in previous safeguard actions of their own.

2.3.3 Firm Product-Specific Exclusions from the 2002 Safeguard

The third channel through which the US excluded imports from being subject to the safeguard was foreign firm-specific product exclusions. These product exclusions were solicited by the USTR, which asked domestic steel consuming industries and/or foreign steel exporters to submit petitions that requested the exclusions by demonstrating that their particular product was otherwise in "short-supply" in the US market.[15] The USTR received over 2000 such petition requests and granted over 1000 of them in various announcements that were made between March 2002 and March 2003; see Table 2.

There are two final interesting items to note about the granted product exclusions: First, while exporting firms from dozens of foreign countries made exclusion product requests, the data also reveal that over 90 percent of the USTR-granted exclusions went to firms from Japan or the EU.[16] Second, when the USTR granted a particular product exclusion, it was not then typically extended on an MFN-like basis to close substitutes from competing firms in the same foreign country, let alone competitor firms from other countries that could produce a substitute variety. In contrast, an exclusion might be so narrowly defined so as to be a trademarked product that therefore could only be produced by a particular foreign firm. For example, product exclusion N454.01 granted to the UK firm Somers Forge, Ltd. on 11 June 2002 was limited to: "[f]orged alloy steel die blocks of round or rectangular cross section. US Trademark No. 1213781, commonly known as 'VMC' or 'HYTUF'." Furthermore, exclusion N408.10 granted to the Japanese firm Daido Steel on 22 August 2002 was limited to: "[a] specialized, high grade tool steel, known as Daido's proprietary grade NAK 55, that is used for the construction of plastic molds" (USTR 2004b).

[15] US steel producers had the ability to file objections to these petition requests in which they could claim that they could produce the product for which an exemption was being sought.

[16] During this period a number of countries including Japan and the members of the EU challenged the US safeguard through formal WTO disputes, with threats to retaliate with higher tariffs on US exports; see Liebman and Tomlin (2008). One contributing explanation for the 90 percent is that the USTR granted some product exclusions to compensate such aggrieved parties informally.

2.3.4 US Imports of Steel in the 24 Months Around the Application of the Safeguard

Given each of the three potential exclusion categories, which therefore created the scope for deviation from the MFN principle, did the safeguard application result in significantly differential trade effects relative to the products that were imported from countries that were actually hit with the safeguard?

Table 3 indicates that while imports of steel products from all sources in product categories that were targeted by the applied safeguard decreased by 13.5 percent in the 12 months following the March 2002 application of the safeguard, the magnitude of the import reduction was far from uniform *across* export sources and product categories. Foreign steel products matched to the March 2002 steel safeguard announcement on exclusions stemming from PTA-member countries such as Canada and Mexico ($16 million), from developing countries ($424 million), or from firm-specific product petitions ($77 million) actually had the value of their exports to the US *increase* in the immediate aftermath of the safeguard, as they continued to face low rates of import protection and now less fierce competition from other foreign rivals.[17]

A second implication is that foreign sources that were *not* excluded and thus faced the tariffs and quotas of the March 2002 safeguard saw a much larger reduction in exports than the 13.5 percent decrease found in the aggregated data. As Table 3 confirms, US imports of safeguarded steel products from foreign producers that did *not* receive exclusions fell by 30 percent, or roughly $1.2 billion, from the level of imports received from those same producers in the 12 months prior to the safeguard. In the aftermath of the safeguard, these foreign sources not only faced a competitive disadvantage relative to US steel producers but also relative to other foreign producers that received preferential treatment through exclusions.

2.4 Summarizing the Potential Outcomes Under Different TTB Policy Applications

The next sections of our paper investigate whether presentation of the anecdotal information on steel imports in Table 3 stands up to a more rigorous econometric approach when estimated on a panel of product-level data. Furthermore, we seek to compare the 2002 safeguard application's potential differential impact across product-level trade with the impact of the US steel industries' use of other TTBs—in particular antidumping and countervailing duties—over the full period of 1989–2003.

Figure 1 presents one way of characterizing the paths for a product that faces a potential TTB investigation. It also illustrates one categorization of the set of potential *outcomes* that face an imported steel product h from a particular trading partner i each year. The Fig. 1 approach establishes a common methodology by which we can refer to different outcomes across TTB policies and apply this approach to an econometric model. Our choice of these particular outcome categories ultimately permits for an

[17] The data in Table 3 underestimate the total differential impact across countries as they do not account for the hundreds of product exclusions that were granted by the USTR after March 2002 (see Table 2 and our discussion below). We estimate the impact of these exclusions in our formal econometric analysis.

Table 3 US steel imports in the 12 months prior to and after the March 2002 safeguard

Category of product	Value of imports in 12 months prior to the March 2002 Safeguard (millions of $) (1)	Value of imports in 12 months after the March 2002 Safeguard (millions of $) (2)	Difference between (2) and (1)	% Change
Total for 272 10-digit HTS products in the March 2002 safeguard categories	$5, 507	$4, 814	−$693	−13.5%
Products hit with safeguard from producers not given a March 2002 exemption*	4, 670	3, 460	−1, 210	−30.0%
Products given March 2002 PTA-member exclusions	23	39	16	53.4%
Products given March 2002 developing country exclusions	481	905	424	63.2%
Products given March 2002 product exclusions	333	410	77	20.8%
Total for 772 10-digit HTS steel products in the non-safeguarded categories in Chapters 72 and 73	11, 740	12, 990	1, 250	10.1%
Products also investigated under the USTR's June 2001 request, but which did not face the safeguard	3, 320	3, 200	−120	−3.7%
Products not investigated under the USTR's June 2001 request	8, 420	9, 790	1, 370	15.1%

* This includes some imports in products that were ultimately exempted from the safeguard *ex post* (i.e., after March 2002), in the USTR's second through ninth rounds (June, July and August of 2002) of product exclusion announcements

Source author's calculations based on a comparison of US import data for April 2001 through March 2002 and April 2002 through March 2003 for steel products in US Harmonized Tariff Schedule (HTS) of Chapters 72 and 73 available from the ITC's *DataWeb* database. Categorization of products and source for data on country and product exclusions is as defined in the text

explicit comparison of alternative TTB policy instruments so as to assess whether they have a "similarly" differential impact on product-level imports across foreign sources.

We begin at the top of Fig. 1 and consider products h: The first difference between two distinct products h is that one may face a TTB investigation in a given year and another may not. Conditional on product h being investigated, the next outcome results from one of two possibilities: a TTB is not imposed on *any* producers of h, or a TTB is imposed on at least one producer of h.

