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The WTO Agreement on Safeguards: An Empirical Analysis of Discriminatory Impact*

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Abstract

The Uruguay Round Agreement on Safeguards represents an effort to improve the GATT safeguards (SG) process and thereby encourage countries to choose this option over antidumping and “gray-area” measures such as bilaterally negotiated export restraints. This paper offers a first detailed analysis of the way safeguards initiated under the agreement have been implemented in practice. We examine the actual trade effects of 14 safeguard actions, covering 85 different 6-digit Harmonized System product categories, implemented by WTO signatories between 1995 and 2000. Our main focus is the extent to which safeguard actions conform to the GATT/WTO most-favored-nation (MFN) principle. We identify two types of discrimination that arise in the application of safeguards: explicit departures from MFN treatment through formal exclusion of some exporters, and implicit departures from MFN as reflected by systematic differences in impact across trading partners. Our results indicate that the impact of SG action on a given exporter depends on the specific form of the safeguard policy. A SG implemented as a quota tends to preserve historical market shares more than a SG implemented as a tariff. When a SG is implemented as a quota, countries that have recently increased market share face reductions in market share relative to other suppliers. More generally, SG actions tend to favor established suppliers, whether large or small, over new suppliers and those whose market share has recently increased. We also find evidence that formal exemptions for developing countries and partners in a preferential trading arrangement allow these countries to gain market share at the expense of other suppliers.

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1 Introduction

The Uruguay Round Agreement on Safeguards (AS) represents an effort to improve the safeguards process and thereby encourage countries to choose this option over antidumping and “gray-area” measures such as bilaterally negotiated export restraints. In contrast to antidumping, which is designed to protect domestic firms from injury due to “unfair” trade, safeguards provide temporary relief to domestic industries that suffer “serious injury” due to fairly traded imports. In contrast to antidumping and gray-area measures, safeguards are intended to limit imports across the board rather than from particular exporters, and the AS explicitly reaffirms the principle of most-favored-nation (MFN) treatment in application of safeguards. However, the AS also authorizes explicit discrimination among exporters in specified circumstances. Moreover, implementation of safeguards (SG) according to the procedures laid out in the AS may entail implicit discrimination among exporters to the SG-protected market. This paper offers a first empirical analysis of the way safeguards initiated under the AS have been implemented in practice.

The nondiscriminatory treatment of trading partners, known as most-favored-nation (MFN) treatment, was a fundamental principle of the original GATT system (Article I) and has been carried over into the World Trade Organization. Its continuing appeal reflects both political and economic-efficiency considerations. Yet exceptions to MFN treatment profoundly affect

trade among members of the WTO. GATT Article XXIV permits the formation of preferential, i.e., discriminatory, trading arrangements among groups of countries, and such arrangements now constitute an important feature of national trade policy. “Special and differential” treatment of developing countries, including the Generalized System of Preferences, became an element of the GATT system in 1971, as membership expanded beyond the original “rich man’s club” of the early postwar period to include many newly independent nations. The Tokyo Round negotiations enlarged the scope of this “differential and more favorable” treatment, and the Uruguay Round agreements likewise incorporated special terms for developing countries.

GATT/WTO-sanctioned relief from import competition is likewise subject to rules that entail discrimination among trading partners. With regard to injurious unfair trade, permitted remedies (antidumping duties or other arrangements, countervailing duties) are applied only to those import suppliers found to sell below fair value or to benefit from government subsidies.¹ Action on unfair trade is thus inherently selective, i.e., discriminatory. GATT rules on safeguards allow temporary protection of sectors experiencing serious injury due to fairly traded imports.² Because affected exporters are not alleged to have violated any norm, GATT/WTO safeguard rules impose a more stringent injury test than in the case of unfair trade (serious versus material injury) and also require compensation of exporting countries in some cases. Moreover, because there is less focus on the source of the imports, safeguard measures are generally assumed to

¹ Economists believe these remedies often target exporting nations that have recently increased competitiveness in the relevant industry, and especially countries lacking the capacity to retaliate in kind. Blonigen and Bown (2003) find evidence that threat of retaliation affects U.S. antidumping activity.

² Originally designed as an “escape clause” to allow temporary re-protection of an import-competing industry that suffers unforeseen damage due to trade liberalization, safeguard protection has become increasingly available to any industry that can demonstrate serious injury due to competing imports, even when the competing imports have not benefited from a recent improvement in market access. An escape clause in the modern sense was introduced in the U.S. Reciprocal Trade Agreements Act of 1934 (Jackson 1997, 179). Recent U.S. safeguards have been initiated under Section 201 of the Trade Act of 1974.

apply equally to all import sources and thus to be consistent with the MFN principle of the GATT/WTO system.³

In practice, however, the distinction between cases of injury due to unfair versus fair trade is not sharply drawn. The various GATT/WTO provisions allowing new restrictions on troublesome imports have proven to be “quite fungible” over time (Finger 1998).⁴ During the early years of the GATT, the preferred instrument was renegotiation of tariff concessions with principal exporters. This approach gave way first to negotiation of quantitative restraints with specific suppliers, and later on to antidumping actions. Now safeguards may be emerging as the newest preferred mode of dealing with troublesome imports.⁵ Moreover, despite the view that safeguards represent a more MFN-consistent approach to import relief than action on unfair trade, the application of safeguard protection may incorporate discriminatory elements, either because of the rules laid out in Article XIX and the Agreement on Safeguards, or because of the way in which these rules are implemented.⁶ The purpose of this paper is to identify the discriminatory elements of safeguard protection, as measured by the differential impact of safeguard policies across trading partners.

The empirical literature assessing use of safeguards is limited, largely due to safeguards’ historically infrequent use. Moreover, researchers have tended to focus on either the industry (or

³ For example, Leidy (1995, 29), in a paper critical of the broad use of antidumping, cites the GATT safeguards provision (Article XIX) as a preferred means of defusing protectionist opposition to trade liberalization through “temporary protection on a most-favored-nation basis in sectors experiencing serious injury....”

⁴ Finger (1998) notes that developing countries may likewise find it administratively convenient to declare as restrictions to protect the balance of payments (Article XVIII.B) trade measures actually applied to protect infant industries (Article XVIII.C).

