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The Role of Importers and Exporters in the Determination of the U.S. Tariff Preferences Granted to Latin America^{*}

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Abstract

This paper investigates the role played by domestic importers and foreign exporters in improving preferential access to the domestic market. To this end, the framework used in this paper extends the protection for sale analysis to explicitly model the role of domestic importers and foreign exporters in the determination of preferential trade treatment. The predictions of the model are tested using data on preferential trade between the United States and Latin American countries. The results suggest that Latin American exporters and U.S. importers' lobbying efforts have a significant and important role in determining the extent of preferential access granted by the United States. More interestingly, these findings also show that U.S. importers capture a very substantial share of the rents generated by tariff preferences. These results therefore shed a pessimistic view on preferential trade schemes as a reliable source of gains for developing countries.

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Non-Technical Summary

This paper investigates the extent to which lobbying by foreign exporters and domestic importers (retailers and wholesale firms) determines the tariff preferences granted by an importing country. The predictions of the model are tested using data on preferential trade between the U.S. and Latin America. This empirical example is important since Latin American countries display a significant dependency on exports to the U.S. Moreover, about half of Latin American exports enter the U.S. market through a myriad of preferential schemes (Andean Act, Caribbean Basin Initiative, GSP, NAFTA, etc.)

The empirical results suggest that lobbying by U.S. importers and Latin American exporters is an important determinant of the tariff preferences granted by the U.S. to that region. More interestingly, the empirical results indicate that U.S. importers capture a substantial share of the rents generated by tariff preferences. These findings imply that importers are likely to be the engine behind the growth of tariff preferences. Moreover, they also shed a pessimistic view of preferential schemes as a reliable source of gains to developing countries.

1 Introduction

This paper develops a framework to investigate the importance of foreign exporters and domestic importers' lobbying efforts in determining the tariff preferences granted by an importing country. Jobst (2002) argues that coalitions among domestic and foreign interests are capable of decreasing political opposition to trade liberalization since the pooling of resources from interested parties reduces the costs of lobbying to each member. However, there is no formal analysis that investigates whether joint lobbying by domestic importers and foreign exporters can enhance the market access of a group of exporting countries. To the best of my knowledge, this paper is the first to provide an analysis of this subject.

There is substantial evidence that lobbying by domestic importers and foreign exporters plays an important role in the determination of tariff preferences. In particular, the trade relations between the U.S. and Latin America have consistently been shaped by pressure groups. In 2001, the National Retailers' Federation (NRF)—a pressure group representing the interests of U.S. importers—lobbied vigorously against the application of tougher rules of origin on apparel products originating in countries which were members of the Caribbean Basin Initiative (CBI).¹ Jobst (2002) reports that the National Supermarket Association, in conjunction with the Colombian Association of Flower Exporters, lobbied successfully to prevent trade regulations that would have placed restrictions on exports of Colombian flowers to the U.S. in the late 1980s.² Similarly, the Association of American Chambers of Commerce in Latin America, in partnership with the U.S.-Chile Free Trade Coalition, led the effort to secure Congressional Approval, effective in January 2004, of the U.S.-Chile Free Trade Area.³

¹The NRF claimed that U.S. retailers are the major buyers of apparel produced in the the Caribbean Basin region, and if retailers do not have the proper incentives to provide apparel under the CBI, then all other U.S. industries down the supply chain will not be able to sell their products under the CBI. See the NRF website (www.nrf.com) for more information.

²See Jobst (2002), pp. 10

³The AACCLA is composed of 23 non-profit, independent, business organizations based in 21 Latin American countries. Its primary objective is to promote trade and investment between Latin America and the U.S. See the AACCLA website (www.aaccla.org) for more information.

To analyze the role played by pressure groups in the determination of tariff preferences, we consider a model in which an importing country, a group of preferential partner nations, and the rest of the world interact. Foreign-produced goods can be sold in the importing country if purchased by domestic agents named importers. We follow Maggi and Rodriguez-Clare (2000) by assuming that importers are agents that supply the sector-specific factor to conduct trade, without further costs. Their sole activity therefore is to purchase goods from a group of preferential partner countries to be sold to the importing country. The presence of importers in the model raises the question of how the rents generated by the tariff preferences are divided between foreign exporters and domestic importers.

In order to incorporate the presence of domestic importers, domestic producers, and foreign exporters, we use a two-stage political economy game. Tariff preferences granted by the importing country to preferential partner countries, and measured as the reduction of the tariff from the Most-Favored-Nation (MFN) rate, are determined in the first stage using the common-agency framework developed by Bernheim and Whinston (1986) and Grossman and Helpman (1994). In the second stage, domestic importers decide how to divide the rents arising from the tariff preferences granted by the domestic government to imports from preferential partner countries. Thus, our model assumes that domestic importers enjoy a substantial degree of market power when facing foreign exporters. Since the rents arising from the trade preferences received by domestic importers and foreign exporters have an impact on their welfare and, consequently, affect their contribution schedules, the game is solved by applying backward induction.

Our analysis shows that importers and exporters tend to lobby for preferential access, rather than for changes in the MFN tariffs. The model also predicts that equilibrium tariff preferences depend on whether the elasticity of export supply is greater or less than the inverse of the tariff preference. If the sectoral elasticity of export supply for a particular country is lower than the inverse of its predicted tariff preference, then the preferential tariff is either zero or equal to the MFN tariff. In other words, a corner solution occurs, and this explains the stylized fact noticed by Kee, Olarreaga and Silva (2003) that most preferences

at the tariff line (Harmonized System 8 digits) are either zero or equal to the MFN tariffs.⁴

We test the predictions of our model using data on preferential trade between the U.S. and Latin America. The empirical example investigated in this work is important since the U.S. is one of the wealthiest and largest economies in the world, and Latin America⁵ constitutes a group of developing countries whose dependency on exports to the U.S. is significant.⁶ Moreover, about half of Latin American exports enter the U.S. market through a myriad of preferential schemes.⁷

The predictions of the model find strong support in the data. Domestic importers and Latin American exporters' lobbying activities significantly increase on average the U.S. tariff preferences granted to Latin American countries. Furthermore, the empirical exercise shows that U.S. importers (tend to) capture most of the rents generated by the tariff preferences granted to Latin American countries. These results offer a pessimistic view about using preferential trade schemes as a reliable source of gains for developing countries. These conclusions are robust to modifications in the definition of political organization, to the exclusion of agricultural goods, and to changes in the level of aggregation of the data.

The political economy of trade literature has been trying to evaluate the impact of foreign lobbying on U.S. trade policy. The relation between foreign lobbying and the determination of the U.S. MFN tariffs was investigated by Gawande, Krishna and Robbins (2004) using a Cournot-Nash competition model. They found that foreign lobbying decreases on average the MFN tariff applied by the U.S.. Kee, Olarreaga and Silva (2003) studied whether lobbying by Latin American exporters plays a significant role in the determination of the U.S. tariff preferences granted to that region. They concluded that Latin American exporters' lobbying has a significant impact on U.S. tariff preferences, and the return to their lobbying activities

⁴See more details on tariff preferences in the empirical section.

⁵In this paper, the meaning of Latin America is extended to include Caribbean countries as well.

⁶On average 57 percent of Latin American exports were directed to the U.S. in the period of 1997-2000.

⁷Around 82 percent of preferential exports entered under the NAFTA regime (Mexico only) in the year 2000; CBTPA countries followed with 6 percent; GSP accounted for 4 percent; CBI for 3 percent and the Andean act regime for 2 percent of Latin America preferential exports to the United States. Other special import regimes, such as the Civil Aircraft, Pharmaceuticals and Dyes accounted for the rest of non-program-claimed imports of the US from Latin America.

has been estimated to be on average about 50 percent.⁸ At the same time, they also found that Latin American lobbying is not the main force behind U.S. tariff preferences since it explains only a small part of the tariff preferences variation. None of these studies, however, investigates the importance of foreign exporters and domestic importers' lobbying efforts in determining the U.S. tariff preferences.⁹

The remainder of the paper is organized as follows. Section 2 describes the notation and the political economy game used to determine tariff preferences granted to a group of preferential partner countries. Section 3 discusses the empirical strategy followed to evaluate the predictions of the model. Section 4 presents the empirical results as well as a series of robustness checks. In section 5 the paper is concluded.

2 The Model

2.1 Notation and Basic Set up

To analyze the role of domestic importers and foreign exporters in the determination of a country's tariff preferences, we consider a model in which a Home country, the rest of the world (ROW) and a group of n preferential partner nations interact. Assume that m different homogenous goods exist. Superscript j denotes preferential partners, while subscript k indicates the type of good. For tractability reasons, the stylized assumptions used on the demand and the supply sides of the model reduce the choice of tariff preferences to a partial equilibrium set up.

Assume that Home is a small economy¹⁰ in which consumers maximize a quasi-linear

⁸In their model, these large returns are due to the low weight of aggregate social welfare in the U.S. government's objective function.

⁹Gawande, Krishna and Robbins (2004) focus on lobbying by foreign exporters and domestic producers in the determination of the U.S. MFN tariffs. Thus, they do not investigate the effects of lobbying by importers or the determination of preferential tariffs, which is the focus of this paper.