The first possibility is that a TTB is not imposed on product h from any exporting country i. In a SG case, this would be because the President decided not to impose

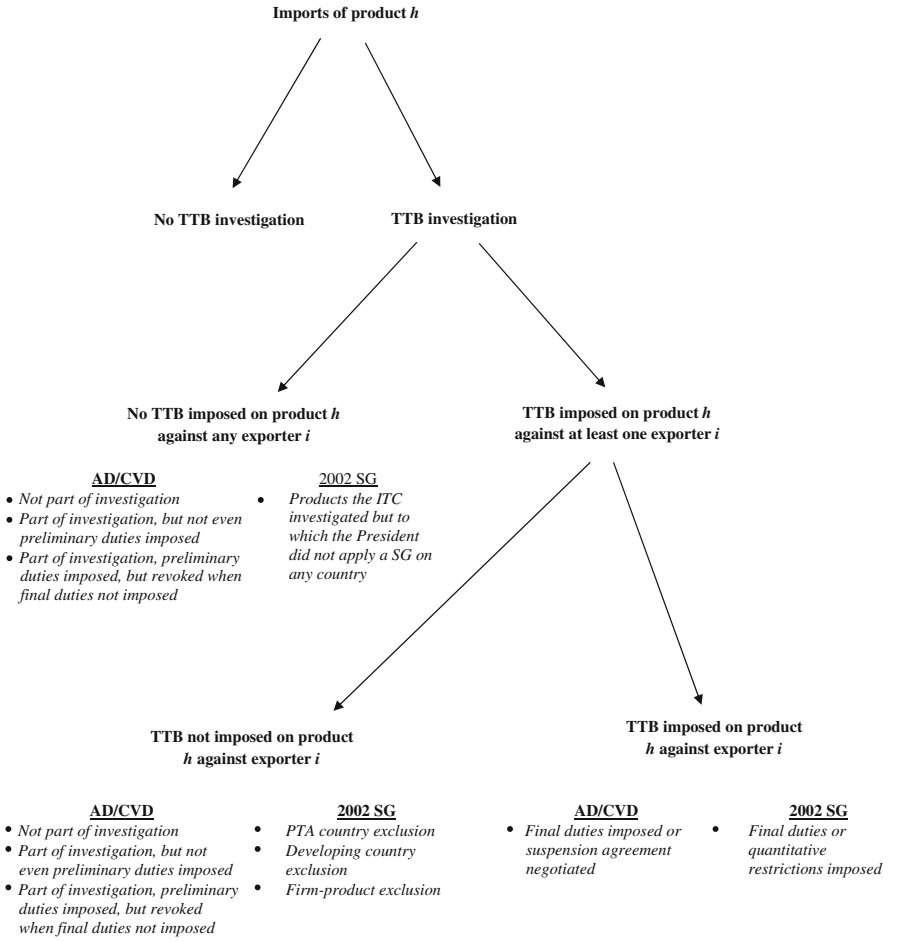

Fig. 1 Characterization of outcomes under temporary trade barrier (TTB) policies

import protection against products that the ITC investigated.[18] In an AD/CVD case, the outcome results because the particular exporting country i was not even part of the investigation of h (which must have investigated other countries), exporting country i was part of the investigation but not even preliminary duties (let alone final duties) were imposed, or exporting country i was part of the investigation and, while preliminary duties were imposed, preliminary duties were revoked and final duties were not imposed.[19]

[18] In the 2002 SG, there were more than 300 10-digit HTS products that were investigated by the ITC but for which the President did not impose import protection against any foreign source. For most of these products, the ITC's injury investigation also indicated that the competing US industry was not sufficiently injured by an increase in imports to merit new protection; see Table 2.

[19] This could occur because the Department of Commerce found insufficient evidence of dumping/foreign subsidies, the ITC found insufficient evidence of injury to the domestic producers of h, or both.

The second possibility is that a TTB is imposed on imports of product h from at least one exporter. Any particular exporter i then faces one of two potential outcomes: it is subject to the new import-restricting TTB, or it is not subject to the TTB but at least one other foreign competitor that produces h for the US market is subject to the TTB. Under the 2002 SG, exporters of h could have been excluded from the US import restriction if they were in a PTA-member country, if they were in one of the developing countries listed as a *de minimus* supplier, or if they were a foreign firm that had petitioned for and was granted a firm product-specific exclusion. Under AD/CVD, when another competing producer of h faces a TTB, exporter i may not because it was not even part of the investigation; it was part of the investigation but not even preliminary duties (let alone final duties) were imposed; or it was part of the investigation, and while preliminary duties were imposed, preliminary duties were revoked and final duties were not imposed. Our detailed empirical approach below allows us potentially to distinguish between even these latter three different sub-categories for AD/CVD cases.[20]

3 Econometric Model and Data

3.1 Empirical Model

To investigate the questions of interest regarding the potential differential trade impacts of alternative TTB policy applications and outcomes across export sources and products, we develop the following reduced-form specification for the quantity of US imports from country i of product h at time t

$$\ln(m_{iht}) = \alpha_i + \alpha_h + \alpha_{i,t} + \beta_1' I_{iht} \ln(1 + \tau_{iht}) + \beta_2' \ln(m_{iht-1}) + \varepsilon_{iht}. \quad (1)$$

In Eq. (1), $\ln(m_{iht})$ denotes the natural logarithm of the quantity of imports of product h from exporters in country i at time t,[21] $(1 + \tau_{iht})$ is one plus the ad valorem US TTB against imports of h from country i at time t, where the ad valorem rate is equal to zero if no TTB is applied. Furthermore, I_{iht} denotes a vector of zero/one indicators that country i was or was not excluded from a particular US TTB applied against imports of h from some other foreign competitor in t. Finally, α_i and α_h are country i and product h fixed effects, respectively, while $\alpha_{i,t}$ is a country-specific effect that may vary over time, and which we use to control for exporting country-specific covariates (e.g., exchange rates, productivity, domestic subsidies) that may also be affecting the level of US imports. Absent from this estimation equation are any industry-level control variables; we omit them given the concentration on only steel products in our estimation exercise.

[20] Note that we organize the AD/CVD policy variables to compare only the bottom outcome in Fig. 1 with the applied SG outcome: Our variable construction conditions on products h for which some exporter was faced with a final TTB through AD or CVD for these subcategories of outcomes.

[21] Where imports are zero in a year, we exclude that observation in our first set of regressions; below we discuss an alternative method that allows us to include those observations and thus allow for entry and exit.

3.2 Estimation Strategy

There are two problems to address in estimating Eq. (1). First, the autocorrelation of $\ln(m_{iht})$ implies that least squares estimation of (1) yields biased estimates. Second, in a short panel, the number of parameters to be estimated (α_i and α_h) increases with the number of countries and commodities, so that α_i and α_h cannot be consistently estimated.

To address both of these problems we follow the general approach of Arellano and Bond (1991) and estimate the first difference of (1) and instrument for the lagged change in imports with the second lag of the log level of imports. Accordingly, taking the first lag of (1) and subtracting this from (1) yields:

$$\Delta \ln(m_{iht}) = \Delta\alpha_{i,t} + \beta_1' I_{iht} \Delta \ln(1 + \tau_{iht}) + \beta_2' \Delta \ln(m_{iht-1}) + \Delta\varepsilon_{iht}. \qquad (2)$$

I.e., after first differencing, direct estimation of (2) yields biased coefficients because the lagged difference in the log of imports, $\ln(m_{iht-1}) - \ln(m_{iht-2})$, is correlated with the error term, $\varepsilon_{iht} - \varepsilon_{iht-1}$. We therefore take an instrumental variables approach to address this problem by instrumenting for $\Delta \ln(m_{iht-1})$ with $\ln(m_{iht-2})$.[22]

3.3 Comparison to the Literature

With a number of important caveats, this estimation approach has similarities to the method that is employed by Prusa (1997, 2001), which examines the trade effects of US antidumping actions that were implemented between 1980 and 1994.[23] Prusa focuses only on AD cases for the 1980–1994 time period but does examine all (i.e., steel and non-steel) products that were targeted in those cases. In contrast, our focus is on steel products only, so that our lack of US industry-level covariates that would be needed to control for product-level import variation across industries is less of a concern. Furthermore, our sample covers the 1989–2003 time period for which we have a consistent time series of 10-digit HTS import data; and we also consider the impact of the imposition of SG and CVD cases in addition to AD, as well as the removal of such policies on product-level imports.