⁵ While not included in the empirical investigation undertaken here because of data limitations due to the recent activity, the use of safeguards greatly increased in 2002, largely because of the high-profile U.S. steel safeguard and the associated response of steel safeguards imposed by many other WTO members.

government) decision to use safeguard protection as opposed to some other measure, or the government response to petitions and the decision whether to grant protection at all.⁷ Examples include Baldwin and Steagall (1994), who use data on U.S. safeguard cases between 1975 and 1988 to assess what economic factors best explain the International Trade Commissioners' injury determinations. Hansen and Prusa (1995) investigate U.S. industry use of unfair (antidumping and countervailing duty) versus fair (safeguard) trade laws and also the differential impact of these laws on imports. Finally, Bown (forthcoming) investigates countries' choice between GATT-legal safeguard measures that avoid the risk of potential retaliation by affected trading partners as opposed to other policies that may lead to a formal trade dispute. However, none of these papers address whether safeguard application has a discriminatory impact on foreign suppliers, which is the issue under investigation here.⁸

We examine the actual trade effects of 14 safeguard actions covering 85 different 6-digit Harmonized System (HS) product categories that were carried out by WTO signatories from 1995 through 2000. Our main focus is the extent to which the trade *effects* of safeguards deviate from the principle of nondiscrimination among trading partners. Specifically, we identify systematic ways that implementation method and trading-partner characteristics influence exporter shares in the SG-protected market. We identify two types of discrimination that may arise in the application of safeguards: explicit departures from MFN treatment through formal exclusion of some exporters, and implicit departures from MFN treatment as indicated by trade impacts that differ systematically across supplying countries. Using data on WTO safeguard

⁶ Discrimination in the actual application of safeguard protection has been a longstanding concern. Jackson (1993, p. 227) identifies "the controversy about discriminatory application of safeguards measures" as a key topic in the Uruguay Round discussions on reform of the safeguards provisions.

⁷ For a more complete review of this literature, see Bown and Crowley (forthcoming).

actions initiated between 1995 and 2000, we test empirically for evidence of a discriminatory impact of the safeguard measure on import shares in the SG-protected market. To preview some of the results, we find that the impact of a SG action on a given exporter depends on the specific form of the safeguard policy: quotas tend to preserve historical market shares more than tariffs. We also find evidence that the non-discrimination “loopholes” favoring small developing-country suppliers and PTA partners do allow these countries to gain market share on average.

The rest of this paper proceeds as follows. Section 2 summarizes the GATT/WTO rules on safeguards and highlights potential sources of discriminatory impact. Section 3 presents data from 14 cases of safeguard action from 1995 until 2000 and our econometric approach to estimating the impact of the form of safeguard protection on market shares. Section 4 presents our empirical results, and section 5 concludes with a discussion of potential future research.

2 Article XIX and the Agreement on Safeguards

International commitments to limit import protection in specific industries typically include the conditions under which countries may restore protection for the same industries. Under Article XIX of the GATT (Emergency Action on Imports of Particular Products), a country is allowed to take safeguard actions when imports seriously injure or threaten serious injury to the competing domestic sector. Article XIX also specifies that affected exporters may request compensation for loss of market access. Hoekman and Kostecki (2001) suggest two distinct motives for including an escape clause in the GATT/WTO system: as insurance and as a safety valve. The insurance motive reflects that without such provisions, governments may be reluctant to sign trade agreements leading to substantial liberalization. Including an escape

⁸ A related paper is Prusa (2001), which investigates the trade-diversionary impact of discriminatory antidumping measures on “non-named” exporters of the product targeted by an antidumping measure.

clause may thus facilitate liberalization of trade by encouraging negotiators to be bolder in their offers of concessions. The safety valve motive reflects that governments may later feel pressure to renege on certain negotiated liberalization commitments. By legalizing some backsliding under carefully specified circumstances, an escape clause can protect the integrity of the remainder of the agreement and therefore improve the overall durability of a liberal trade regime.

However, few countries actually appealed to Article XIX in coping with fairly traded but injurious imports. During the GATT period, the United States and other countries opted instead to negotiate bilateral trade restrictions outside the framework of the GATT or, especially more recently, to apply GATT-sanctioned antidumping measures.⁹ These preferred remedies could be applied selectively to a few trading partners, thus obviating any need for even the appearance of MFN treatment of exporters. Moreover, use of dumping action rather than safeguards eliminated any requirement of compensation for affected exporters¹⁰ and had the political appeal of attributing the domestic industry's problems to unfair foreign competition.

The Uruguay Round Agreement on Safeguards added specificity to the ambiguous language of Article XIX in a number of key areas.¹¹ Some elements of the agreement are largely procedural, including clarification of the injury requirement and timing and duration of safeguard protection, and establishment of a monitoring body (the WTO Committee on Safeguards) to which members must report safeguard actions. An important substantive change

⁹ Thanks to elastic legal criteria for dumping, most injurious imports can be labeled successfully as unfair. An OECD review of antidumping cases in Australia, Canada, the European Union, and the United States concluded that in 90 percent of cases where imports were found to be unfairly priced under antidumping rules, the goods would be considered fairly priced under domestic antitrust or competition policy (Finger 1998, 13).

¹⁰ In contrast, use of VERs encouraged affected exporters to form cartels and also provided compensation in the form of quota rents.

¹¹ Reform of safeguards was also a goal in the Tokyo Round. This effort failed because of disagreement on several issues, notably including discriminatory application of safeguard measures (Jackson 1997, 209). On the concerns that motivated the Uruguay Round negotiation on safeguards and details of the final agreement, see Bown and Crowley (forthcoming) and references cited there.

in rules is that bilateral arrangements such as voluntary export restraints (VERs) and orderly marketing agreements (OMAs) are explicitly prohibited (Article 11.1b).