¹⁰In this section, domestic or home economy is used to denote the U.S. economy. Preferential partners denote Latin American countries.

utility function

$$U = c_0 + \sum_{k=1}^m u(c_k).$$

Good zero is the numeraire. Given this functional form, there is no income or substitution effect on the demand for non-numeraire goods. The supply side is a specific-factor model where primary inputs are a sector-specific capital and mobile labor. Production of good zero uses labor only under constant returns to scale, and in an interior solution this fixes the wage rate. Thus, there is no general-equilibrium effect on the supply of non-numeraire goods either.

Our model follows Maggi and Rodriguez-Clare (2000) by assuming that foreign-produced goods can be sold in the Home country only if imported by domestic agents that supply the sector-specific factor needed to conduct trade, without further costs. We call these agents importers, and they earn rents only if the tariffs applied on goods originating in preferential partner countries are lower than the corresponding MFN tariffs.¹¹ Note that importers of a particular good k can import this good from any preferential partner country but can not import other goods besides k .

Owners of a specific factor might be politically organized or not. For simplicity, we assume that resident owners of specific capital have mass zero in the population and, consequently, domestic politically organized groups do not consider their consumption bundle or share of tariff revenue when lobbying the Home's government.

The political game takes the following form. Politically organized owners of sector specific capital, whether nationals or foreigners, lobby the Home's government for advantageous trade policies. In order to simplify the setup, we will assume that ROW imports (imports from non-preferred countries) are sufficiently large to absorb the increase in preferential imports that would result from preferential tariffs. The 'large market' assumption ensures that there is no political rivalry between Home country's producers and preferential partners since exports that receive preferential treatment do not change domestic prices. For Home's

¹¹We assume that trade tariffs are the only policy instrument in this economy. Thus, quota rents do not exist in this case.

import-competing producers, this means asking for MFN tariffs on imports, whereas for foreign producers and Home's importers, it means asking for either MFN or preferential tariffs.

The notation used in the model is as follows. Let t_k denote Home's ad-valorem MFN tariff on good k and let $t_k^j \in [0, t_k]$ be the preferential ad-valorem tariff applied on good k originating in preferential partner country j . Tariff preferences granted to imports of good k originating in country j can be described as

$$\alpha_k^j = \begin{cases} t_k - t_k^j & \text{if } 0 \leq t_k^j < t_k, \\ 0 & \text{otherwise.} \end{cases} \quad (1)$$

The share of the rents due to preferences α_k^j that accrue to importers of good k is denoted by ρ_k^j . Thus, the share of the rents that accrue to exporters of good k from country i is $1 - \rho_k^j$.

Let $C_k^{ej}(t_k, t_k^j)$ be the contribution schedule offered by the exporter lobby k from country j to the Home's government, and let $C_k^{ij}(t_k, t_k^j)$ be that offered by the Home's importer lobby for preferences granted to good k originating in country j . Importers' lobby can be thought of as representing the service firms involved in the distribution of imported goods. Similarly, let $C_k^p(t_k)$ be the contribution schedule offered by Home's producers of good k .¹² All contribution schedules are assumed to be differentiable at least around the equilibrium point. Grossman and Helpman (1994) show that differentiability of the contribution schedules is sufficient to guarantee that the equilibrium tariffs are robust with respect to non-binding communication among the lobbies, i.e., that the equilibrium tariffs are coalition-proof. In the context of tariff preferences to Latin America, this means that importers and exporters can share information about their preferences and, as long as there are non-binding agreements among them, the equilibrium preferential tariffs described in the following sections are stable to communication among them.

The exporter lobby (j, k) 's objective function, net of contribution, is given by $v_k^{ej} =$

¹²Note that domestic producers just lobby for MFN tariff since preferences do not change domestic prices.

$\pi_k^{ej}(t_k, t_k^j) - C_k^{ej}(t_k, t_k^j)$. In the case of Home's importers of good k , the lobby's objective function for preferences to goods originating in country j is $v_k^{ij} = \pi_k^{ij}(t_k, t_k^j) - C_k^{ij}(t_k, t_k^j)$. Likewise, Home country producer of good k 's objective function is denoted by $v_k^p = \pi_k^p(t_k) - C_k^p(t_k)$. The profit function of the lobbies can be written as follows,

$$\begin{aligned}\pi_k^{ej}(t_k, t_k^j) &= p_k^{ej} m_k^j - l_k^j \\ \pi_k^{ij}(t_k, t_k^j) &= \rho_k^j \alpha_k^j p_k^w m_k^j \\ \pi_k^p(t_k) &= p_k y_k - l_k\end{aligned}\tag{2}$$

where p_k^w stands for the world price of good k , m_k^j denotes the imports of good k from country j , l_k^j is the exporter's labor cost to produce m_k^j , and y_k is the domestic output of good k .¹³ The price that exporters receive when preferences are granted is denoted by $p_k^{ej} = [1 + (1 - \rho_k^j) \alpha_k^j] p_k^w$. Home's producers and consumers face instead prices represented by $p_k = [1 + t_k] p_k^w$. The Home's government picks an $m \times (n + 1)$ matrix of preferential and MFN tariffs maximizing the following objective function:

$$V = \sum_j \sum_{k \in I} C_k^{ij}(t_k, t_k^j) + \sum_j \sum_{k \in E} C_k^{ej}(t_k, t_k^j) + \sum_{k \in P} C_k^p(t_k) + aW(\mathbf{t}^1, \dots, \mathbf{t}^n, \mathbf{t})\tag{3}$$

where $\mathbf{t}^j = (t_1^j, \dots, t_m^j)$ is the vector of preferential tariffs granted to partner j and $\mathbf{t} = (t_1, \dots, t_m)$ is the vector of MFN tariffs. The sets I , E and P represent the set of importers, exporters and domestic producers that are politically organized. $W(\mathbf{t}^1, \dots, \mathbf{t}^n, \mathbf{t})$ denotes the aggregate social welfare function which can be defined as follows:

¹³Note that labor costs are not constant. However, the fact that the labor wage rate is constant implies that the derivative of profit functions with respect to tariffs does not affect labor costs according to the Envelope Theorem.

$$\begin{aligned}
W(\mathbf{t}^1, \dots, \mathbf{t}^n, \mathbf{t}) &= TR(\mathbf{t}^1, \dots, \mathbf{t}^n, \mathbf{t}) + CS(\mathbf{t}) + \sum_j \sum_k \pi_k^{ij}(t_k, t_k^j) \\
&+ \sum_k \pi_k^p(t_k) + \sum_j \sum_{k \in E} C_k^{ej}(t_k, t_k^j) + PP(\mathbf{t}^1, \dots, \mathbf{t}^n, \mathbf{t}) \quad (4)
\end{aligned}$$

where $CS(\mathbf{t})$ denotes consumer surplus, $TR(\mathbf{t}^1, \dots, \mathbf{t}^n, \mathbf{t})$ represents tariff revenues, and $PP(\mathbf{t}^1, \dots, \mathbf{t}^n, \mathbf{t})$ denotes a political process. The latter will be explained in details below. The tariff revenue and consumer surplus can be written in the following manner:

$$\begin{aligned}
TR(\mathbf{t}^1, \dots, \mathbf{t}^n, \mathbf{t}) &= \sum_k t_k p_k^w m_k - \sum_j \sum_k (t_k - t_k^j) p_k^w m_k^j \quad (5) \\
CS(\mathbf{t}) &= \sum_k [u(c_k(p_k)) - p_k c_k(p_k)]
\end{aligned}$$

where m_k stands for the imports of good k .¹⁴

Grossman and Helpman (1994) assume that even in the protection "for sale" context the fraction of aggregate income exchanged for political influence (contributions) remains within the country so that political contributions just imply a change of income distribution without welfare consequences.¹⁵ Likewise, they do not include in their framework the possibility of income losses due to the political process of implementing trade restrictions. In our case, income losses might arise when the political discussions about trade restrictions gain ground over welfare enhancing topics (like education, health and infrastructure) in the legislature agenda.¹⁶ We incorporate possible income losses to the Home country due to the political

¹⁴The 'large' market assumption guarantees that m_k does not change due to preferential trade.

¹⁵This is due to the use of identical quasi-linear preferences. See Dixit, Grossman and Helpman (1997) for a common agency game where income distribution matters.

¹⁶Shleifer and Vishny (1993) maintains that the illegality status of operations that involve corruption forces corrupted politicians and public officials to concentrate the public or legislature agenda on issues where the danger of being caught is lower. Not rarely the preferable issues in corrupted politicians' agenda are the least efficient manners to redistribute income to politicians or interest groups. In this sense, one can conclude that it might be easier to corrupt public officials in the setting of trade policy and defense projects than in the allocation of resources to education and infrastructure. Mauro (1995) provides evidence of the deleterious

process in the following term:

$$PP(\mathbf{t}^1, \dots, \mathbf{t}^n, \mathbf{t}) = - \sum_k \gamma_k \left[t_k p_k^w m_k + \sum_j (t_k - t_k^j) p_k^w m_k^j \right] \quad (6)$$

where $\gamma_k \in (0, 1]$.¹⁷ Expression (6) indicates that the higher the tariff rents involved in determining MFN and preferential tariffs, the higher is the welfare loss due to the political process.¹⁸

2.2 The Second Stage: Sharing the Tariff Preferences Rents

The vector of preferences α is determined in the first stage. Assuming that the government grants positive preferences to the imports of good k originating in country j , i.e., $0 < \alpha_k^j \leq t_k$, the share of rents due to preferences acquired by importers and exporters is determined in the second stage. A common situation in the international arena is a developed country granting preferences to a group of developing countries. In many cases a significant share of the rents arising from the tariff preferences granted by the developed nation are acquired by domestic importers, and exporters located in the developing countries instead enjoy only a small share of the rents.