A second important contribution made by our approach is that we have constructed a dynamic panel of all steel products that were imported by the US over the time period–regardless of whether a particular product was targeted by a TTB. By contrast, Prusa's estimation sample considers only US imports in product categories that were hit with an AD measure, and he uses separate samples to examine the impact of TTBs on products that were exported by targeted and non-targeted suppliers. Our approach goes one step further. A dynamic panel of all US steel imports allows us to take advantage of the substantial variation in the trade data of the products that were

[22] Because of the dynamic panel structure of our data, two potential problems with the IV estimator used in Eq. (2) are bias that is associated with the use of a weak instrument and bias that is associated with correlation in measurement error.

[23] Konings et al. (2001) apply Prusa's approach to AD cases in the European Union.

targeted and not-targeted by US TTBs in addition to the exporters that were targeted and not-targeted by US TTBs within categories of targeted products.

3.4 Data

3.4.1 Trade Data

To estimate the model, we use product-level data on US imports of steel at the 10-digit Harmonized Tariff Schedule (HTS) level, where most steel products are allocated to chapters 72 or 73. Annual import data for the US at the 10-digit HTS level are available from the US International Trade Commission's DataWeb data base for the years 1989–2003.[24] Given the need to instrument with $\ln(m_{iht-2})$, this allows us to estimate Eq. (2) on a dynamic panel of yearly, bilateral, product-level US import data from 1991–2003. As stated earlier, we have an unbalanced panel of 1,471 different 10-digit HTS products in chapters 72 or 73 over the life of the sample.

3.4.2 Policy Data

This paper investigates the potential for differential effects of various instruments of import protection on steel US imports during the 1989–2003 period. We have collected detailed product-level changes to trade policies that were associated with antidumping and countervailing duty investigations, the removal of AD and CVD after revocation orders or sunset reviews, and the imposition and removal of acts of safeguard protection. All of these basic trade policy data are now available electronically through the World Bank's *Temporary Trade Barriers Database* (Bown 2012). The information regarding the implementation and removal of AD or CVD is directly from the US *Federal Register*, as well as from public documents that are available at either the USITC or the Department of Commerce's official websites.

Much of the data for the safeguard cases are also from either the *Federal Register* or the ITC's official website. The US President imposed safeguard protection over various 10-digit HTS products in the steel industry on three occasions during the 1989–2003 period: circular welded pipe and steel wire rod in 2000 (five different 10-digit HTS products), as well as the 272 different HTS-products that were targeted by the March 2002 policy application that we have referred to as the "2002 steel safeguard." In each case, the 10-digit HTS products as well as any excluded countries were made publicly available in the Presidential Proclamation that announced the safeguard policy.

The one important piece of policy information that was not readily available from electronic sources for the 2002 steel safeguard and compiled into Bown (2012) is the 10-digit HTS categories of the foreign firm-specific *product exclusions* that were granted by the USTR. Descriptions of the physical characteristics of the products that were excluded from the safeguard were made public on the USTR's website; however, this information was not sufficiently detailed for systematic efforts to match excluded products to the 10-digit HTS coded import data that were used in the estimation. How-

[24] See http://dataweb.usitc.gov/, last access date of 16 December 2012.

ever, information on the 10-digit HTS codes of the excluded products was available in the actual surveys that petitioners filled out to request that their product be excluded. Such petitions are publicly available, though the data had to be transcribed by hand from hard copy surveys that were available in the International Trade Administration's Central Records and Subsidy Library in the Department of Commerce in Washington, DC. There were over 2000 petitions from firms that requested to have their products excluded from the safeguard.[25]

Finally, we note again that a firm-specific product exclusion was typically granted to a product from a single exporting firm, which would be even more narrowly defined than a 10-digit HTS product category. Thus, not all products within a 10-digit product category would be excluded.

Table 4 provides the summary statistics for the yearly data that were used in the estimation of specifications that are reported in the next section.

4 Empirical Results

This section considers the result of estimating variants of Eq. (2) on product-level imports and trade policy indicators for data that cover the period 1989–2003. Unfortunately our approach requires so many different policy variables that we are forced to split the estimation results of each regression into three *separate* tables. Table 5 presents the estimated coefficients for the variables that are associated with the application of the steel SG in 2002, and Table 6 reports the impact of the application of AD/CVD. In unreported results (discussed in Sect. 4.4 below) we have coefficient estimates for a smaller set of SGs that were imposed in 2000 as well as estimates for the trade impact of AD/CVD policy removals. In our tables, we ultimately present results from eight different model specifications.

4.1 Results for the 2002 Steel Safeguard

Table 5 presents results for our estimates of Eq. (2) with regard to the trade effects that were associated with various aspects of the 2002 application of a US safeguard on steel. The dependent variable is the yearly growth rate of US imports of product h from country i. So as to facilitate a comparison of results across different policy instruments, we use simple indicators for application and removal of TTB policies in lieu of the applied tariff rates found in Eq. (2).[26]

[25] There is some measurement error with the survey data as there were a few instances in which petitioners left the entry for the relevant 10-digit HTS code blank, or instead entered an incorrect product code that was not subject to the safeguard. These exclusions were omitted from the empirical analysis.

[26] We have also estimated model specifications in which we use the different tariff rates that were associated with the 2002 safeguard across different products; our results are broadly robust to using the tariff rates instead. For the 267 10-digit HTS codes that faced a tariff in the first year after the safeguard, 185 (69 percent) received a 30 percent tariff, 60 (22 percent) received a 15 percent tariff, 15 (6 percent) received a 13 percent tariff, and 7 (3 percent) received an 8 percent tariff in the first year. In March 2003, the tariffs for each of the categories were reduced to 24, 12, 10, and 7 percent,

Table 4 Summary statistics for variables used to estimate policy regressions

Variable	Observations	Mean value	Standard deviation	Minimum	Maximum
Dependent variables					
Import volume growth rate: $\Delta \ln(m_{iht})$	88,891	0.01	1.88	−15.26	16.18
Import volume growth rate: Δm_{iht}	134,940	-0.20	1.43	−2	2
Import value growth rate: $\Delta \ln(vm_{iht})$	93,793	0.01	1.41	−9.47	8.49
Import value growth rate: Δvm_{iht}	141,773	−0.19	1.38	-2	2
Explanatory variables					
SG policy variables					
Product investigated $_{ht}$	141,773	0.05	0.22	0	1
Product with SG applied against some country $_{ht}$	141,773	0.02	0.15	0	1
Country excluded from applied SG $_{iht}$	141,773	0.01	0.10	0	1
PTA country exclusion from SG $_{iht}$	141,773	0.00	0.04	0	1
Developing country exclusion from SG $_{iht}$	141,773	0.00	0.07	0	1
Firm-product exclusion from SG $_{iht}$	141,773	0.00	0.06	0	1
AD/CVD Policy imposition variables					
Product investigated $_{ht}$	141,773	0.09	0.29	0	1
Product with AD/CVD applied against some country $_{ht}$	141,773	0.07	0.25	0	1
Country excluded from applied AD/CVD $_{iht}$	141,773	0.05	0.23	0	1
Not even investigated $_{iht}$	141,773	0.05	0.22	0	1
Investigated, not even preliminary duties $_{iht-1}$	141,773	0.00	0.03	0	1
Investigated, preliminary but not final duties $_{iht}$	141,773	0.00	0.05	0	1

We first consider specification (1) in which the dependent variable is defined as the log growth rate of the quantity (volume) of imports. So as to build intuition for interpretation of the coefficients on the policy variables, we begin by estimating the model with only an indicator for products h that were subject to TTB investigations. For Table 5, column (1), this refers to the impact of the steel SG investigation that was initiated in June 2001. In the annual data for 2001, the estimated coefficient of 0.12 on the dummy variable indicates the import growth rate of investigated products

Footnote 26 continued
respectively. Use of ad valorem tariff rates for AD/CVD cases is a bit more problematic given that some major cases resulted in suspension agreements in which a trading partner agreed to restrain exports but no US tariffs were imposed; see Table 1.