Under the AS, countries may implement safeguard protection through tariffs, quotas, or tariff-rate quotas (TRQs). The empirical analysis below suggests that inclusion of quotas and TRQs along with tariffs as allowable instruments has important implications for the distribution of the economic impact of safeguard protection across affected exporters. A second important change in rules concerns compensation for exporters affected by safeguard actions. Specifically, a country facing an absolute import surge is no longer required to offer compensation for the first three years that a safeguard is in effect. *Ceteris paribus*, this change should make safeguards relatively more attractive in comparison with alternative means of obtaining relief from injurious imports, especially antidumping.¹²

A final set of provisions in the AS deals with the impact of safeguards across exporters. Article 2.2 states the general principle that “[s]afeguards measures shall be applied to a product being imported irrespective of its source,” i.e., on a nondiscriminatory basis. If quantitative restrictions are used, quota allocations should be based on market shares in a prior representative period unless all affected suppliers can agree to a different allocation scheme (Article 5.2 (a)). However, allocation on the basis of market shares in a prior period implicitly favors established suppliers over recent entrants. Two other provisions open the door to explicit discrimination among suppliers. Article 5.2(b) allows countries to depart from MFN treatment when imports from certain members have increased “disproportionately.” As with quotas based on market shares in a prior period, this provision shifts the burden of safeguards toward recent entrants into

¹² For a discussion of these and other economic incentives affected by Uruguay Round reforms to safeguards, antidumping, and dispute settlement under the WTO, see also Bown (2002).

the market.¹³ However, a second departure from MFN treatment exempts developing country members from safeguard action, provided that a given member accounts for no more than 3 percent of total imports, and that developing countries collectively account for no more than 9 percent (Article 9.1).¹⁴ This exception introduces a bias in favor of developing countries that are new entrants or at least small producers of goods whose market is still dominated by suppliers in developed countries.

3 Econometric Model and Data

3.1 Estimation Equations

To approach these issues empirically, we use a set of safeguard actions that WTO members have taken under the Agreement on Safeguards between 1995 and 2000. The data are compiled from country notifications made to the Committee on Safeguards and published at the WTO's website (WTO 2000, 2001, 2002). As our primary interest relates to the market shares of exporters affected by the safeguard action, our sample consists of those cases for which we are able to match the products identified in the notifications with the most disaggregated trade data that is available systematically, i.e., the TRAINS 6-digit Harmonized System (HS) import data provided in UNCTAD (1995, 2001, 2002).¹⁵

¹³ A possible justification for the discriminatory treatment is that traditional suppliers have "paid" for their market access with their own earlier concessions, while newer entrants have not. As the empirical analysis below indicates, newer entrants are often also new to the GATT/WTO system. For the 14 cases studied, new entrants to the market often included transition economies in central Europe.

¹⁴ Developing countries are also subject to less stringent limits on their own use of safeguards (Article 9.2).

¹⁵ The safeguard notifications are typically made at the 8- or 10-digit HS level, and there may be multiple 8- or 10-digit HS products named in a given SG action. Because we use 6-digit HS trade data, our results will be estimated imprecisely to the extent that variation in a given 6-digit product is driven by variation in 8- or 10-digit products that were not subject to the SG action.

For each case, define year t as the year the SG was imposed and country j as an exporter of the product i that the SG-imposing country has chosen to protect. Then our first estimation equation is given by

$$\begin{aligned}
M_{i,j,t+1} = & \alpha_0 + \alpha_1 \bar{M}_{i,j} + \sum_{k=1}^2 \alpha_{2k} \tau_k \bar{M}_{i,j} + \alpha_3 \Delta M_{i,j,t-1} \\
& + \sum_{k=1}^2 \alpha_{4k} \tau_k \Delta M_{i,j,t-1} + \alpha_5 R_j + \alpha_6 X_{i,j,t+1} + \varepsilon_{t+1}
\end{aligned} \tag{1}$$

Our dependent variable, $M_{i,j,t+1}$, is exporting country j 's share in the SG-imposing country's total imports of product i in year $t+1$. We focus on $t+1$ because the SG may have been imposed at any time during year t ; thus, trade data for year $t+1$ are more likely to show the full effect of the safeguard action.

In terms of our explanatory variables, $\bar{M}_{i,j}$ is country j 's average share of the SG-imposing country's import market for the three calendar years prior to imposition of the SG. We include this regressor both independently and then interacted with two of the three possible forms that a safeguard action can take, i.e., policy $\tau_k \in \{TRQ, tariff\}$. The omitted policy, and thus benchmark category in the estimation, is for a safeguard implemented as a quota. Next consider $\Delta M_{i,j,t-1}$, which is the percentage change in exporting country j 's share of the SG-imposing country's import market for product i between year $t-3$ and year $t-1$. A positive value of $\Delta M_{i,j,t-1}$ indicates that country j was gaining market share in the period prior to imposition of the safeguard. R_j is a measure of exporter j 's capacity to retaliate. Furthermore, $X_{i,j,t+1}$ is the share of country j 's exports of the same product in world markets, which is included to capture

country j 's revealed comparative advantage as a supplier of product i . Finally, ε_{t+1} is the additive error term and the α 's are the vectors of parameters to be estimated.

In addition to equation (1), we also estimate the following:

$$\begin{aligned} \Delta M_{i,j,t+1} = & \beta_0 + \beta_1 \overline{M}_{i,j} + \sum_{k=1}^2 \beta_{2k} \tau_k \overline{M}_{i,j} + \beta_3 \Delta M_{i,j,t-1} \\ & + \sum_{k=1}^2 \beta_{4k} \tau_k \Delta M_{i,j,t-1} + \beta_5 E_j + \beta_6 R_j + \beta_7 \Delta X_{i,j,t+1} + v_{t+1} \end{aligned} \quad (2)$$

In this second equation, our dependent variable, $\Delta M_{i,j,t+1}$, is the *percentage change* in exporting country j 's share of the SG-imposing country's import market for product i between year $t-1$ and year $t+1$. The explanatory variables $\tau_k, \overline{M}_{i,j}, \Delta M_{i,j,t-1}$ and R_j are defined as in equation (1).

Another explanatory variable in equation (2) is E_j , a dummy variable that indicates whether the exporting country j has been formally exempted from the SG action by the imposing country. Furthermore, instead of $X_{i,j,t+1}$, in this equation we include an explanatory variable $\Delta X_{i,j,t+1}$, which is designed to capture the *change* over the base period in country j 's revealed comparative advantage as a supplier of product i ; $\Delta X_{i,j,t+1}$ is defined as the percentage change in country j 's share of total exports of product i to the rest of the world, over the period $t-1$ to $t+1$. Finally, v_{t+1} is the additive error term and the β 's are the parameters to be estimated.

We estimate equations (1) and (2) separately by OLS and correct for heteroskedasticity by clustering according to the SG cases.

3.2 Variable Construction and Data

3.2.1 Dependent Variables

The dependent variable in equation (1), $M_{i,j,t+1}$, is the share of country j 's exporters in the SG-imposing country's total imports of product i in year $t+1$, the year after the SG was first imposed. For the most part, we use data on value of trade to construct this share measure because the value import series for the 6-digit HS products is more systematically available from the TRAINS data set than the corresponding volume series. We do, however, use the volume series where possible for a robustness check on our results.