Olarreaga and Ozden (2004) show evidence that the degree of market power enjoyed by U.S. importers in dealing with African exporters implies that countries that are members of the AGOA (African Growth and Opportunity Act) enjoy only a small fraction¹⁹ of the potential benefits from tariff preferences granted by the U.S. Krishna, Erzan and Tan (1994) show a similar pattern in the tariff preferences granted by the U.S. to apparel goods originating

effects of corruption on income through the reduction of the investment rate.

¹⁷ Assuming that $\gamma_k \in (0, 1]$ avoid some expressions to have a negative sign for feasible ranges of important parameters. For instance, see the expression defined by the parameter β_k^j in section (4).

¹⁸ Facchini, Van Biesebroeck and Willmann (2003) show that allowing for imperfect rent capturing due to the application of trade instruments that do not generate rents to domestic citizens can be important when testing models a la Grossman and Helpman (1994). For simplicity, other trade instruments are not considered in this paper.

¹⁹ On average African exporters enjoy 33 percent of the potential tariff preferences granted by the U.S. This share is much lower for exporters located in the poorest countries that are members of the AGOA.

in Hong Kong, China.

Following the empirical evidence, our model assumes that Home's importers can collusively determine the share of the rents accruing to importers and exporters.²⁰ Thus, the share of rents that accrue to importers (ρ_k^j) is determined by maximizing $\pi_k^{ij}(t_k, t_k^j)$ ²¹ with respect to ρ_k^j subject to the constraint that $0 < \rho_k^j \leq 1$.²² The interior solution to this problem can be written as follows:

$$\underbrace{\alpha_k^j p_k^w m_k^j}_{\text{Direct Effect}} + \rho_k^j \underbrace{\alpha_k^j p_k^w \frac{\partial m_k^j}{\partial \rho_k^j}}_{\text{Indirect Effect}} = 0 \quad (7)$$

Clearly, the direct effect of an increase in ρ_k^j also increases importers' profits. Equation (7) also highlights the presence of an indirect effect, where an increase in ρ_k^j has a negative effect on the price perceived by exporters (p_k^{ej}), leading, consequently, to a decrease in the quantities exported and the importers' profits. Simple algebra allows equation (7) to be rewritten as follows:

$$\rho_k^j = -\frac{m_k^j}{\frac{\partial m_k^j}{\partial p_k^{ej}} \frac{\partial p_k^{ej}}{\partial \rho_k^j}} \quad (8)$$

This implies that $\frac{\partial p_k^{ej}}{\partial \rho_k^j} = -\alpha_k^j p_k^w$, and, through some manipulations, equation (8) can be rewritten as

$$\rho_k^j = \frac{1 + \alpha_k^j}{\alpha_k^j [1 + \epsilon_k^j]} \quad (9)$$

where ϵ_k^j is the elasticity of export supply of good k from country j , i.e., $\epsilon_k^j = \frac{\partial m_k^j}{\partial p_k^{ej}} \frac{p_k^{ej}}{m_k^j}$.

²⁰Export supply of the ROW is perfectly elastic. Thus, whether Home's importers collude or not does not affect Home's consumers and producers equilibrium prices.

²¹See equation (2) for a description of this term.

²²The game between importers and exporters could be modelled in a different way. Three reasons, however, made us pick this particular choice. First, we did not want to estimate other sectorial parameters related to the bargain weights of importers and exporters. Second, the empirical section requires a manageable prediction of the tariff preferences. Last, the tariff preferences predicted by the model match the stylized facts noticed in Kee, Olarreaga and Silva (2003).

Since $0 < \rho_k^j \leq 1$, equation (9) implies the following "switching equation" for ρ_k^j .²³

$$\rho_k^j = \begin{cases} \frac{1+\alpha_k^j}{\alpha_k^j[1+\epsilon_k^j]} & \text{if } \epsilon_k^j > \frac{1}{\alpha_k^j}, \\ 1 & \text{otherwise.} \end{cases} \quad (10)$$

Equations (9) and (10) indicate that if $\epsilon_k^j > \frac{1}{\alpha_k^j}$ then the greater ϵ_k^j the lower ρ_k^j . Clearly, when the exporter's supply elasticity is high given the tariff preference, a reduction of ρ_k^j in response to an increase in ϵ_k^j produces the two effects in the importers' profits described by equation (7). The direct effect represents a decrease in the price received by importers, which reduces their profits. On the other hand, the indirect effect represents an increase in the quantity imported, which increases their profits. In this case, the indirect effect dominates the direct effect since the proportional increase in the imported quantity is greater than the reduction in the importers' price. This indicates that exporters with high supply elasticity receive larger shares of the rents generated by tariff preferences than exporters with low supply elasticity.

2.3 The First Stage: Determining Tariff Preferences

In the first stage, the government chooses MFN and preferential tariffs for each good k and for each partner country j . In the second stage we have solved for the share of rents that accrue to importers and exporters, and the government will take them into account in determining the tariff preferences. An important question is whether or not importers and exporters would lobby for MFN and preferential tariffs since both instruments affect the trade preferences granted by Home's government. In what follows we show that importers and exporters lobby only for preferential tariffs, as long as equilibrium preferential tariffs are not full, i.e., $0 < t_k^j \leq t_k$. This result resembles the one obtained by Dixit (1996) where domestic interest groups do not lobby for tariffs when production subsidies are also for 'sale'.

Import subsidies are rarely seen in practice so that MFN and preferential tariffs are

²³In fact we could have written a Kuhn-Tucker problem in the beginning of this section.

assumed to be non-negative.²⁴In the first stage of the game, the government solves the following maximization problem:

$$\max_{\mathbf{t}^1, \dots, \mathbf{t}^n, \mathbf{t}} V(\mathbf{t}^1, \dots, \mathbf{t}^n, \mathbf{t}) \quad \text{s.t. } 0 \leq t_k^j \leq t_k \text{ and } t_k > 0 \text{ for any } j, k \quad (11)$$

According to equation (1), the choice of preferential tariffs is interesting only when the MFN tariff is positive, so that the restriction $t_k > 0$ is part of problem (11). Assuming that λ is a $(m.n) \times 1$ column vector of Lagrangian multipliers connected to problem (11), we can write the first order conditions as follows:

$$\frac{\partial V}{\partial t_k^j} - \lambda_k^j \leq 0, \quad t_k^j \geq 0, \quad \left(\frac{\partial V}{\partial t_k^j} - \lambda_k^j \right) t_k^j = 0 \quad \text{for any } j, k \quad (12)$$

$$\frac{\partial V}{\partial t_k} + \sum_j \lambda_k^j = 0 \quad \text{for any } k \quad (13)$$

$$t_k - t_k^j \geq 0, \quad \lambda_k^j \geq 0, \quad (t_k - t_k^j) \lambda_k^j = 0 \quad \text{for any } j, k \quad (14)$$

Notice that if the importers in sector k become politically organized, they will offer contribution schedules for preferential tariffs granted to imports originating in any partner country j . Using equations (1)-(6) and (10) we obtain the following derivatives for the government's objective function:

$$\frac{\partial V}{\partial t_k^j} = -(1+a) I_k^{ej} p_k^w \left[(1 - \rho_k^j) m_k^j + \alpha_k^j m_k^j \frac{\partial \rho_k^j}{\partial t_k^j} \right] \quad (15a) \quad (15)$$

$$- (I_k^i + a) p_k^w \left(\rho_k^j m_k^j - \alpha_k^j m_k^j \frac{\partial \rho_k^j}{\partial t_k^j} \right) \quad (15b)$$

$$+ a (1 + \gamma_k) p_k^w \left(m_k^j - \alpha_k^j \frac{\partial m_k^j}{\partial t_k^j} \right) \quad (15c)$$

²⁴This assumption is usually made in the political economy of trade literature. See also Maggi and Rodriguez-Clare (2000).

$$\frac{\partial V}{\partial t_k} = (1+a)p_k^w \sum_j I_k^{ej} \left[(1-\rho_k^j) m_k^j - \alpha_k^j m_k^j \frac{\partial \rho_k^j}{\partial t_k} \right] \quad (16a) \quad (16)$$

$$+ (I_k^i + a) p_k^w \sum_j \left(\rho_k^j m_k^j + \alpha_k^j m_k^j \frac{\partial \rho_k^j}{\partial t_k} \right) + I_k^p p_k^w y_k \quad (16b)$$

$$+ a p_k^w \left[y_k - c_k + (1-\gamma_k) \left(m_k + t_k \frac{\partial m_k}{\partial t_k} \right) \right] \quad (16c)$$

$$- a (1+\gamma_k) p_k^w \sum_j \left(m_k^j + \alpha_k^j \frac{\partial m_k^j}{\partial t_k} \right) \quad (16d)$$

where I_k^{ej} , I_k^i and I_k^p are dummy variables that indicate whether an exporter, importer and Home's producer lobby is organized or not, respectively. The effect of an increase in the preferential tariff of good k originating in country j on the government's objective function can be divided in the following elements: (i) Expression (15a) represents the effect of an increase in the preferential tariff on the foreign exporters' profits; (ii) Expression (15b) describes the effect of an increase in the preferential tariff on Home's importers; (iii) Expression (15c) represents the effect of an increase in the preferential tariff on the tariff revenue and the political process term. Notice that using equation (10) we can find that expressions (15a) and (15b) are negative, while expression (15c) is positive. This is intuitive since an increase in preferential tariff t_k^j implies a decrease in tariff preference α_k^j , which implies that the profits of exporters and importers of good k originating in country j also decrease. At the same time, however, an increase in preferential tariff t_k^j also increases the summation of the tariff revenue and the political process term.