Table 4 continued

Variable	Observations	Mean value	Standard deviation	Minimum	Maximum
Other TTB policy variables					
Products subject to 2000 SGs on steel wire rod or circular welded pipe $_{ht}$	141,773	0.00	0.03	0	1
Countries excluded from 2000 SGs $_{iht}$	141, 773	0.00	0.01	0	1
Indicator for Korea's products excluded from circular welded pipe SG in 2002 $_{iht}$	141,773	0.00	0.00	0	1
Product with AD/CVD on someone removed $_{ht}$	141,773	0.03	0.16	0	1
Country with AD/CVD being removed $_{iht}$	141,773	0.00	0.04	0	1
Instruments					
$\ln(m_{iht-2})$	134,940	7.29	5.82	0	21.45
$\ln(vm_{iht-2})$	141,773	8.19	5.90	0	19.81

was 13 percentage points higher than the growth rate of non-investigated products.[27] Relative to non-investigated products, the growth rate for investigated products was 10 percentage points lower in 2002 (coefficient of −0.11) and 12 percentage points lower in 2003 (coefficient of −0.13).

In column (2) we introduce a second explanatory variable which is an indicator for the *subset* of investigated products *h* against which the US applied a TTB against someone; in Table 5, it refers to the safeguard applied via new import restrictions in March 2002. The first item to note is that including this variable changes the interpretation of the coefficient on the first variable introduced in Table 5. In 2002, the import growth rate for investigated products for which no exporting country was subject to the applied SG was 9 percentage points lower than the growth rate of non-investigated products. The other products—i.e., those products *h* for which *some* trading partner faced an applied SG—had a growth rate that was an additional 7 percentage points lower. In total, products *h* for which some trading partner was subject to the applied safeguard had import growth that was roughly 15 percentage points lower than non-investigated steel product imports in 2002.

In 2003, the import growth rate for investigated products for which no exporting country was subject to the applied SG was only 2 percentage points lower than the rate for non-investigated products. However, the other products for which *some* trading partner faced an applied SG had a growth rate that was an additional 26 percentage points lower (coefficient of −0.30). In total, products *h* for which some trading partner was subject to the safeguard had import growth that was roughly 27 percentage points lower than non-investigated steel products in 2003.

[27] Because the dependent variable in our regression Eq. (2) is defined as the log growth rate, the coefficient estimates on the explanatory variables represent $\exp(\beta_1)$; our discussion of magnitudes in the text reflects this transformation.

Table 5 Regression estimates for trade policy indicators on product-level import growth: the 2002 steel safeguards

Explanatory variables	Dependent variable = import growth, defined as							
	Volume: $\Delta \ln(m_{iht})$ IV (1)	Volume: $\Delta \ln(m_{iht})$ IV (2)	Volume: $\Delta \ln(m_{iht})$ IV (3)	Volume: $\Delta \ln(m_{iht})$ IV (4)	Volume: $\Delta \ln(m_{iht})$ OLS (5)	Volume: Δm_{iht} IV (6)	value: $\Delta \ln(vm_{iht})$ IV (7)	value: Δvm_{iht} IV (8)
SG variables in 2001								
Product investigated $_{ht}$	0.12**	0.12**	0.12**	0.12**	0.09*	0.02	0.05	0.01
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.03)	(0.04)	(0.03)
SG variables in 2002								
Product investigated $_{ht-1}$	−0.11**	−0.09*	−0.10*	−0.09*	−0.11**	−0.08**	−0.12***	−0.08***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.03)	(0.04)	(0.03)
Product with SG applied against some country $_{ht}$		−0.07	−0.23***	−0.24***	−0.25***	−0.20***	−0.23***	−0.19***
		(0.06)	(0.07)	(0.07)	(0.07)	(0.05)	(0.06)	(0.05)
Country excluded from applied SG$_{iht}$			0.42***					
PTA country exclusion from SG$_{iht}$			(0.09)	0.67***	0.82***	0.33***	0.47***	0.27**
				(0.20)	(0.20)	(0.12)	(0.17)	(0.12)
Developing country exclusion from SG$_{iht}$				0.55***	0.52***	0.36***	0.59***	0.39***
				(0.12)	(0.12)	(0.09)	(0.11)	(0.09)
Firm-product exclusion from SG$_{iht}$				0.26***	0.18*	0.16**	0.16*	0.11
				(0.10)	(0.10)	(0.08)	(0.09)	(0.08)
SG variables in 2003								
Product investigated $_{ht-2}$	−0.13***	−0.02	−0.02	−0.01	−0.04	−0.09**	0.00	−0.06
	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)	(0.04)	(0.04)	(0.04)

Table 5 continued

Explanatory variables	Dependent variable = import growth, defined as							
	Volume: $\Delta \ln(m_{iht})$ IV (1)	Volume: $\Delta \ln(m_{iht})$ IV (2)	Volume: $\Delta \ln(m_{iht})$ IV (3)	Volume: $\Delta \ln(m_{iht})$ IV (4)	Volume: $\Delta \ln(m_{iht})$ OLS (5)	Volume: Δm_{iht} IV (6)	value: $\Delta \ln(vm_{iht})$ IV (7)	value: Δvm_{iht} IV (8)
Product with SG applied against some country $_{ht-1}$		−0.30***	−0.46***	−0.46***	−0.48***	−0.47***	−0.43***	−0.48***
		(0.06)	(0.08)	(0.08)	(0.08)	(0.05)	(0.06)	(0.05)
Country excluded from applied SG_{iht-1}			0.35***					
			(0.09)					
PTA country exclusion from SG_{iht-1}				−0.02	0.08	0.17	−0.02	0.17
				(0.22)	(0.22)	(0.13)	(0.19)	(0.13)
Developing country exclusion from SG_{iht-1}				0.50***	0.52***	0.49***	0.54***	0.54***
				(0.14)	(0.14)	(0.09)	(0.12)	(0.09)
Firm-product exclusion from SG_{iht-1}				0.34***	0.26***	0.34***	0.21**	0.30***
				(0.10)	(0.10)	(0.07)	(0.09)	(0.07)
Instrument	0.24***	0.24***	0.24***	0.23***	–	−0.05***	0.16***	−0.07***
	(0.01)	(0.01)	(0.01)	(0.01)		(0.01)	(0.01)	(0.00)
$\Delta\alpha_{i,t}$: Country-year fixed effects [number]	yes	yes	yes	yes	yes	yes	yes	yes
	[1052]	[1052]	[1052]	[1052]	[1052]	[1513]	[1095]	[1562]
Observations	88,891	88,891	88,891	88,891	88,891	134,940	93,793	141,773
R^2	0.04	0.04	0.04	0.04	0.03	0.05	0.05	0.05