In equation (2), rather than the share level, we use $\Delta M_{i,j,t+1}$, which is the percentage change in exporting country j 's share of the SG-imposing country's total imports of product i between years $t-1$ and $t+1$. One concern in our data set is the non-trivial number of observations in which the 6-digit HS imports from a particular country j were zero in either $t-1$ or $t+1$. This generates problems for calculating percentage changes in market shares. To deal with this issue, we use the approach suggested by Davis and Haltiwanger (1992) and define the percentage change of import share as

$$\Delta M_{i,j,t+1} = \frac{M_{i,j,t+1} - M_{i,j,t-1}}{1/2 (M_{i,j,t+1} + M_{i,j,t-1})},$$

where $M_{i,j,t+1}$ ($M_{i,j,t-1}$) is county j 's share of the SG-imposing country's total imports of product i in year $t+1$ ($t-1$). This measure of percentage change is symmetric around zero; it lies in the closed interval $[-2,2]$, with trade flows that end (start) at zero corresponding to the left (right) endpoint.¹⁶

3.2.2 Historical Market Share and Policy Choice

¹⁶ Davis and Haltiwanger note that this measure is monotonically related to the conventional growth rate measure, with the two measures being approximately equal for small rates of growth. This methodology has also been used in

The explanatory variable representing exporting country j 's historical market share is defined as

$$\bar{M}_{i,j} = \frac{M_{i,j,t-1} + M_{i,j,t-2} + M_{i,j,t-3}}{3}.$$

We would expect $\bar{M}_{i,j}$ to have a strong positive impact on $M_{i,j,t+1}$ in equation (1) when SG policy is implemented as an import quota because the Agreement on Safeguards specifies that, unless all affected exporters agree on an alternative scheme, allocation of import licenses should reflect the proportions supplied during a previous representative period. This, therefore, is one way that implementation of a safeguard may implicitly discriminate among exporters. We would likewise expect the parameter estimate on $\bar{M}_{i,j}$ to be positive in the case of a TRQ and a tariff, but with a progressively smaller size.

On the other hand, in equation (2) we expect $\bar{M}_{i,j}$ to have no impact on $\Delta M_{i,j,t+1}$ if the SG policy is a quota, since market shares for $t+1$ would then be expected to reflect historical averages. In equation (2), we also expect any impact of the historical average variable to be largest when the policy is implemented as a tariff, with the impact of the TRQ policy somewhere in between. However, the expected sign in the case of a tariff or TRQ is unclear a priori. A positive coefficient estimate, i.e., a high historical average leading to an increased import share after the SG, would suggest that tariffs somehow favor larger suppliers at the expense of smaller

empirical international trade research by Bernard, Jensen and Schott (2002), for example, in order to address the issue of U.S. manufacturing plant 'births' and 'deaths.'

ones, perhaps due to fixed costs of serving a particular export market,¹⁷ whereas a negative result would indicate an outcome more favorable to smaller suppliers.

3.2.3 Trend in Market Share and Policy Choice

The explanatory variable representing exporting country j 's percentage change in market share over the prior three-year period is defined as

$$\Delta M_{i,j,t-1} = \frac{M_{i,j,t-1} - M_{i,j,t-3}}{1/2 (M_{i,j,t-1} + M_{i,j,t-3})},$$

where we again use the Davis and Haltiwanger measure to deal with exporters entering and exiting at the 6-digit HS level over the historical period.

In equation (1), we expect $\Delta M_{i,j,t-1}$ to have a positive impact on $M_{i,j,t+1}$, regardless of the trade measure (tariff, TRQ, quota) used to implement the SG. An exporting country that increased its market share over the prior period would tend to have a larger market share in $t+1$, ceteris paribus.

In equation (2), consider first the case of a SG implemented through a quota. We expect $\Delta M_{i,j,t-1}$ to have a negative impact on $\Delta M_{i,j,t+1}$, because the safeguard-imposing country is permitted to discriminate against exports that have experienced a recent “disproportionate” percentage increase under Article 5.2(b). Furthermore, the allocation of market shares under the SG quota should be determined by the historical average, according to the statute. If the exporter's market share was greatest in year $t-1$, immediately prior to imposition of the SG (i.e., if the country's market share had been trending upward), then its market share would be expected

¹⁷ Haveman et al. (2003) investigate differences in tariffs and four different types of non-tariff barriers and find evidence that higher trade barriers tend to shift trade toward large exporters, which they interpret as a desire to minimize fixed costs of trading.

to fall following imposition of the SG. Conversely, if the exporter's market share was smallest in the year immediately prior to imposition of the SG (i.e., if the country's market share had been trending downward), then market share after imposition of the SG would be expected to rise.

On the other hand, in the observations in which the SG takes the form of a tariff, we would expect the historical trend variable to have a less-pronounced impact on the post-SG percent change in market share. While we expect a negative relationship due to mean-reversion, a safeguard against a fast-growing exporter should be less punishing in the case of a tariff (where changes in market shares are more likely to be determined by market forces) than in quota cases (where changes in market shares are determined by the SG-imposing country's allocation decision). Nevertheless, a positive impact of historical growth on import share after the SG would suggest that tariffs favor newer entrants at the expense of established suppliers, whereas a negative result would indicate an outcome more favorable to established suppliers that may have suffered a loss in market share in the three-year period prior to imposition of the SG.

3.2.4 Retaliation

The variable R_j is country j 's share of the SG-imposing country's total exports, where we derive the export data from Feenstra (2000). We use R_j as a measure of exporting country j 's capacity to retaliate against the SG-imposing country, as this has been shown in other contexts to affect policy decisions.¹⁸ In equation (1) we expect $M_{i,j,t+1}$ to be positively affected by a greater retaliatory capacity: the more reliant is the SG-imposing country on country j 's market as an outlet for its own exports, the greater the resulting import share in the SG-protected market. An alternative interpretation is that the SG-imposing country rewards with higher import market

¹⁸ See, for example, Blonigen and Bown (2003) or Bown (forthcoming).

shares those exporting countries with which it has exchanged concessions, i.e., countries that account for a substantial share of the SG-imposing country's own exports.