Similarly, the effect of an increase in the MFN tariff applied to good k on the government's objective function can be expressed in the following terms: (i) Expression (16a) describes the effect of an increase in the MFN tariff on the exporters' profits; (ii) Expression (16b) represents the effect of an increase in the MFN tariff on the importers and domestic producers' profits; (iii) Expressions (16c) and (16d) describe the effect of an increase in the MFN tariff on consumer surplus, tariff revenue and the political process term. Notice that

a change in the MFN tariff applied to good k changes the exporters and importers' profits related to trade of good k with any of the preferential partner countries.

It is clear that expressions (15a)-(16d) depend on the terms $\frac{\partial \rho_k^j}{\partial t_k^j}$ and $\frac{\partial \rho_k^j}{\partial t_k}$ which, according to equation (10), itself will depend on whether or not $\epsilon_k^j > \frac{1}{\alpha_k^j}$. Thus, the following two sections discuss the equilibrium of tariff preferences and MFN tariffs using conditions (12)-(14) for each of these cases.

2.3.1 First Case - $\epsilon_k^j > \frac{1}{\alpha_k^j}$

Lobbying for Preferential Tariffs Assume for tractability that the elasticity of export supply of any partner country and good is constant. Using conditions (12), (14), and equation (15) the interior solution ($0 < t_k^j < t_k$) of the government maximization problem with respect to t_k^j can be written as follows:

$$\frac{\alpha_k^j}{1 + \alpha_k^j} = \frac{\beta_k^j}{\epsilon_k^j} \quad (17)$$

where $\beta_k^j = \frac{1}{a(1+\gamma_k)} \left[(1+a) \frac{\epsilon_k^j}{1+\epsilon_k^j} I_k^{ej} + (I_k^i + a) \frac{1}{1+\epsilon_k^j} - a(1+\gamma_k) \right]$.²⁵ Details on how to obtain equation (17) are provided in Appendix 1. We can explicitly solve for α_k^j rewriting equation (17) as follows:

$$\alpha_k^j = \frac{\beta_k^j}{(\epsilon_k^j - \beta_k^j)} \quad (18)$$

The original Kuhn-Tucker problem suggests the existence of other solutions as well. The complete set of solutions is described by the following expression.

$$\alpha_k^j = \begin{cases} \frac{\beta_k^j}{(\epsilon_k^j - \beta_k^j)} & \text{if } \frac{\beta_k^j}{(\epsilon_k^j - \beta_k^j)} < t_k, \frac{\beta_k^j}{(\epsilon_k^j - \beta_k^j)} > 0 \\ t_k & \text{if } \frac{\beta_k^j}{(\epsilon_k^j - \beta_k^j)} \geq t_k \end{cases} \quad \text{if } \epsilon_k^j > \frac{1}{\alpha_k^j(a, \gamma_k, I_k^{ej}, I_k^i)} \quad (19)$$

²⁵Note that if γ_k is greater than one then β_k^j is unambiguously lower than zero for $a > 1$. Empirical papers on the political economy of trade policy have estimated the value of a to be much greater than one. See Gawande and Krishna (2002) for a survey of these results.

According to equation (19) α_k^j is different from zero. Conditions $\frac{\beta_k^j}{(\epsilon_k^j - \beta_k^j)} < t_k$ and $\frac{\beta_k^j}{(\epsilon_k^j - \beta_k^j)} > 0$ are implied by the restriction $0 < t_k^j < t_k$. Given the parameters a , γ_k and the political organizational dummies, the restriction $\epsilon_k^j > \frac{1}{\alpha_k^j}$ defines a lower bound to the elasticity of export supply so that $\epsilon_k^j > \frac{\epsilon_k^j - \beta_k^j}{\beta_k^j}$.

Equation (17) provides valuable information about the economic effects of changes in political organization, export elasticities and in the weight attached by Home's government on social welfare in the equilibrium tariff preferences when $0 < t_k^j < t_k$ and $\epsilon_k^j > \frac{1}{\alpha_k^j}$. In this case, the political organization dummies (I_k^{ej} and I_k^i) have a positive effect on tariff preferences since importers and exporters benefit from them, and there is no counter-lobbying from domestic producers. On the other hand, the higher the weight of social welfare (a) in the government's objective function, and the higher the income losses (γ_k) due to the political process necessary to implement trade restrictions, the lower are the tariff preferences. In both cases, the decrease on the level of tariff preferences is due to income losses, and, more generally, to losses in welfare, caused by positive tariff preferences.

Similarly, the higher export elasticities (ϵ_k^j), the lower is the level of tariff preferences. Increases in the export elasticities imply an increase in the fraction of tariff revenues that is lost by the domestic government, and is neither captured by exporters nor importers. In other words, the higher the export elasticities, the higher is the trade diversion induced by tariff preferences.

Lobbying for MFN tariffs We have just shown above how tariff preferences are determined in equilibrium if $\epsilon_k^j > \frac{1}{\alpha_k^j}$. However, whether exporters and importers lobby or not for MFN tariffs remains still unclear.²⁶ We show next that domestic producer lobbies are the only politically organized groups that have an interest at stake if $0 < t_k^j < t_k$ for any j .²⁷ In this case, conditions (12)-(14) imply that $\frac{\partial V}{\partial t_k} = \frac{\partial V}{\partial t_k^j} = 0$ since $0 < t_k^j < t_k$ for any j . Thus, from condition (12) and expression (15) we have:

²⁶The reverse is not true as can be seen from equation (19).

²⁷If $t_k^j = t_k$ then tariff preferences are zero and exporters and importers neither lobby for the preferential nor the MFN tariff.

$$\begin{aligned}
a(1 + \gamma_k) \sum_j \alpha_k^j \frac{\partial m_k^j}{\partial t_k^j} &= -(1 + a) \sum_j \frac{\epsilon_k^j}{1 + \epsilon_k^j} I_k^{ej} m_k^j \\
&\quad - (I_k^i + a) \sum_j \frac{1}{1 + \epsilon_k^j} m_k^j + a(1 + \gamma_k) \sum_j m_k^j
\end{aligned} \tag{20}$$

For the details of the derivation, see Appendix 1.²⁸ Substituting equation (20) in equation (16) and setting it equal to zero, we can rewrite the first order condition with respect to t_k as follows:

$$a \sum_j \alpha_k^j \left(\frac{\partial m_k^j}{\partial t_k^j} + \frac{\partial m_k^j}{\partial t_k} \right) - y_k I_k^p + a\gamma_k m_k - a(1 - \gamma_k) t_k \frac{\partial m_k}{\partial t_k} = 0 \tag{21}$$

Clearly, $\frac{\partial m_k^j}{\partial t_k^j} = -\frac{\partial m_k^j}{\partial t_k}$ because changes in the MFN and preferential tariffs have a symmetric effect on exporters' price p_k^j . Simple algebra allows equation (21) to be rewritten as follows:

$$t_k = -\frac{(I_k^p y_k - a\gamma_k m_k)}{a(1 - \gamma_k) \frac{\partial m_k}{\partial t_k}} \tag{22}$$

which is the same expression obtained for a small economy with no preferential tariffs, with the addition of the political loss term described by equation (6). Notice that if $\gamma_k = 0$ for any k , equation (22) becomes simply proposition (2) in Grossman and Helpman (1994). Thus, exporters and importers do not lobby for MFN tariffs if $0 < t_k^j < t_k$.²⁹

What is the intuition behind this result? There are two main reasons why exporters and importers lobby only for preferential tariffs in this case. First, lobbying for MFN tariffs might lead to the same level of tariff preferences as lobbying for preferential tariffs, but it is likely to require higher contributions by the lobbies to compensate the government for

²⁸Equation (20) is obtained by rearranging equation (29) shown in Appendix 1.

²⁹Note that equation (22) implies that $I_k^p y_k > a\gamma_k m_k$ so that $t_k > 0$ as was assumed in the definition of the government's maximization problem. Thus, only sectors whose domestic producers are politically organized may have preferential tariffs different from zero.

the higher efficiency cost of the policy. Second, lobbying for MFN tariffs benefits not only the exporter of a particular country, but all the exporters of the homogenous good whose tariff changes no matter where they are from. The non-binding commitment nature of the game then implies that these positive externalities to other lobbies are not followed by a reduction in costs (contributions). Thus, as long as preferences are not full then exporters and importers lobby only for preferential tariffs.³⁰

If the domestic government grants full preferences ($\alpha_k^j = t_k$ for some j), then the first order condition with respect to t_k^j implies that $\frac{\partial V}{\partial t_k^j} \leq 0$. Equation (20) can then be rewritten as an inequality and, following a procedure similar to the one used above, simple algebra allows equation (22) to be rewritten as follows:

$$t_k \leq -\frac{(I_k^p y_k - a\gamma_k m_k)}{a(1 - \gamma_k) \frac{\partial m_k}{\partial t_k}} \quad (23)$$

which implies that the MFN tariffs are at least as great as when there are no full preferences.³¹ Thus, importers and exporters may lobby for MFN tariffs if the government grants full preferences.