Subscript i is an exporting country, h is an HTS 10-digit product in Chapter 72 or 73, and t is a year. In parentheses are standard errors clustered on products h. Superscripts ***, **, and * denote coefficients that are statistically different from zero at the 1, 5, and 10 percent levels, respectively. Estimates for all of the AD/CVD policy imposition variables are presented in Table 6. Estimates for the constant term and the remaining policy variables are available upon request

One noteworthy result in (2) that highlights the general results of our paper, and certainly foreshadows our discussion below, is that the estimated *differential* between the subset of products h against which the US applied a SG against some country (−0.07) is not statistically different from zero in 2002. Overall, this indicates that there was no statistically significant differential in the growth of imports in 2002 between products that were investigated and to which no safeguard was applied and products that were investigated and to which a safeguard was applied. This raises the question: Did the applied safeguard in 2002 have any trade effects at all?

The estimates presented in column (3) provide an answer to this question and an explanation for the initially puzzling result of column (2). The next variable that we introduce in column (3) is defined as an indicator for the subset of products for which the exporter-product (ih) combination was *excluded* from the application of the safeguard on product h.[28]

The first important result from introduction of the new variable in column (3) is the strong evidence of the negative effect of the safeguard for the products and trading partners that were actually hit with the new import restrictions. The products h for which a particular trading partner i faced an applied SG in 2002 had an import growth rate that was an additional 21 percentage points lower than products subject to the investigation only (i.e., but for which *no* countries faced the applied SG). Furthermore, products h for which a particular trading partner was subject to the safeguard had import growth that was roughly 30 percentage points lower than non-investigated steel products in 2002.

The second important result from column (3) is our first evidence of the significant *differential* trade impact that resulted from the exclusions that were embodied in the application of the 2002 steel safeguard. First, trading partners i and products h that were excluded from the safeguard had import growth that was 52 percentage points higher (coefficient of 0.42) than the products from exporters that faced the applied safeguard in 2002. Second, their import growth in 2002 was roughly 32 percentage points higher than investigated steel products for which no SG was applied against any trading partner. Third, their import growth in 2002 was 22 percentage points higher than even non-investigated steel products. This last comparison is worth highlighting: Products that received exclusions and thus preferential access to the US import market in 2002 had faster growth rates than one particularly important control group of other steel imports: those steel import products that were completely absent from the safeguard investigation process.

Now that we have developed intuition for how to interpret these results, consider column (4). Column (4) presents our preferred, baseline specification of the model as it includes each of the relevant policy variables of interest. It is almost identical to column (3), but it provides additional granularity by breaking out the indicator for

[28] In 2002, the import growth rate for investigated products for which no exporting country was subject to the applied SG was 9.5 percentage points lower than non-investigated products; this estimate is only slightly different from the estimate (9.3 percentage points) found in column (2). These estimates in (2) and (3) are not identical because we simultaneously introduce other new variables in specification (3) that are related to AD/CVD. While these variables are not shown in Table 5, as we describe below, their impacts are documented in Table 6.

whether a particular trading partner-product combination (*ih*) was *excluded* from the safeguard into one of the three categories described in Table 3.

While the average import growth differential across all excluded products was 52 percentage points in 2002 (column 3), column (4) now reveals that import growth in steel-affected products from PTA partners Canada, Mexico, Israel and Jordan grew fastest (95 percentage points), followed by developing countries that were excluded (73 percentage points), and then firm-product exclusion petitions (30 percentage points). While each of these three differentials is statistically significant, there are two likely contributing explanations for the relatively smaller estimate for the firm-product exclusions: First, the estimation is on *country-product* level data, and the USTR granted *firm-product* level exclusions in a way that would not necessarily have applied to all varieties of product *h* from all firms (or even the same firm!) in the home country of the firm that filed the exclusion petition; see the discussion in Sect. 2.3.3. Furthermore, many of the excluded products were granted in June, July and August of 2002 and thus would only have an impact on the last 6 months of trade data for 2002; see Table 2.

Before considering our robustness checks in columns (5) through (8), consider the rows of estimates in the lower third of Table 5. These estimates identify the trade effects of the applied safeguard and exclusions in 2003: the second (and last) year that the policy application was in place. Columns (2) through (4) begin by indicating that by 2003 there was already no longer a statistically significant differential between the import growth of non-investigated products and products that had been part of the original investigation but that had not faced the safeguard at all.

However, column (3) provides additional evidence of the negative effect in 2003 of the applied safeguard for the products and trading partners that were actually hit with the import restrictions. Even though the applied safeguard tariff rates were reduced in March 2003 from their March 2002 level across all affected products, as is mandated by the statute and was unannounced in the March 2002 Presidential Proclamation, the applied safeguard is associated with a substantial negative impact on import growth. The products *h* for which a particular trading partner *i* faced an applied SG had an import growth rate that was 37 percentage points lower (coefficient of −0.46) than products that were "only" investigated. Furthermore, products *h* for which a particular trading partner was subject to the safeguard had import growth that was roughly 39 percentage points lower than the control group of non-investigated steel products in 2003.

Column (3) also indicates that the average import growth differential across the excluded product categories was 42 percentage points in 2003. Column (4) breaks this out according to the three different exclusion categories; one important result is a new ranking of the impact of exclusions when compared to the estimated results on import growth for 2002. In 2003, differential import growth from excluded developing countries was the largest (65 percentage points), and this was followed by firm-product exclusion petitions (40 percentage points). There was no statistically significant differential for PTA partner countries in 2003 (−0.02) relative to import growth of products *h* from countries targeted by the safeguard. Finally, only excluded products from developing countries and the firm-product exclusions grew faster in 2003 than the control group of non-investigated products.

The results of this section are summarized in Fig. 2, which plots the size of the effects for the four different outcomes for products *h* associated with the applied steel

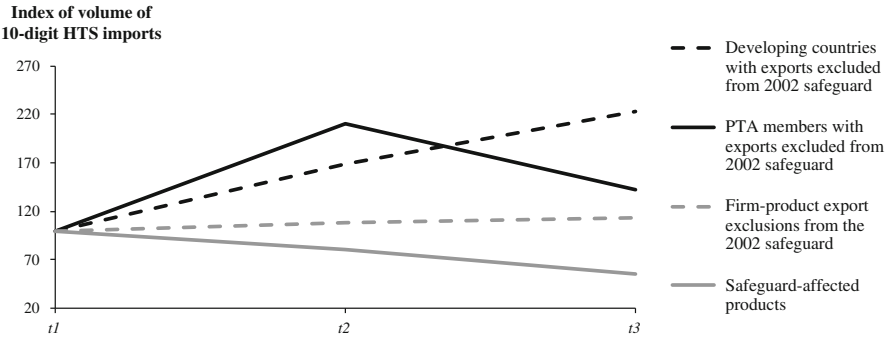

Fig. 2 Comparison of export response to 2002 US safeguard imposition and exclusions. Notes: based on specification (4) reported in Table 5, $t2 = 2002$ and $t3 = 2003$