In equation (2) we would also expect $\Delta M_{i,j,t+1}$ to be positively affected by a greater retaliatory capacity—i.e., if the SG-imposing country is particularly reliant on exporter j as a market for its own exports, country j might be rewarded with an increase in its market share after the imposition of the safeguard.¹⁹

3.2.5 Revealed Comparative Advantage

We also control for other factors that might affect import market shares of the SG-protected product i . In particular, country j may have a revealed comparative advantage in good i , which would lead us to expect that it would have a greater share of the SG-imposing country's import market. To control for this, we include a variable $X_{i,j,t+1}$, defined as country j 's share of total exports of the 6-digit HS product i to the rest of the world. We would expect a positive relationship—if country j has a large share of the world market for good i , we would expect it to have a large share of the SG-imposing country's market as well, *ceteris paribus*.

When we seek to estimate the impact on the change in market shares in equation (2), we also must take into account that exporter j may experience some sort of country-specific shock that changes its comparative advantage in producing good i , relative to the other exporters. Therefore include an explanatory variable $\Delta X_{i,j,t+1}$ designed to capture such changes in

¹⁹ The potential retaliation threats may derive either through negotiations under the Committee on Safeguards, if there has been no “absolute surge” in imports so that compensation is due, or through a formal trade dispute under the Dispute Settlement Understanding if a country affected by the SG initiates a claim. Irwin (2002) addresses the issue of U.S. safeguard actions that have faced question at the DSU and also documents specific evidence of retaliatory threats made by trading partners in some of these U.S. cases.

comparative advantage.²⁰ The variable $\Delta X_{i,j,t+1}$ is defined as the percentage change in country j 's share of total exports of product i to the rest of the world between year $t-1$ and year $t+1$. We would expect a positive relationship: if country j enjoys a change in comparative advantage that gives it a larger share of the rest of the world's import market for product i , then country j 's share in the SG-imposing country's import market should also increase.

3.2.6 Exempted Countries

The SG-imposing countries in our sample typically exempted exporting countries from the measure for two reasons: 1) developing countries that satisfied certain *de minimus* requirements (each country supplying less than 3% of total imports, and in the aggregate less than 9%), and 2) partners in a preferential trading arrangement (PTA).²¹ The explicit exemptions were notified to the WTO and were provided in the country's report submitted to the Committee on Safeguards. We would expect those exporters exempted from the safeguard to enjoy an increase in market share after imposition of the SG.²² To control for the effect of such

²⁰ This variable also captures the effects on country j 's exports of any change in domestic prices and exchange rate relative to competing exporters and actual and potential importers of good i .

²¹ For example, in its 1998 SG on wheat gluten, the United States formally exempted its PTA partners Canada, Mexico, and Israel, as well as all countries named in the Caribbean Basin Economic Recovery Act or the Andean Trade Preference Act and a list of other developing countries.

²² This is conditional on the exempted country being an exporter of the product subject to the SG. A SG-imposing country often exempts from the policy many developing countries that do not export the relevant product. We do not add such non-exporting countries to our data set. In the analysis we include only those exempted countries that have been revealed by the data as exporters to the SG-imposing country. However, an exempted country might subsequently begin exporting to the SG-protected market due to its advantage over established exporters subject to the SG policy.

exemptions, in equation (2) we include a dummy variable that takes on a value of one if the exporting country was formally exempted from the SG by the imposing country.²³

3.3 Descriptive Analysis

To estimate equations (1) and (2), we require five years of trade data around the year of the SG's implementation—the three years before the SG was enacted, in addition to the year of and the year after the SG application. After matching the products and generating the required time series for the trade data, we are left with 14 different safeguard actions initiated between 1995 and 2000, which are presented in Table 1.²⁴ These 14 SG actions cover a total of 85 different 6-digit HS product categories. The mean number of 6-digit HS products per case is 6.0, while half of all safeguards in the sample affect just one 6-digit product. Within each SG action, for each product we use the 6-digit HS import data to reveal the affected exporting countries. This leaves us with 899 county-product pairs affected by a SG action. Table 1 also presents a list of some of the exporting countries that the SG-imposing country exempted from the particular policy action.

In terms of the specific form of the safeguard policies, nine were implemented as tariffs, three were implemented as tariff rate quotas (TRQs) and two were implemented as quotas. There was also some variation in the way the TRQs were administered, though in most cases the quota

²³ We do not include this dummy variable in estimating equation (1) for endogeneity reasons. The Agreement on Safeguards requires that the SG-imposing country use market shares to determine whether a developing country is eligible to be exempted.

²⁴ For the purpose of our empirical exercise, we treat the second Argentine footwear safeguard as distinct from the initial footwear safeguard as its form was changed from a tariff to TRQ, the HS products subject to the safeguard were changed, and the countries exempted from the measure were changed. An additional nine SG actions initiated during the same period are omitted from our analysis because the required import data were not available: Bulgaria (Ammonium Nitrate), Czech Republic (Cane/Beet Sugar), Ecuador (Matches), Egypt (Safety Matches; Common Fluorescent Lamps), India (Phenol; Acetone), Korea (Garlic), and Latvia (Swine Meat).

element appeared to be binding, with a defined allocation of market shares among foreign exporters.

Table 2 presents summary statistics on the data used in the estimation and the expected sign of the impact of each explanatory variable in equations (1) and (2).

4 Empirical Results

4.1 Raw Data Analysis

Consider first a graphical representation of some of the key data in the analysis. Figure 1 plots the average share of country j in the SG-imposing country's imports of product i for the three years prior to imposition of the SG against country j 's import share in the year after the SG was imposed. Each of the three panels shows data for a specific SG-policy choice: tariff (a), TRQ (b), and quota (c). The graphs look much as we would expect. The data fit most tightly around the 45-degree line in panel (c), cases in which the safeguard is implemented as a quota. At the other extreme, for the case of a tariff (a), the data is much more dispersed. As we expected, the TRQ policy leads to an outcome that is between the other two.

4.2 Formal Estimation Results

4.2.1 Import Market Share in $t+1$

The results of estimating equation (1) are presented in Table 3. The first column presents estimates for the baseline specification of the determinants of exporters' shares in the SG-imposing country's imports in year $t+1$. The historical share variable (mean share for the three years previous to the year the SG was implemented) is entered first independently and then interacted with two of the three potential SG policies (TRQ and tariff), so the quota policy is the

omitted category. In specification (1), the estimate of 0.799 for the coefficient of the historical share variable in the case of a SG quota is positive and statistically different from zero, as we expected, though the estimated coefficient is also statistically different from 1. Furthermore, while the impact of the quota is larger (closer to 1) than the impact of the SG in the case of a tariff (which is -0.104 less), the impact for the TRQ case is still larger than in the quota case, rather than smaller as we would have anticipated. However, this result is not robust to all specifications, as we see below.