2.3.2 Second Case - $\epsilon_k^j \leq \frac{1}{\alpha_k^j}$

Lobbying for Preferential Tariffs In this case equation (10) tells us that $\rho_k^j = 1$. This implies that exporters will not contribute to obtain preferential treatment since they do not obtain any advantage in this case. Thus, the effect of an increase in t_k^j on the government's objective function can be described as follows:

$$-(I_k^i + a) m_k^j + a(1 + \gamma_k) m_k^j \quad (24)$$

³⁰Dixit (1996) shows that if production subsidies are also "for sale" then lobbies do not pay for MFN tariffs. In this case, production subsidies achieve the same objective than MFN tariffs, i.e., increase in profits, but it is cheaper since it does not distort so much allocations and welfare. Thus, the net benefit of lobbying for subsidies is higher than lobbying for MFN tariffs.

³¹In the case of full tariff preferences, expression (23) can be written using the home country import elasticity (ϵ_k) and the inverse of the import penetration ratio (z_k), so that one obtains $\frac{t_k}{1+t_k} \geq \frac{(I_k^p z_k - a\gamma_k)}{a(1-\gamma_k)\epsilon_k}$.

which implies that a corner solution is always obtained since equation (24) does not depend on α_k^j .³²

The Kuhn-Tucker solution to this problem is the following:

$$\alpha_k^j = \begin{cases} 0 & \text{if } I_k^i - a\gamma_k < 0 \\ \min\left(t_k, \frac{1}{\epsilon_k^j}\right) & \text{if } I_k^i - a\gamma_k > 0 \end{cases} \quad \text{if } \epsilon_k^j \leq \frac{1}{\alpha_k^j(a, \gamma_k, I_k^{ej}, I_k^i)} \quad (25)$$

Expression (25) indicates that "full" or "null" preferences occur depending on whether one dollar of contributions from importers is worth more than the welfare weighted value of the fraction of a dollar of income lost due to politics as described by the expression $I_k^i - a\gamma_k$. If either importers are not politically organized ($I_k^i = 0$) or the product of the parameters a and γ_k is high, then any positive value of tariff preferences reduces the value of the government's objective function. In this case, importers can not compensate the government for the losses in welfare when preferences are positive, and the government then grants null preferences, i.e., $\alpha_k^j = 0$. On the contrary, if the weight of social welfare in the government's objective function (a) is low, welfare losses due to the political process are not significant (low γ_k), and importers are politically organized, then equilibrium tariff preferences are full³³ as described by $\alpha_k^j = \min\left(t_k, \frac{1}{\epsilon_k^j}\right)$. It is also worth noticing that contrary to equation (19) export elasticities do not play any role in this case, since preferential partners' exports are not affected.

Lobbying for MFN tariffs Equation (25) indicates that the magnitude of the MFN tariff for good k depends on the sign of the expression $I_k^i - a\gamma_k$. According to equation (25) if $I_k^i - a\gamma_k < 0$ then $\alpha_k^j = 0$. Using conditions (12)-(14) we have that

$$\sum_j \frac{\partial V}{\partial t_k^j} = -\frac{\partial V}{\partial t_k} = \sum_j \lambda_k^j \geq 0 \quad (26)$$

³²The case where $I_k^i = \gamma_k a$ is not being considered since it is a measure zero event.

³³Controlling for the restriction $\epsilon_k^j < \frac{1}{\alpha_k^j}$.

Substitution of $\rho_k^j = 1$ in equations (15) and (16), allows expression (26) to yield expression (21), and, consequently, implies that equation (22) is also valid. Thus, importers and exporters do not lobby for MFN tariffs. However, if $I_k^i - a\gamma_k > 0$ and $t_k < \frac{1}{\epsilon_k^j}$ then expression (23) is valid and importers and exporters may lobby for MFN tariffs as well.

3 Estimation Strategy and Data

3.1 Empirical Model

We can use our model to test whether Latin American exporters and U.S. importers lobbying are important forces behind the tariff preferences granted by the U.S. to that region. In carrying out the empirical analysis of the model we need to address two important issues. First of all, importers and exporter may lobby for both preferential and MFN tariffs. This has important effects on the scope of the empirical analysis. The second issue is related instead to the challenges involved in the estimation of the predicted tariff preferences of the model, since they depend on whether the condition $\epsilon_k^j > \frac{1}{\alpha_k^j(a, \gamma_k, I_k^{e,j}, I_k^i)}$ is satisfied or not.

With respect to the first issue, the framework used in this paper predicts that exporters and importers may lobby for MFN tariffs only if preferences are full. Thus, in general one can assume that importers and exporters only lobby for preferential tariffs. Following this line of argument, we ignore possible importers and exporters lobbying activities towards MFN tariffs, and, consequently, the following analysis concentrate on their lobbying efforts towards preferential trade as described by equations (19) and (25).³⁴

The second issue is handled by using quartile thresholds of the product of tariff preferences and elasticities of export supply ($\epsilon_k^j \alpha_k^j$) to determine whether the observation for a particular good k originating in country j satisfies the restriction $\epsilon_k^j > \frac{1}{\alpha_k^j}$. If we assume, for instance,

³⁴The interested reader on lobbying for MFN tariffs is referred to the studies of Goldberg and Maggi (1999), Gawande and Bandhyopadhyay (2000), and Krishna, Gawande and Robbins (2004) for more on this topic.

that the third quartile of the product $\epsilon_k^j \alpha_k^j$ is used to determine whether an observation satisfies the restriction $\epsilon_k^j > \frac{1}{\alpha_k^j}$, then only the group of observations whose product of tariff preference and elasticity of export supply is greater than the third quartile have predicted tariff preference described by equation (19). Otherwise, the predicted tariff preference is described by equation (25). Thus, the approach followed in this paper does not test whether the condition $\epsilon_k^j > \frac{1}{\alpha_k^j(a, \gamma_k, I_k^{ej}, I_k^i)}$ is satisfied by the data but, instead assumes that the group of observations whose product $\epsilon_k^j \alpha_k^j$ is greater than the quartile threshold is the result of a different data generating process from observations that do not satisfy this condition.

We can proceed as follows with our empirical analysis. For observations that satisfy the condition $\epsilon_k^j > \frac{1}{\alpha_k^j}$, equation (19) is the one to be estimated. Adding an error term and after some manipulations, equation (19) can be rewritten as follows:

$$\frac{t_k}{1+t_k} - \frac{\alpha_k^j}{1+\alpha_k^j} = \max\left(\frac{t_k}{1+t_k} - \frac{\beta_k^j}{\epsilon_k^j}, 0\right) + u_k^j \quad (27)$$

where $\frac{t_k}{1+t_k} - \frac{\beta_k^j}{\epsilon_k^j} = \phi_0 \left[\frac{t_k}{1+t_k} + \frac{1}{\epsilon_k^j} \right] + \phi_1 \left[\frac{I_k^{ej} \epsilon_k^j + I_k^i}{\epsilon_k^j (1+\epsilon_k^j)} \right] + \phi_2 \left[\frac{I_k^{ej} \epsilon_k^j + 1}{\epsilon_k^j (1+\epsilon_k^j)} \right]$ with $\phi_1 = -\frac{1}{a(1+\gamma)}$, $\phi_2 = -\frac{1}{(1+\gamma)}$ and ϕ_0 is a constant. The error term is defined by u_k^j .

Note that we assume the political cost parameter (γ_k) to be constant across goods so that we have an estimable equation. Moreover, it is clear from equation (27) that the endogenous variable is bounded from below at zero and, in fact, many observations hit this boundary. Therefore, the endogenous variable is censored at zero and a Tobit estimation has to be performed. The model implies the following restrictions on the parameters in equation (27): $\phi_0 > 0$, $\phi_1 < 0$ and $\phi_2 < 0$. The estimation of the coefficients will then be used to compute the parameters a and γ .

For observations that satisfy $\epsilon_k^j \leq \frac{1}{\alpha_k^j}$ we need instead to estimate equation (25), which assuming that $t_k < \frac{1}{\epsilon_k^j}$ for any pair (j, k) , and adding an error term can be written as follows:

$$\alpha_k^j = \theta_0 + \theta_1 I_k^i + u_k^j \quad (28)$$

where θ_1 is expected to be positive and θ_0 is a constant as suggested by equation (25).

3.2 Data

The estimation of equations (27) and (28) requires information on U.S. importers and Latin American exporters' political organization, and data on elasticity of export supply and tariff preferences by industry and by Latin American country. Data on MFN and preferential tariffs as well as exporters' political organization cover the years from 1997 to 2000. The paper employs data on importers' political organization from the period 1991-2000. By calculating the average of the data over these years, we perform cross-section regressions to estimate the coefficients of equations (27) and (28). All the variables are organized at the HS 8-digit and ISIC 3-digit levels. Several issues related to the data set are discussed at length next.