safeguard policy. This figure uses the model's estimated coefficients to trace out both the time path and the size of the full impact on trade flows for each of the different policy outcomes after 2 years.[29] We first consider the negative impact of the US steel safeguard applied in March 2002; it is associated with a sharply lower import growth rate in 2002 and 2003 for products and countries that were hit by the safeguard, relative to products that were investigated but not hit and relative to non-investigated steel products. In particular, the figure indicates that trading partners and product categories that were hit with the SG saw imports fall to roughly 56 percent of their pre-SG level after 2 years. This reduction was much larger than the impact after 2 years for the excluded products that received implicit preferential treatment in the US market relative to their foreign competitors. Products that were excluded from the SG application based on firm-product petitions ended up 13 percent higher than their pre-SG level after 2 years, and products from PTA members that received exclusions were 42 percent higher than their pre-SG level after 2 years. The main foreign beneficiaries of the SG application were exporters of products that were excluded because of the developing country exemption; the model estimates imply these exports ended up 123 percent higher than their pre-SG levels after 2 years. The exclusions provided in the safeguard resulted in substantially different trade effects for partners that export products for which other foreign competitors were subject to the new import restriction.

4.2 Basic Robustness Checks to the Model

Column (5) begins our sensitivity analysis by reporting the OLS estimates of the model without the instrument for the lagged growth rate of imports. While the size of some of the coefficients changes marginally, the qualitative pattern of the results is unchanged.

Column (6) addresses the concern that the results may be sensitive to missing observations due to country-product level entry and exit in the annual data. Such a concern is also motivated by our important result on the statistical significance of the exclusion of

[29] This figure is based on the estimates in column (4) of Table 5. They result from differential impacts on import growth for each set of products relative to the set of steel products that also faced the SG investigation but for which no countries faced an import restriction.

developing countries in column (4) and Fig. 2. Recall that these developing countries are, by definition, small suppliers of the product (under 3 percent of the import market in the years prior to the imposition of the SG). Thus our estimation of the impact on product-level import growth that uses the log growth rate measure may incorrectly estimate the trade effects if there are a substantial number of observations with zero imports in either year $t-1$ or t, as this would cause the log growth rate measure to be undefined. To address this potential issue, we adopt the Davis and Haltiwanger (1992) approach and re-define our import growth rate measure as

$$\Delta m_{iht} \equiv \frac{m_{iht} - m_{iht-1}}{1/2\,(m_{iht} + m_{iht-1})}, \tag{3}$$

where $m_{iht}(m_{iht-1})$ is the quantity of 10-digit imports of product h from exporters in country i in year t $(t-1)$. This measure of import growth is symmetric around zero, and it lies in the closed interval $[-2,2]$ with trade flows that end (start) at zero corresponding to the left (right) end point.[30] As the results of column (6) indicate, explicitly allowing for entry and exit significantly expands the sample size. The ranking of the size of the differential across the three categories of exclusions for 2002 changes so the coefficient for the developing countries is larger than the coefficient for the PTA partners (a result also found in columns 7 and 8 below), but otherwise it does not significantly alter the interpretation of our results.

Finally, columns (7) and (8) use the *value* of imports instead of the volume to construct the dependent variable. Column (7) defines the growth rate in logs, column (8) uses the Davis and Haltiwanger (1992) approach described in Eq. (3). On the one hand, use of values may ease comparison of products for which there exists differentiation across export sources even at the 10-digit level that may not be captured by the quantity data. Furthermore, use of values expands the sample size as there are some products for which there are no trade volume data. On the other hand, the use of values introduces the potential for changes in prices to confound the estimates; this is something that we cannot explicitly address due to the absence of HTS-10 digit product-level price deflators. Nevertheless, the evidence in columns (7) and (8) indicate the qualitative nature of our results is robust to the use of values instead of volumes.

4.3 Results for AD/CVD Investigations and Impositions and Comparison to the Steel Safeguard

Table 6 presents results from these same regression estimates of Eq. (2) for all of the variables that are related to AD/CVD policy investigations and impositions over 1989–2003 that could not fit into Table 5. We construct and review similarly defined indicators to characterize the different AD/CVD policy outcomes that faced exporters from country i of a 10-digit HTS product h; see Fig. 1. The first indicator captures whether a product h from any source was under investigation in a US AD/CVD case

[30] Davis and Haltiwanger also note that this measure of the growth rate is monotonically related to the conventional growth rate measure, with the two measures' being approximately equal for small rates of growth.

that was initiated in year t. The second indicator is whether the United States applied an AD/CVD to *some* trading partner that produces h that faced the investigation in t. The third indicator captures a particular trading partner i that was effectively "excluded" from the application of a US AD/CVD on product h. For this third outcome, we investigate further three sub-categories that underlie why country i was excluded from an AD/CVD imposed on h: a) country i was not even part of the investigation; b) country i was investigated, but the investigation ended without even preliminary duties being imposed; or c) country i was investigated and preliminary duties were imposed, but they were revoked and final duties were not imposed. The set up of Table 6 also builds intuition for our results in the same manner as Table 5; i.e., columns (1), (2), and (3) introduce one set of policy variables at a time.

We begin with the estimates of column (1), for which the only AD/CVD policy variable is an indicator for the products h that faces initiation of an AD/CVD investigation. On average across all foreign exporters of that product h (for which some trading partner is being investigated), import growth in year t is 14 percentage points less (coefficient of -0.15) than products for which no one is being investigated. One year later the relative import growth is 3 percentage points higher (though not statistically different from zero), and 2 years later it is 7 percentage points lower than products that had not faced an investigation that was initiated in t.

Column (2) introduces an indicator for the subset of investigated products h against which the US subsequently applied an AD/CVD import restriction against some trading partner. Including this variable changes the interpretation of the coefficient on the first variable in Table 6. The import growth rate for investigated products for which no exporting country was subject to the applied AD/CVD was 10 percentage points lower than the growth rate for non-investigated products. The other products—i.e., those for which some trading partner faced an applied AD/CVD—had a growth rate that was an additional 6 percentage points lower. In total, products h for which some trading partner was subject to the AD/CVD had import growth that was 16 percentage points lower than non-investigated products in t. Furthermore, this differential of 6 percentage points in Table 6 is also not statistically significant in year t. This is similar to what we found in Table 5 for the safeguard in the year it was applied (2002). Our primary comparison *across tables* will be to benchmark year t results from Table 6 against the year 2002 results from Table 5 (and year $t+1$ results for AD/CVD to year 2003 results for the SG, etc.), given that many AD/CVD cases result in import protection being applied in the same year as the initiation of the investigation. In terms of the comparison of specific results, the *magnitudes* of the coefficients in these column (2) results are also similar across the two tables.[31]

Column (3) of Table 6 introduces an indicator for exporters i that were "excluded" from an applied US AD/CVD imposed against product h. Like Table 5, the column

[31] Table 6, column (2) indicates that in the next year (after the initiation of the investigation), relative to non-investigated products, the import growth rate for investigated products for which no exporting country was subject to the applied AD/CVD was 10 percentage points higher. However, the other products for which some trading partner faced an applied AD/CVD grew at a rate that was a 8 percentage points lower. In total, products h for which some trading partner was subject to the AD/CVD had import growth in the year after the initiation of the investigation that was 2 percentage points lower than products that were not investigated.