Specification (1) includes SG case dummy variables among the explanatory variables. With this specification, the historical trend variable, i.e., the percentage change in exporter j 's market share between $t-3$ and $t-1$, has no impact on market share in year $t+1$ when the policy is implemented as a quota. This result does not change when the policy is a TRQ, though the trend does have a positive and significant impact for a SG action implemented as a tariff. The other control variables in estimation equation (1) are also positive, as suggested by the theory, but only the retaliation variable is statistically significant in specification (1).

In specification (2) we substitute 6-digit HS product dummies for the SG case dummies included in specification (1). The pattern of results is largely unchanged, except that the coefficient of the historical trend variable for a SG implemented as a TRQ is now positive, as anticipated, while the retaliation variable is insignificant. Neither of the latter changes is robust to all alternative specifications, however.

In specification (3) we add exporting-country dummies to the estimation equation. This addition gives us the anticipated ranking (based on type of policy) of the size of the parameter estimates relating to the historical share variables, an estimated coefficient on the historical

average in the quota SG case that is not statistically different from 1, and also an improvement in the statistical significance of the retaliation and revealed-comparative-advantage variables.

In specification (4) we perform a final robustness check by replacing dependent and explanatory variables based on trade *values* with counterparts based on trade *volumes*.²⁵ This cuts the number of observations available for the estimation nearly in half. By coincidence, all observations in which a SG policy was implemented as a TRQ had to be dropped from the estimation due to insufficient data on trade volumes. Nevertheless, the estimation results are comparable to the otherwise analogous specification (2) in terms of the sign and size of parameter estimates.

To summarize table 3, our results document the implicit discriminatory impact of a safeguard arising from the choice of trade-protecting policy instrument. Since post-SG market shares are more tightly linked to historical market shares under a quantitative restriction than under a tariff, the implication is that quantitative measures implicitly discriminate in favor of exporting countries whose share of the import market has been falling in recent years, to the detriment of exporting countries whose share of the import market has been increasing.

4.2.2 Growth in Import Market Share

The results from estimation of equation (1) suggest that past import shares are an important determinant of import shares following imposition of a safeguard, but they are not the only determinant. What other variables determine post-SG *changes* in market shares? Table 4 presents results from estimation of equation (2) using specifications similar to those of Table 3,

²⁵ For two explanatory variables in Table 3, the share of the SG-imposing country's total exports that are sent to the affected exporting country and the exporter's share of the ROW's 6-digit HS import market in $t+1$, quantity data were not sufficiently available to allow their inclusion.

but now also adding the variables which allow for the explicit exceptions to the MFN rule through exporting country-specific exemptions. Specification (5) is again the baseline specification and includes SG case dummies. With respect to the estimated coefficient on the historical average market share variable, the impact of a SG implemented as a quota is not statistically different from zero, as we expected. On the other hand, where the policy was implemented as a tariff, the impact of the historical average is strongly negative, suggesting that historically smaller exporters (perhaps new entrants) experience a greater increase in market share than do larger suppliers. For a SG implemented as a TRQ, the estimate is also negative and lies between the estimates for the quota and tariff, as we would expect.

How do past changes in market share influence post-SG changes? In specification (5), the impact of the trend variable is negative for the cases in which the SG took the form of a quota. This is consistent with the application of safeguards in these cases being biased against exporters who have recently experienced a “disproportionate” percentage increase in market share. However, the impact of the historical trend variable is also negative and statistically significant in the instances in which the SG was applied as a tariff, suggesting that this outcome may not be due to an explicit discrimination against exporters whose trade has recently surged, but instead may simply be due to random shocks causing country j 's exports in any given year to deviate from the “normal” value, or mean reversion.

Next consider the impact of the exempted-country dummy variables, which control for instances in which the SG-imposing country has formally excluded a particular exporting country from the SG policy and thus explicitly discriminated in favor of certain trading partners. Note that we also interact this variable with a dummy for instances in which the exempted country was not a member of a common PTA with the SG-imposing country, to check for

whether there is a significantly differential effect on the outcomes experienced by exempted countries that are PTA members versus those exporters that are exempted because of the small supplier, developing country exception. Does the explicit discrimination of an exemption lead to a discriminatory effect on market shares? In Table 4, the estimation results do suggest that a formal exemption leads to a statistically significant increase in market share. While the estimated impact is smaller for the case of non-PTA members than for PTA members (the negative estimates on the dummy interacted with the non-PTA member), the difference across PTA and non-PTA members is not statistically different from zero.²⁶ The exception to this result is specification (7), which includes exporting country-specific effects. In this specification, the statistical significance of the exempted country parameter is eliminated, as the country-specific effects are likely absorbing the effects of the exemptions as well.

Finally, consider the estimated coefficients of the retaliation and percent change in revealed comparative variables. The estimated coefficients are also positive, as suggested by the theory, but only the latter is statistically significant in specification (5).

Specifications (6) through (8) document analogous robustness checks to those presented in Table 4. Adding various sets of dummy control variables [specifications (6) and (7)] and substitution of the volume share for the value share variables [specification (8)] yield an almost identical qualitative pattern of results to those for specification (5).

²⁶ Interestingly, Argentina did not exempt most of the developing countries in its second footwear safeguard in 2000 that were exempted in the first footwear safeguard in 1997. This is likely due to the increased imports resulting from the developing countries who may have entered the market as a result of the first safeguard and its exemptions.

5 Conclusions

Our results indicate that the impact of SG action on a given exporter depends on the specific form of the safeguard policy. A SG implemented through a quota tends to preserve historical market shares more than a SG implemented as a tariff. When a SG is implemented as a tariff, countries that have recently increased market share gain at the expense of other suppliers, while a quota tends to have the opposite effect. Although we are not able to compare these results to the hypothetical case of a purely MFN SG, it seems safe to conclude that SG implementation through a tariff comes closer to achieving nondiscriminatory results. We also find evidence that formal exceptions for developing countries and PTA partners do allow these countries to gain market share on average, although the estimated effect is larger for PTA partners than for developing countries. Nonetheless, the departure from MFN treatment intended to shelter new developing-country suppliers from the full effect of SG action appears to have been effective at least in qualitative terms.