MFN and Preferential Tariffs MFN and Preferential tariffs are calculated using customs data provided by the United States International Trade Commission (USITC). The original data is available at the tariff line level (HS 8-digit level) and covers the period between 1997-2000. Before proceeding with the calculation of the MFN and preferential tariffs, we average out the observations for these four years by HS 8-digit code and by country. U.S. MFN tariffs are determined by the ratio between duties paid on U.S. imports and the value of U.S. imports from all over the world that entered under the MFN regime for each HS 8-digit line. Similarly, preferential tariffs are determined by the ratio between duties paid on U.S. imports and the value of U.S. imports by Latin American country and by HS 8-digit line.

Using actual duties paid and the value of imports to calculate tariffs allows the determination of *actual* tariff preferences (i.e., those actually granted at customs and not 'on paper').³⁵The data on MFN and preferential tariffs has been aggregated at the ISIC 3-digit

³⁵The data on MFN and preferential tariffs used in this paper is the same one used in Kee, Olarreaga and Silva (2003). The interested reader can obtain information about the products and countries which were granted the highest and lowest preferential tariffs in that paper.

level as well. The value of the 8-digit HS exports from each Latin American country to the U.S. is used as weights to aggregate the data on tariffs from the 8-digit of the HS to the 3-digit of the ISIC.

Political Organization of Importers Previous papers on the political economy of trade have used corporate Political Action Committees (PAC) data for manufacturing firms to determine whether a sector is organized or not. These measures identify which domestic producers' lobbies are capable of playing a significant role in the determination of trade policy. The model and the discussion shown above, however, made clear that the influence played by exporters and importers might be very important in explaining tariff preferences. This paper is first to elaborate a measure of political organization for importers. Using the lobbying in service database kindly provided by Kishore Gawande, we identify which manufacturing and agriculture products present organized lobbying by service firms. The measure of importers' political organization is driven by the requirements of the theoretical model presented above, and which is summarized by the variable I_k^i .

Gawande (2002) organizes service firms' corporate PAC contributions for the five election cycles between the years of 1991 and 2000. Contributions reach a total of \$483 million over the five election cycles period and are organized at the SIC 4-digit level. Of course, not all of the contributions paid can be directly imputed to influence trade policy. For instance, it is hard to believe that financial institutions and insurance companies lobby for trade purposes. Following this line of argument, only contributions from retail and wholesale firms are used to measure the political activity of service firms in this paper. Trade related contributions from service firms amount to \$68 million during the period from 1991-2000. Before proceeding with the determination of the political organization variable, an average across the five election cycles was taken by SIC 4-digit code.

The theoretical model requires importers' to be either politically organized or not by agricultural and by manufacturing code. In order to filter contributions from SIC 4-digit service codes to the ISIC 3-digit and HS 8-digit agricultural and manufacturing codes we

proceeded as follows. First, we filtered the retail and wholesale firms' data from the SIC 4-digit level to the North American Industrial Classification System (NAICS). Assuming that importers lobby according to the importance of each agricultural and manufacturing NAICS code in its production process, the 1997 U.S. Input-Output matrix provided by the Bureau of Economic Analysis (BEA) was used to determine the level of service firms' contributions by each agricultural and manufacturing NAICS code. Finally, a concordance between the Input-Output codes and the HS 10-digit codes provided by the BEA was used to map the contributions to the international trade data system.

Political organization of importers for each agricultural and manufacturing ISIC 3-digit and HS 8-digit code was determined using thresholds following Goldberg and Maggi (1999) and Krishna, Gawande and Robbins (2004). The first, second and third quartiles of the importers' distribution of political contributions were used to determine which manufacturing and agricultural sectors present politically organized importers. For example, using the first quartile of the distribution of political contributions to determine whether importers are organized or not means that those sectors with lower (higher) contributions than the one displayed by the first quartile code are assumed to be not politically organized (are politically organized) so that $I_k^i = 0$ ($I_k^i = 1$).

Political Organization of Exporters The data set used to determine Latin American exporters political organization is the same one used in Kee, Olarreaga and Silva (2003). Latin American exporters contribution data were provided by the U.S. Department of Justice under the legislation known as the Foreign Agent Registration Act (FARA). First, the foreign lobbying expenditure data related to trade on agricultural and industrial goods were separated from those involving trade in services and other types of foreign lobbying. Kee, Olarreaga and Silva explain in details the procedure used to select contributions related to trade in goods. The same process was used for firms' and governments' contributions. Then, each lobbying expenditure related to trade in goods was mapped into 3-digit ISIC industries. Latin American governments' contributions were spread across sectors using sectorial

exports to the rest-of-the-world (i.e., excluding the United States). This methodology was chosen to avoid simultaneity issues between the exporters' organization dummy and the tariff preferences.³⁶ This mapping process was repeated for each entry found on the FARA report for 33 countries in Latin America. We used the FARA reports for 1997, 1998, 1999 and 2000. Finally, we calculated the average lobbying expenditure over this four year period by 3-digit ISIC industry and by country. Trade related FARA contributions by Latin American exporters reached 120 million dollars during this period when both firms' and governments' contributions are included.

After selecting the contributions related to trade, a series containing exporters' political contributions from private firms and Latin American governments was organized at the ISIC 3-digit level. Political organization of exporters is determined using quartile thresholds of the distribution of political contributions. After determining the exporters' political organization at the ISIC 3-digit level we replicated the value of the variable I_k^i at the HS 8-digit level.

Elasticities of Export Supply Data on elasticities of export supply was kindly provided by Marcelo Olarreaga. The elasticity data are described in Kee, Nicita and Olarreaga (2004). They estimate elasticities of export supply at the HS 6-digit and ISIC 3-digit levels for about 118 countries. They present elasticities of export supply for most Latin American countries. Dividing Latin America in regions³⁷ allow us to use the regional export weighted average of the export elasticities in a region to fill the gap for those Latin American industry codes missing in their study. In the cases a regional weighted export elasticity is not available to substitute the elasticity for a particular commodity, we use the export weighted average elasticity of Latin America instead. The elasticities of export supply at the HS 8-digit level used in this study are replications of the values obtained by Kee, Nicita and Olarreaga (2004) at the HS 6-digit level.

³⁶More details about possible endogeneity of the organization dummies are provided in the estimation techniques section.

³⁷Latin America is divided in South America, Central America and Caribbean.

Estimation Techniques The variables on the right-hand side of equations (27) and (28) may present endogeneity problems. The usual instruments applied in the literature, such as sectorial firm concentration and unionization measures, to deal with the possible endogeneity of the importers' organization dummy are not available for service sectors. The construction of these measures for service sectors (we believe) is beyond the scope of this paper. Moreover, Maggi and Goldberg (1999) and Mitra et al. (2003) do not have their results significantly affected when they assume that the domestic producers' organization dummy is exogenous. Thus, this paper assumes that importers' and exporters' political organization variables do not present endogeneity problems.

Equations (27) and (28) are estimated using a Tobit approach. The standard errors of the government's weight on social welfare (a) and the political cost parameter (γ) are calculated using the delta method.³⁸ Since the data on tariff preferences are constructed at the tariff line (HS 8-digit levels) then a serious heteroscedasticity problem due to group aggregation may occur when estimating the model at the ISIC 3-digit levels. As discussed at length in Kee, Olarreaga and Silva (2003) the method suggested by Dickens (1990) is used to control for heteroscedasticity problems.

The estimations of the elasticities of export supply presented in Kee, Nicita and Olarreaga (2004) are quite precise, and almost all of them are significant at the 1% and 5% levels. Moreover, the range of their point estimates is quite large [0.02, 302] and, although most of them are very precise, their standard errors (which are obtained by bootstrapping) can vary considerably [0, 1340]. The only method available to correct any remaining errors-in-variable problem when appropriate instruments are not present would be to apply the procedure described in Gawande (1997). Applying his method, however, would decrease the sample size dramatically. Moreover, it is not clear whether the benefits in this case are superior to the costs given that we assume that the political organization variables are exogenous.

³⁸This paper uses the delta method to obtain the standard errors of structural parameters of the model since the dependent variable (tariff preferences) is censored and the use of Non-linear Least square would prevent us from measuring important effects of the explanatory variables (organization dummies and elasticities) on tariff preferences. Moreover, least square estimates in the case of censored data is likely to be inconsistent. See Wooldridge (2002, chapter 16) for more on this.

Thus, the results presented in the empirical section do not correct for errors-in-variables in the elasticity data.

4 Results

Table A0 shows the summary statistics for the variables used in our empirical analysis. The sample mean of the U.S. MFN tariffs is 6.7%. The sample mean of the U.S. preferential tariffs applied to Latin American exports is 3.8%. In the case of the elasticities of export supply, the sample mean is 12.248. The main empirical results of the paper are presented in tables 1-6. The results shown in these tables use data organized at the HS 8-digits level and under the assumption that the errors are spherical. We leave the discussion of the presence of non-spherical errors to the next section. The total number of observations at the HS 8-digit level is 14,372.