Table 6 Regression estimates: antidumping and countervailing duties

Explanatory variables	Dependent variable = import growth, defined as							
	volume: $\Delta \ln(m_{iht})$ IV (1)	volume: $\Delta \ln(m_{iht})$ IV (2)	volume: $\Delta \ln(m_{iht})$ IV (3)	volume: $\Delta \ln(m_{iht})$ IV (4)	volume: $\Delta \ln(m_{iht})$ OLS (5)	volume: Δm_{iht} IV (6)	value: $\Delta \ln(vm_{iht})$ IV (7)	value: Δvm_{iht} IV (8)
AD/CVD variables, year of initiation of investigation								
Product investigated $_{ht}$	−0.15***	−0.11***	−0.12***	−0.12***	−0.16***	−0.20***	−0.15***	−0.19***
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.03)
Product with AD/CVD applied against some country $_{ht}$		−0.06	−0.65***	−0.65***	−0.69***	−0.37***	−0.64***	−0.39***
		(0.05)	(0.09)	(0.09)	(0.09)	(0.05)	(0.08)	(0.05)
Country excluded from applied AD/CVD $_{iht}$			0.75***					
			(0.08)					
Not even investigated $_{ih}$				0.80***	0.85***	0.50***	0.74***	0.49***
				(0.08)	(0.09)	(0.04)	(0.08)	(0.04)
Investigated, not even preliminary duties $_{ih}$				0.80***	0.85***	0.42***	0.68***	0.42***
				(0.20)	(0.21)	(0.11)	(0.15)	(0.11)
Investigated, preliminary but not final duties $_{ih}$				0.06	0.05	0.06	0.07	0.08
				(0.15)	(0.15)	(0.07)	(0.13)	(0.07)
AD/CVD variables, year after initiation of investigation								
Product investigated $_{ht-1}$	0.03	0.10**	0.10**	0.09**	0.06	0.06*	0.10**	0.07**
	(0.03)	(0.04)	(0.04)	(0.05)	(0.05)	(0.03)	(0.04)	(0.03)
Product with AD/CVD applied against some country $_{ht-1}$		−0.08	−0.34***	−0.32***	−0.36***	−0.35***	−0.28***	−0.33***
		(0.05)	(0.08)	(0.08)	(0.08)	(0.05)	(0.08)	(0.05)

Table 6 continued

Explanatory variables	Dependent variable = import growth, defined as volume: $\Delta \ln(m_{iht})$ IV (1)	volume: $\Delta \ln(m_{iht})$ IV (2)	volume: $\Delta \ln(m_{iht})$ IV (3)	volume: $\Delta \ln(m_{iht})$ IV (4)	volume: $\Delta \ln(m_{iht})$ OLS (5)	volume: Δm_{iht} IV (6)	value: $\Delta \ln(vm_{iht})$ IV (7)	value: Δvm_{iht} IV (8)
Country excluded from applied AD/CVD $_{iht-1}$			0.33***					
			(0.08)					
Not even investigated $_{iht-1}$				0.32***	0.37***	0.33***	0.31***	0.33***
				(0.08)	(0.08)	(0.05)	(0.07)	(0.05)
Investigated, not even preliminary duties $_{iht-1}$				−0.20	−0.21	0.05	0.03	0.09
				(0.22)	(0.22)	(0.13)	(0.18)	(0.13)
Investigated, preliminary but not final duties $_{iht-1}$				0.63***	0.61***	0.48***	0.67***	0.50***
				(0.16)	(0.16)	(0.09)	(0.16)	(0.09)
AD/CVD variables, 2 years after initiation of investigation								
Product investigated $_{ht-1}$	−0.07**	−0.02	−0.01	−0.01	−0.05	0.01	−0.04	0.01
	(0.03)	(0.05)	(0.05)	(0.05)	(0.05)	(0.03)	(0.04)	(0.03)
Product with AD/CVD applied against some country $_{ht-1}$		−0.05	−0.05	−0.08	−0.10	−0.18***	−0.11*	−0.19***
		(0.06)	(0.08)	(0.09)	(0.09)	(0.05)	(0.07)	(0.05)
Country excluded from applied AD/CVD $_{iht-1}$			0.00					
			(0.07)					
Not even investigated $_{iht-1}$				−0.00	0.03	0.06	0.04	0.07
				(0.08)	(0.08)	(0.05)	(0.06)	(0.04)
Investigated, not even preliminary duties $_{iht-1}$				0.45**	0.48**	0.56***	0.38**	0.53***
				(0.20)	(0.20)	(0.12)	(0.17)	(0.11)
Investigated, preliminary but not final duties $_{iht-1}$				0.23*	0.25*	0.27***	0.19	0.24***
				(0.14)	(0.14)	(0.08)	(0.12)	(0.08)

Notes: see Table 5

(3) results in Table 6 help explain why the estimated *differential* between the subset of products *h* against which a SG was applied against some country (−0.06) in column (2) was not statistically different from zero.

For the AD/CVD results in Table 6, column (3) is the first evidence of the negative effect of the applied policies for the products and trading partners that were targeted by the import restrictions. The products *h* for which a particular trading partner *i* faced an applied AD/CVD had an import growth rate in the year of the initiation of the investigation that was an additional 48 percentage points lower (coefficient of −0.65) than products only subject to an investigation (and which no trading partners faced an applied import restriction). Overall, products *h* for which a particular trading partner was subject to the AD/CVD had import growth that was 59 percentage points lower than non-investigated steel products in the year of the initiation of the investigation.

Column (3) also provides our first evidence of the *differential* trade impact of being "excluded"—or not subject to an AD/CVD imposed on the same product from other foreign competitors. First, trading partners *i* and products *h* that did not face an imposed AD/CVD had import growth that was 112 percentage points higher than targeted countries and products in the year of the initiation of the investigation. Second, their import growth was 64 percentage points higher than investigated products in cases in which no countries faced AD/CVD, and 53 percentage points less than non-investigated steel products.

We next compare the impact of these AD/CVD policies on imports (column 3 of Table 6) with the 2002 steel SG policy on imports (column 3 of Table 5). Under both SG and AD/CVD there is a sharp differential for the import growth of the exporting producers of *h* that are in the countries hit with the import restriction, vis-à-vis the exporting producers of *h* that are excluded from the import restriction. Furthermore, this differential exists over the two relevant years that were associated with each policy: 2002 and 2003 for the SG in Table 5, and the year of and year after the initiation of the AD/CVD investigation in Table 6.

We summarize our comparison of the two different classes of TTB policies with Fig. 3, which plots the overall time path and the size of the effects for these different policy outcomes to show the full effect on trade after 2 years.[32] In the case of products and countries hit with the SG, imports fell to roughly 56 percent of their pre-SG level after 2 years. This is slightly larger than products hit with AD/CVD, for which imports fell to only 46 percent of their pre-investigation level after 2 years.

Figure 3 also illustrates that products that were excluded from the 2002 SG were 44 percent higher than their pre-SG level after 2 years. This is quite close to the estimated 9 percent higher level of imports for products that were "excluded" from applied AD/CVD import restrictions after 2 years, relative to their pre-investigation level. This is our most striking evidence of the similarity in the discriminatory trade effects—or policy substitutability—between the US steel safeguard applied in 2002 and the other applications of US TTBs under antidumping and countervailing duty policies.

[32] This figure is based on the estimates in column (3) of Tables 5 and 6. They are thus based on import growth rates for these products relative to the set of steel products that also faced investigations but for which no countries faced an import restriction.