While we have not addressed the issue explicitly here, Bown and McCulloch (2003) also document evidence that safeguards have a discriminatory impact on the exit response of new entrants, when compared to the exit response rate of earlier “new entrants” that were not faced with a safeguard and when compared to other small, but historically present, suppliers that were also faced with the imposition of a safeguard.

Because the form of a SG policy is key to its impact across suppliers, a logical follow-up study would investigate the political-economy determinants of the SG-imposing country’s decision to initiate a safeguard and its choice of SG policy. The markets in which the 14 SG actions were taken had experienced recent increases in the *number* of supplying countries, not just in the total value of competing imports. However, such an analysis requires a comparison

set of otherwise similar markets in which no SG was subsequently imposed in order to determine whether the increased number of suppliers played a significant role in the decision to apply safeguards. Data from our cases also suggests that the timing of new supplier entry may play a role in the choice of SG instrument. When the new entry occurs in the year immediately prior to initiation of the SG, use of a non-tariff measure with market shares based on historical averages favors established suppliers over new entrants. However, if the new entry occurred two or three years before initiation of the SG, non-tariff measures would no longer be expected to differ significantly from tariffs in their relative impact on established versus new suppliers.

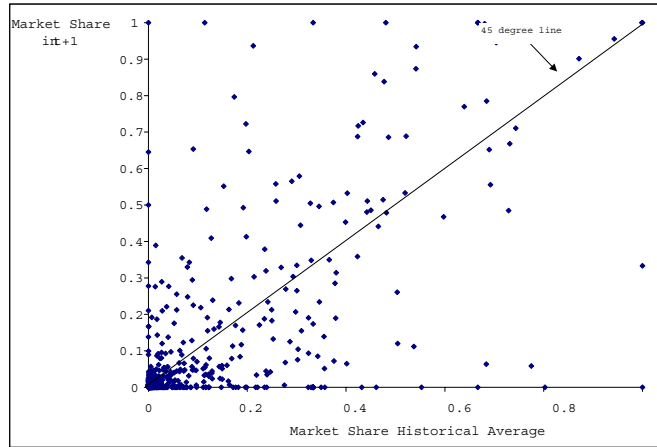
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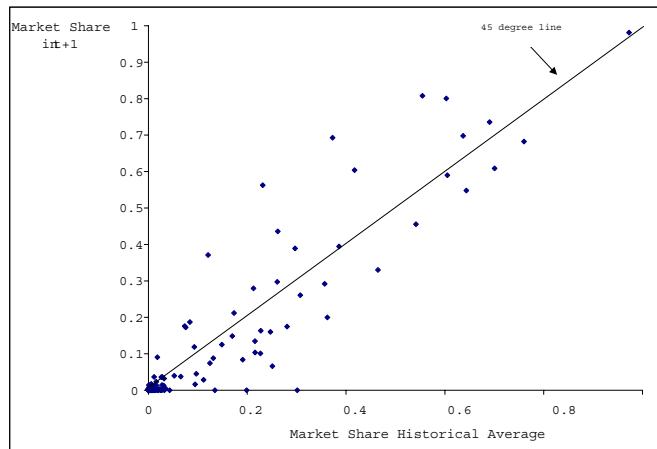
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Figure 1. Historical Market Shares versus Market Share after the SG Application

a. Safeguard Implemented as a Tariff



b. Safeguard Implemented as a Tariff Rate Quota



c. Safeguard Implemented as a Quota

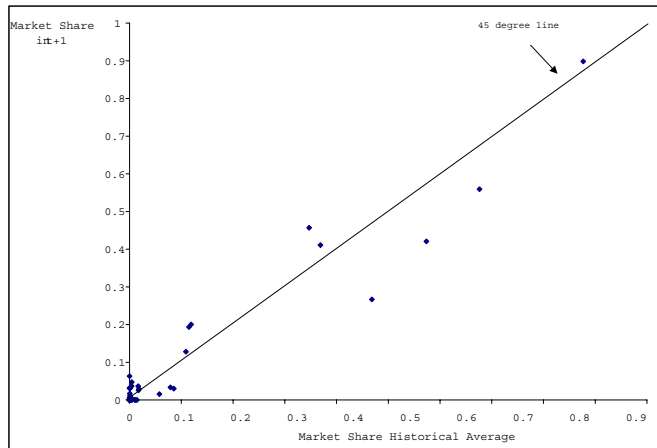


Table 1. WTO Safeguard Actions in the Sample

No.	Country	Product (number of 6-digit HS Codes in sample)	Year	Measure	Exempted Countries
1.	Argentina	Footwear (21)	1997	tariff	Brazil, Paraguay, Uruguay and 19 other countries
2.	Argentina	Footwear* (4)	2000	TRQ	Brazil, Paraguay, Uruguay and 4 other countries
3.	Brazil	Toys (15)	1997	tariff	Paraguay, Uruguay, 18 other countries
4.	Chile	Wheat, wheat flour, cane/beet sugar, edible vegetable oils (27)	2000	tariff	None listed
5.	Chile	Socks of synthetic fibres (1)	2000	tariff	Canada, Mexico, Peru, developing countries satisfying the small supplier criterion
6.	India	Acetylene/Carbon black** (1)	1998	tariff	Developing countries satisfying the small supplier criterion except China, Philippines, Singapore and South Africa
7.	India	Slabstock polyol (1)	1998	tariff	Developing countries satisfying the small supplier criterion except Singapore
8.	India	Propylene glycol (1)	1998	tariff	Developing countries satisfying the small supplier criterion except Singapore
9.	Korea	Dairy products (3)	1997	quota	Developing countries satisfying the small supplier criterion
10.	US	Broom corn brooms (1)	1996	tariff	Canada, Israel, 147 other countries
11.	US	Wheat gluten (1)	1998	quota	Canada, Mexico, Israel, countries named in the Caribbean Basin Economic Recovery Act and Andean Trade Preference Act, 140 other countries
12.	US	Lamb meat (6)	1999	TRQ	Canada, Mexico, Israel, countries named in the Caribbean Basin Economic Recovery Act and Andean Trade Preference Act, 142 other countries
13.	US	Steel wire rod (2)	2000	TRQ	Canada, Mexico
14.	US	Circular welded pipe (1)	2000	tariff	Canada, Mexico

* A subset of the footwear in the tariff SG of case number 1 was re-structured into a TRQ SG for case 2.

** The carbon black tariff SG was actually initiated in February 1999, but it has the same 6 digit HS code as acetylene black (imposed December 1998) so we have combined the two SGs into one.