Tables 1 and 2 present the results of Tobit regressions for equations (27) and (28), respectively, using the first quartile of the product of elasticities of export supply and tariff preferences to divide the sample. As explained in detail, the observations for which the product of the elasticity of export supply and tariff preference is greater than the value of the first quartile threshold should have tariff preferences predicted by equation (27). Otherwise, they should have tariff preferences predicted by equation (28). Similarly, tables 3 and 4 and tables 5 and 6 show the results of Tobit regressions for equations (27) and (28) using the second and third quartiles of the product of elasticities of export supply and tariff preferences to divide the sample, respectively. The results shown in tables 3-6 are robustness checks to the results presented in tables 1 and 2.

The coefficients' estimates shown in table 1 confirm the basic predictions of the theoretical model since coefficient ϕ_0 is positive and coefficients ϕ_1 and ϕ_2 are negative. All estimates are significant at the 1% level and they are robust to the choice of thresholds which determines the value of the political organization dummies of exporters and importers. Since coefficients ϕ_1 and ϕ_2 have the predicted signs and are all significant, we then conclude that domestic

importers and foreign exporters' lobbying have a significant impact on the determination of the U.S. tariff preferences granted to Latin America.³⁹

Moreover, the estimation of the coefficients ϕ_1 and ϕ_2 in equation (27) provides an estimate of the U.S. government's weight on social welfare (a) and the political cost parameter (γ). Using the results provided in table 1, the estimates of the structural parameter a range from 1 to 29. The latter is by far the greatest value obtained for the structural parameter a in our regressions. By calculating the standard errors of the parameter a through the delta method, we can verify that all the estimates of this parameter are significant at the 1% level. The estimates of the parameter γ also have the correct sign, and we can verify that they are significant at the 1% level by using the Delta Method to calculate their standard errors. The estimates vary considerably depending on the thresholds used to determine the organization dummies.⁴⁰

The results shown in table 1 indicate that parameter a is greater than one. As explained in section 3 this is problematic since estimates of the parameter a greater than one require that estimates of the parameter γ be lower than one to yield a perfect match between the estimations and the theoretical model. We interpret these findings as follows. The estimates of the coefficients ϕ_0 , ϕ_1 , and ϕ_2 confirm that the model is successful in explaining the cross section variation of the data. The parameters a and γ are constant across countries and products. They are then related to the level of trade preferences. The literature on the political economy of trade presents many similar problems in the estimation of structural parameters.⁴¹ Thus, this paper shares some limitations with the literature.

Table 2 provides estimates of the coefficients in equation (28). Similarly to table 1, the estimates of the coefficient θ_1 have the predicted sign and are significant at the 1% level. The estimates are also robust to different measures of the importers' political organization

³⁹Excluding export weighted average elasticities does not affect the results shown in this section. For the sake of brevity these results are not shown here. These results, however, are available upon request.

⁴⁰We follow Maggi and Goldberg (1999) and Gawande, Krishna and Robbins (2004) in providing results of the regressions of equation (26) without a constant. Our model does not require a constant and so we decided to continue using the theory. The results using constant, however, are similar to the ones presented here and are available upon request.

⁴¹See the discussion in Gawande and Bandyopadhyay (2000) and Gawande, Krishna and Robbins (2004).

dummy. These results shown in table 1 confirm the findings that the political organization of domestic importers is a fundamental determinant of the U.S. tariff preferences granted to Latin America. Moreover, the findings shown in tables 1 and 2 indicate that the share of rents that accrue to importers and exporters really depends upon the relation between the elasticity of export supply and the tariff preference. In particular, U.S. importers tend to capture most of the rents generated by tariff preferences granted to Latin America since the model assumes that they enjoy a high degree of market power when facing Latin American exporters.

Tables 3 and 4, and tables 5 and 6 provide additional robustness checks to the results shown in tables 1 and 2 by varying the thresholds which determine the political organization of importers and exporters. The estimates of coefficients ϕ_0 , ϕ_1 and ϕ_2 present the expected sign and are significant at the 1% level, with the exception of the coefficient ϕ_1 in the last column of table 5. Similarly, the coefficient θ_1 has the expected sign and is always significant, a results which highlights once again the importance of domestic importers' lobbying in the determination of tariff preferences. Moreover, tables 3 and 5 provide estimates of the structural parameters a and γ . In most cases, the estimates of the parameter a are significant and lower than five. In all cases, the estimates of γ have the correct sign and are significant. These results confirm that importers' and exporters' lobbying is a significant determinant of the U.S. tariff preferences granted to Latin America.

The economic importance of importers' and exporters' lobbying can also be investigated using our estimates. As an example we use the estimation results provided in the first column of table 1. The estimates of the coefficients ϕ_1 and ϕ_2 , in conjunction with the sample mean of the elasticity of export supply, can be used to calculate the average effect of exporters' and importers' political organization on the tariff preferences granted to Latin America.⁴² In this case, the joint political organization of importers and exporters decreases on average

⁴²The important impact on preferences should not only be measured when preferences are positive, but also when they are negative. In this sense, the impact of political organization does not need to be scaled down by the probability of the tariff preference being positive. Tariff preferences can be negative by the presence of rules of origin and non-tariff barriers as discussed in Kee, Olarreaga and Silva (2003).

the U.S. tariffs applied to Latin American goods by 25 percent. Using the results provided in the first column of table 5, we find that the joint political organization of importers and exporters decreases the U.S. tariffs applied to Latin America by 18 percent. Clearly, lobbying is a relevant force in the trade relations between the U.S. and Latin America.⁴³

Additional Robustness Results The results shown in the last section use data on agriculture and manufacturing to check whether lobbying by U.S. importers and Latin American exporters increases tariff preferences. Most of the literature, however, does not use data on agriculture. Therefore, an interesting exercise is to test whether the results discussed above are sensitive to the exclusion of data on agricultural goods. The methodology employed to obtain the results in table 7 is analogous to that used in table 1. The only difference is that in table 7 the agricultural sector is excluded.⁴⁴ The results presented in this table are similar to the ones discussed above. Again, the coefficients of interest have the predicted sign and are significant at the 1% level. Moreover, the structural parameters a and γ are significant at the 1% level and have similar values to the ones shown in table 1. Thus, the inclusion of agricultural goods is not essential to the results obtained in this paper.

Mitra, Thomakos and Ulubasoglu (2003) suggest that more disaggregated elasticities should have higher values, and this assertion could imply lower estimates of the parameter a . Since we are first to use elasticities data organized at the HS 6-digit level, this might be behind our results. In table 8 we adopt the same methodology used in table 1, but employ data organized at the ISIC 3-digit level. The method discussed by Dickens (1990) is used to control for heteroscedasticity problems. Most of the coefficients of interest have the predicted sign and are also significant. Again, the estimates of the structural parameter are comparable, in most cases, to the ones shown in the previous section. Thus, the level of aggregation of the data and the inclusion of agricultural goods seem not to affect substantially

⁴³The mean MFN tariff in the sample used to construct table 1 is 6.3 percent. In the case of table 3 it is 9.7 percent.

⁴⁴Similar results are obtained using similar methodology to the results shown on tables 3 and 5.

our results.

Tables 1-8 show the result of regressions whose variables are strictly linked to the theoretical model discussed in section 3. Nevertheless, it is also important to check whether additional variables could change the estimates of the coefficients predicted by the theory, or whether an extended specification could outperform the predications of the theoretical model. Tables 9 and 10 present the results of regressions for extended versions of equations (27) and (28), respectively, using the first quartile of the product of elasticities of export supply and tariff preferences to divide the sample. In both tables the value of Latin American exports to the world by country and by product is included to control for U.S. producers' counter-lobbying triggered by preferential tariffs. In a sense, we are testing whether preferential imports affect or not the U.S. domestic prices. In table 10 we also include the exporters' political organization dummy to check whether Latin American exporters have any influence over the choice of tariff preferences even for observations that should satisfy equation (28). Country and program dummies are also used in the regressions shown in tables 9 and 10.⁴⁵

The results shown in table 9 confirm that even in the presence of control variables the coefficient ϕ_0 is positive and the coefficients ϕ_1 and ϕ_2 are negative. Moreover, the estimates of the coefficients ϕ_0 , ϕ_1 and ϕ_2 remain significant at the 1% level. Table 10 confirms that the coefficient θ_1 remains positive and is statistically significant even in the presence of different control variables. These findings provide evidence that the estimates discussed in tables 1-8 are not sensitive to missing variables and that joint lobbying by importers and exporters is an important force in the determination of tariff preferences granted by the U.S. to Latin American countries.

The coefficients of the control variables shown in tables 9 and 10 have the sign predicted by economic intuition in most cases. However, they are not statistically significant in many occasions. Table 9 indicates that the value of Latin American exports indeed tends to decrease tariff preferences, but the effects of Latin American exports to the world may not be

⁴⁵A Latin American country can belong to only one of the following programs: Generalized system of preferences (GSP), Caribbean Basin Initiative (CBI), Andean Act Regime, and North American Free Trade Area (NAFTA).

statistically significant.⁴⁶ Table 10 confirms that foreign exporters' lobbying efforts increase on average the tariff preferences. However, the effect of lobbying by foreign exporters on tariff preferences is not significant in any of the results shown in table 10. Thus, foreign exporters' lobbying efforts do not significantly affect tariff preferences for observations that should satisfy equation (28).