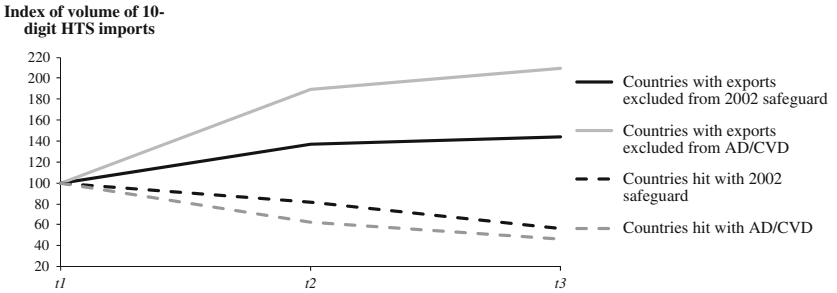

Fig. 3 Comparison of export response to different US TTB impositions and exclusions. Notes: based on specification (3) reported in Table 5 and 6. For SG, $t2 = 2002$ and $t3 = 2003$. For AD/CVD, $t2 =$ year of initiation of investigation and $t3 =$ year after initiation of investigation

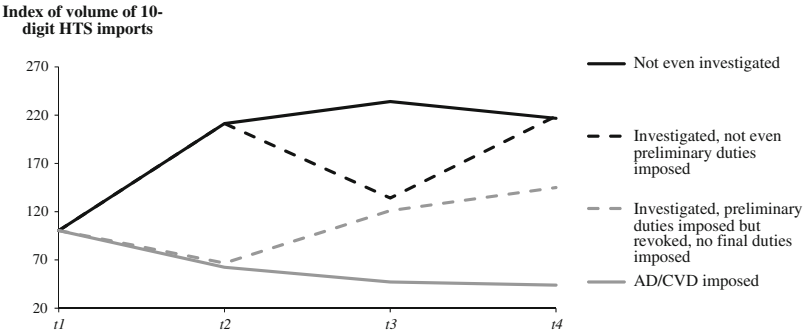

Fig. 4 Comparison of export response to different US AD/CVD outcomes. Notes: based on specification (4) reported in Table 6, $t2 =$ year of initiation of investigation, $t3 =$ year after initiation of investigation, and $t4 = 2$ years after initiation of investigation

We next consider Table 6, column (4), which is the same specification as column (3) but which further subdivides the instances in which an exporter i was excluded from US applied AD/CVD on product h into three outcomes: (a) exporter i was not part of the investigation; (b) exporter i was part of the investigation but did not even face preliminary duties; or (c) exporter i was part of the investigation and faced preliminary duties but they were revoked and final duties were not imposed. To interpret the coefficient estimates, begin with the year of the initiation of the investigation. Column (4) provides evidence of a substantial positive differential for the import growth rates of countries that were not even part of the investigation (123 percentage points), or which were investigated, but for which not even preliminary duties were imposed (123 percentage points). However, some of this differential effect reverses itself the following year.

Figure 4 plots the implications of these estimated differentials on the trade flows for the 3 years following the initiation of the investigation to illustrate both the time path and the full effect of these trade policy outcomes under AD/CVD. Over the 3 years, Fig. 4 illustrates some evidence of what Staiger and Wolak (1994) term an "investigation effect" that is associated with AD/CVD cases. To establish the benchmark, products from countries that were never investigated (but for which they are exporters

of a product *h* that was investigated) have exports after 3 years that are 117 percent higher than pre-investigation levels. Products that were investigated but for which not even preliminary duties were imposed experience a substantial decline in the second year; nevertheless by the end of the third year their exports have also achieved roughly the same level as the exports from the non-investigated countries. We consider finally the products that were investigated and which faced preliminary duties, but for which those duties were revoked (and likely refunded) and no final duties were imposed. After 3 years, exports from these countries were 44 percent higher than their pre-investigation levels, but this was still much lower than levels for the two categories of exporters of product *h* that were also not targeted with the application of final antidumping or countervailing duties at the end of the investigation.

Before moving on to a brief discussion of our last set of results for additional policy variables, we also note that Table 6's remaining columns (5) through (8) present the same robustness checks that we described in our earlier presentation of Table 5. The qualitative pattern to our results for the AD/CVD policy variables also holds up to this sensitivity analysis.

4.4 Other TTB Policy Changes: The 2000 Safeguards and AD/CVD Policy Removals

Here we briefly describe estimates of the effects of a number of other policy variables that are included in the model but are not reported in the tables to conserve space.[33] These variables are mainly used to control for other changes in policy during our sample to improve identification for our main results of interest in Tables 5 and 6.

The first set of policy variables of note relate to the application of a US safeguard on the five 10-digit HTS product categories of steel wire rod and circular welded pipe beginning in 2000. In the estimation, we also control for the Canada/Mexico ("PTA") country exclusions that were announced with those safeguards and the country exclusion that Korea alone received in 2002 as a settlement after a WTO trade dispute. These two safeguards are not associated with any statistically significant impact on product-level US import growth until 2 years after the safeguard went into effect, when the 2002 expansion of the tariff rate quota led to a substantial increase in import growth for safeguarded products. Furthermore, Korea's exemption in 2002 is also associated with a large relative increase in import growth of safeguarded products.

The last set of policy variables that are of potential interest relate to the potential differential effects for AD/CVD policy *removals* that took place during 1989–2003. For example, we might expect a US import surge from one trading partner after an AD/CVD on that partner is removed and a US import decline from a trading partner that experiences preference erosion by having a US AD/CVD on a competing producer of *h* removed. Overall, there is little evidence that the US imports of *h* from any partner—either a producer that loses an implicit preference or a country that directly improves its potential new market access—have a statistically significant differential for import growth for the first 2 years after the AD/CVD is removed. Finally, 2 years

[33] These results are available from the author upon request.

after the AD/CVD removal, there is some statistically significant evidence of a small, positive import growth differential, but only in specifications (6) and (8) that have the dependent variable defined so as to allow for entry (and exit).

5 Conclusions

This paper examines the substitutability of two statutorily distinct temporary trade barrier policies—safeguards and antidumping—that more countries and industries are applying to restrict imports under the rules-based multilateral trading system. We estimate the differential trade impacts of the United States' safeguard policy that was applied to product-level steel imports in 2002, and we compare these effects to US application of antidumping and other TTBs on steel that were imposed over 1989–2003.

We find that country and product exclusions that were associated with the 2002 safeguard led to substantial differential treatment across export sources; this is a result that closely resembles the trade effects of discriminatory treatment already documented for the antidumping policy. Our specific evidence on the substitutability of safeguard and antidumping import protection regarding their similar *impacts* complements other recent research that finds relative substitutability of these TTB policies with regard to the economic shocks that ultimately *trigger* their application in the first place.

These results are potentially important, especially for questions of TTB policy design under the rules of international trade agreements. Nevertheless, one important caveat is that our estimates for the impact of the policy—especially with regard to the country and product exclusions—are identified from only one safeguard application. And while our comparison estimates for the differential trade effects that are associated with application of the US antidumping policy are identified from dozens of policy actions, our analysis here has focused, by design, on one policy-imposing country and industry. Additional research on these and related questions is required, especially given the expanding reach of these particular policies across sectors and policy-imposing countries under the multilateral trading system.

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