Table 2. Summary Statistics*

Variables	Predicted Sign for Equation (1)	Predicted Sign for Equation (2)	Mean	Standard Deviation	Minimum	Maximum
<u>Explanatory Variables</u>						
Exporter's historical share over $t-3$, $t-2$, and $t-1$ x (i.e., interacted with)...	Positive (=1)	Zero	0.0955	0.1779	0	1
... SG policy was a TRQ	Positive	Ambiguous	0.0174	0.0852	0	0.9729
... SG policy was a tariff	Positive	Ambiguous	0.0737	0.1596	0	1
Percent change in exporter's share between $t-3$ and $t-1$ x (i.e., interacted with)...	Positive	Negative	-0.0323	1.2891	-2	2
... SG policy was a TRQ	Positive	Ambiguous	-0.0134	0.5591	-2	2
... SG policy was a tariff	Positive	Ambiguous	-0.0171	1.1308	-2	2
Dummy if the exporting country was formally exempted x (i.e., interacted with)...	N/A	Positive	0.3704	0.4832	0	1
... Exporter is not a PTA partner	N/A	Positive	0.2859	0.4521	0	1
SG-imposing country's share of exports sent to affected exporting country	Positive	Positive	0.0524	0.0784	0	0.2874
Exporter's share of the ROW's 6 digit HS import market in $t+1$	Positive	N/A	0.0940	0.2066	0	1
Percent change in exporter's share of the ROW's 6 digit HS import market between $t-1$ and $t+1$	N/A	Positive	-0.0495	0.7896	-2	2

* All statistics are based on the value of trade share variables. The analogous summary statistics for the volume of trade share variables used in the estimation of specifications (4) and (8) are omitted from the table but are available from the authors upon request.

Table 3. Estimation Results: Import Market Share in $t+1$

Explanatory Variables	Dependent variable: Exporter's share of the SG-imposing country's 6 digit HS import market in $t+1$			
	Baseline Specification	Add Product Dummies	Add Exporter Dummies	Volume Share
	(1)	(2)	(3)	(4)
Exporter's historical share over $t-3$, $t-2$ and $t-1$	0.799*** (0.058)	0.803*** (0.062)	0.876*** (0.088)	0.848*** (0.121)
x (i.e., interacted with) SG policy was a TRQ	0.126** (0.059)	0.132** (0.059)	-0.042 (0.102)	---
x (i.e., interacted with) SG policy was a tariff	-0.104* (0.056)	-0.083 (0.063)	-0.176* (0.091)	-0.228 (0.169)
Percent change in exporter's share between $t-3$ and $t-1$	-0.001 (0.001)	-0.001 (0.001)	0.003 (0.007)	0.008 (0.008)
x (i.e., interacted with) SG policy was a TRQ	0.002 (0.003)	0.010*** (0.003)	-0.002 (0.008)	---
x (i.e., interacted with) SG policy was a tariff	0.009*** (0.003)	0.010*** (0.003)	0.003 (0.008)	-0.001 (0.008)
Share of SG-imposing country's exports sent to affected exporting country	0.350** (0.169)	0.300 (0.187)	0.541*** (0.123)	0.485** (0.219)
Exporter's share of the ROW's 6 digit HS import market in $t+1$	0.077 (0.087)	0.084 (0.097)	0.135** (0.059)	0.240*** (0.076)
SG case dummy variables	Yes	No	No	No
Product dummy variables	No	Yes	Yes	Yes
Exporting country dummy variables	No	No	Yes	Yes
Number of observations	899	899	899	503
Adjusted R ²	0.57	0.60	0.61	0.48

Notes: White's standard errors correcting for heteroskedasticity and clustering on the SG case are in parentheses, with ***, ** and * denoting variables statistically different from zero at the 1, 5 and 10 percent levels, respectively. Time t is the year of the application of the SG. Each specification estimated with a suppressed constant term.

Table 4. Estimation Results: Percent Change in Import Market Share

Explanatory Variables	Dependent variable: Percent change in exporter's share of the SG-imposing country's 6 digit HS import market between $t-1$ and $t+1$			
	Baseline Specification	Add Product Dummies	Add Exporter Dummies	Volume Share
	(5)	(6)	(7)	(8)
Exporter's historical share over $t-3$, $t-2$ and $t-1$	-0.265 (0.295)	-0.289 (0.309)	-0.239 (0.432)	0.053 (0.267)
x (i.e., interacted with) SG policy was a TRQ	-0.653 (0.444)	-0.576 (0.436)	-0.726 (0.753)	---
x (i.e., interacted with) SG policy was a tariff	-0.937*** (0.326)	-0.910** (0.362)	-1.076** (0.447)	-1.381*** (0.428)
Percent change in exporter's share between $t-3$ and $t-1$	-0.382*** (0.131)	-0.370** (0.146)	-0.290** (0.114)	-0.155 (0.138)
x (i.e., interacted with) SG policy was a TRQ	0.051 (0.138)	0.062 (0.157)	-0.029 (0.123)	---
x (i.e., interacted with) SG policy was a tariff	0.073 (0.140)	0.060 (0.158)	-0.040 (0.115)	-0.069 (0.112)
Dummy if the exporting country was formally exempted x (i.e., interacted with)...	0.315*** (0.108)	0.317*** (0.118)	0.149 (0.410)	1.205** (0.611)
... Exporter is not a PTA member	-0.165 (0.175)	-0.182 (0.191)	0.115 (0.434)	-0.622 (0.566)
Share of SG-imposing country's exports sent to affected exporting country	0.368 (0.562)	0.191 (0.442)	0.953 (1.348)	3.606* (1.863)
Percent change in exporter's share of the ROW's 6 digit HS import market between $t-1$ and $t+1$	0.138*** (0.037)	0.146*** (0.048)	0.091** (0.038)	0.060 (0.041)
SG case dummy	Yes	No	No	No
Product dummy variables	No	Yes	Yes	Yes
Exporting country dummy variables	No	No	Yes	Yes
Number of observations	899	899	899	503
Adjusted R ²	0.13	0.11	0.17	0.14

Notes: White's standard errors correcting for heteroskedasticity and clustering on the SG case are in parentheses, with ***, ** and * denoting variables statistically different from zero at the 1, 5 and 10 percent levels, respectively. Time t is the year of the application of the SG. Each specification estimated with a suppressed constant term.