Our last set of results compares the extended specifications shown in tables 9 and 10 with the parsimonious model described in the first column of tables 1 and 2, respectively. Pairwise likelihood ratio tests are used to determine whether an extended specification outperforms the model implied by the theory. The extended specification described in column 1 of table 9 does not outperform the parsimonious prediction described in equation (27). Thus, the effect of Latin American exports to the world does not seem to be so important in determining tariff preferences. However, the specifications described in columns 2 and 3 of table 9 do outperform the tariff preferences described in equation (27). In fact, the specification which includes country and program dummies is preferred to all others. Similar phenomenon occurs when we compare the specifications of table 10 with the tariff preferences predicted by equation (28). Hence, country and program dummies have a significant influence over tariff preferences granted by the U.S. to Latin American countries.⁴⁷ The use of different thresholds to determine political organization and to divide the sample does not change the conclusions discussed above. These results are available upon request.

The results shown in column 3 of table 9 can be used to calculate the predicted share of the rents generated by tariff preferences that is captured by U.S. importers (ρ_k^j) according to equation (10). We calculated the parameter ρ_k^j at the HS 8-digit level using the fitted values of the regression shown in column 3 of table 9. The results shown on tables 11 and 12 are sample means of the parameter ρ_k^j calculated at the HS 8-digit level. Table 11 shows that the

⁴⁶Note that the dependent variable in table (9) is $\frac{t_k}{1+t_k} - \frac{\alpha_k^j}{1+\alpha_k^j}$. Thus, a positive coefficient for imports indicates that the higher the imports, the lower the tariff preference.

⁴⁷This result is not surprising. For instance, the U.S. grants general tariff preferences to Colombia as part of its plan to reduce the production of drugs in that country. Similarly, tariff preferences granted to a caribbean country might also affect tariff preferences granted to other countries in that region. Thus, country and program dummies are relevant explanations for tariff preferences.

ISIC 3-digit industries displaying the highest shares of the rents captured by U.S. importers are printing, publishing and allied products (ISIC 342), other non-methalic mineral products (ISIC 369), and paper products (ISIC 341), all with shares greater than 95 percent. Similarly, table 12 provides the sample mean by country of the share of the rents captured by U.S. importers. In this case, U.S. importers capture the highest shares of the rents generated by tariff preferences when facing exporters from Chile, Bermuda and Costa Rica. It is clear that whether we look at product or country averages, U.S. importers capture a very significant share of the rents generated by tariff preferences.

5 Conclusion

This paper adapts the flexible framework provided by Grossman and Helpman (1994) to examine the pattern of tariff preferences granted by politicians in the presence of domestic importers' and foreign exporters' lobbying. The theoretical model assumes that domestic importers enjoy a high degree of market power when facing foreign exporters. The predictions of the model indicate that tariff preferences granted to a commodity k originating in country i depend upon the relation between the elasticity of export supply of country i in good k and the inverse of the equilibrium tariff preference. If the elasticity of export supply is greater than the inverse of the equilibrium tariff preference, then importers and exporters' lobbying increases the tariff preference. Otherwise, only importers' lobbying is capable of having some influence over the decision on tariff preferences.

We tested the predictions of the model on Latin American exports to the U.S.. The estimation of both equations indicates that Latin American exporters and U.S. importers' lobbying efforts are key determinants of the U.S. tariff preferences granted to Latin American countries. Furthermore, the empirical results also show that the U.S. importers tend to capture the bulk of the rents generated by tariff preferences granted by the U.S. to Latin American countries. Thus, our findings imply that politicians should be cautious when designing preferential schemes aiming at benefiting developing countries. The empirical

results we obtained seem to be robust to changes in the definition of political organization, to variations in the level of disaggregation of the data, and to the presence of agricultural goods in the sample.

What have we learnt from the analysis? First, joint lobbying by exporters and importers is responsible for significant increases in the tariff preferences granted by the U.S. to Latin America. However, importers are likely to be the engine behind the tariff preferences granted by the U.S. to Latin America since they capture the bulk of the rents generated by the tariff preferences. Second, developing countries that choose to support the formation of exporters' lobbies should do so if the sectors in question are characterized by relatively high export elasticities. In any event, our results indicate that the presence of politically organized importers is an essential feature behind the growth of trade preferences granted to developing countries.

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Appendix 1

According to conditions (12)-(14), the interior solution $0 < t_k^j < t_k$ implies that $\lambda_k^j = \frac{\partial V}{\partial t_k^j} = 0$. Furthermore, equation (10) indicates that $\rho_k^j = \frac{1+\alpha_k^j}{\alpha_k^j(1+\epsilon_k^j)}$ so that $\frac{\partial \rho_k^j}{\partial t_k^j} = \frac{1}{[\alpha_k^j]^2(1+\epsilon_k^j)}$, where the elasticity of supply of all partner countries is assumed to be constant. Note that the world price p_k^w multiplies all conditions and, therefore, does not affect the equilibrium. Simplifications allow conditions (15a)-(15c) to be written as follows:

$$0 = -(1+a) \frac{\epsilon_k^j}{1+\epsilon_k^j} I_k^{ej} m_k^j - (I_k^i + a) \frac{1}{1+\epsilon_k^j} m_k^j + a(1+\gamma_k) \left\{ m_k^j - \alpha_k^j \frac{\partial m_k^j}{\partial t_k^j} \right\} \quad (29)$$

Further manipulations of equation (29) yield the following expression,

$$\alpha_k^j = \frac{1}{a(1+\gamma_k)} \underbrace{\left[-(1+a) \frac{\epsilon_k^j}{1+\epsilon_k^j} I_k^{ej} - (I_k^i + a) \frac{1}{1+\epsilon_k^j} + a(1+\gamma_k) \right]}_{-\beta_k^j} \frac{m_k^j}{\frac{\partial m_k^j}{\partial p_k^j} \frac{\partial p_k^j}{\partial t_k^j}} \quad (30)$$

Using the fact that $p_k^{ej} = 1 + (1 - \rho_k^j) \alpha_k^j$ then we can write that $\frac{\partial p_k^{ej}}{\partial t_k^j} = -(1 - \rho_k^j) - \frac{\partial \rho_k^j}{\partial t_k^j} \alpha_k^j$. Thus, equation (30) can be written as

$$\alpha_k^j = \beta_k^j \frac{1 + (1 - \rho_k^j) \alpha_k^j}{\epsilon_k^j \left[(1 - \rho_k^j) + \frac{\partial \rho_k^j}{\partial t_k^j} \alpha_k^j \right]} \quad (31)$$

The assumption that the elasticity of export supply is constant allows equation (31) to be written as follows:

$$\alpha_k^j = \beta_k^j \frac{[1 + (1 - \rho_k^j) \alpha_k^j] [\alpha_k^j (1 + \epsilon_k^j)]}{\epsilon_k^j [\alpha_k^j (1 + \epsilon_k^j) (1 - \rho_k^j) + 1]} \quad (32)$$

Cancelling out α_k^j in both sides of equation (32) and substituting ρ_k^j as defined in equation (10) yields

$$\frac{\alpha_k^j (1 + \epsilon_k^j) \left(\frac{\alpha_k^j \epsilon_k^j - 1}{\alpha_k^j (1 + \epsilon_k^j)} \right) + 1}{\left[\left(\frac{\alpha_k^j \epsilon_k^j - 1}{\alpha_k^j (1 + \epsilon_k^j)} \right) \alpha_k^j + 1 \right] (1 + \epsilon_k^j)} = \frac{\beta_k^j}{\epsilon_k^j} \quad (33)$$

Equation (33) can be simplified to yield equation (17):

$$\frac{\alpha_k^j}{1 + \alpha_k^j} = \frac{\beta_k^j}{\epsilon_k^j}$$

In the case $t_k^j = 0$ and $\epsilon_k^j > \frac{1}{t_k}$ then conditions (12)-(14) imply that $\frac{\partial V}{\partial t_k^j} \leq 0$. Thus, we can obtain that

$$\frac{t_k}{1 + t_k} \leq \frac{\beta_k^j}{\epsilon_k^j}$$

Finally, the last two equations yield expression (19).

Table A0: Descriptive

<i>Variables</i>	<i>Sample Means (Standard Deviations)</i>
# of Observations	14,372
# of Countries	33
Statistics Preferential Tariff	0.038 (0.071)
MFN Tariff	0.067 (0.077)
Elasticity of Exp. Supply	12.248 (25.479)

Table 1: *Estimating Tariff Preferences - Equation (27) - First Quartile of $\alpha_k^j \epsilon_k^j$*

	Org. Dummies	Org. Dummies	Org. Dummies
	First Quartile	Second Quartile	Third Quartile
ϕ_0	0.21** (0.01)	0.05** (0.003)	0.01** (0.003)
ϕ_1	-0.01** (0.001)	-0.005** (0.001)	-0.006** (0.001)
ϕ_2	-0.21** (0.01)	-0.05** (0.003)	-0.01** (0.002)
a	29.44** (3.54)	9.08** (1.67)	1.75** (0.65)
γ	3.74** (0.13)	19.22** (1.44)	101.03** (29.66)
# Obs.	10,779	10,779	10,779
L	4,725.89	4,273.87	4,171.42

Table 2: *Estimating Tariff Preferences - Equation (28)⁴⁸ - First Quartile of $\alpha_k^j \epsilon_k^j$*

	Org. Dummy	Org. Dummy	Org. Dummy
	First Quartile	Second Quartile	Third Quartile
θ_0	-0.004** (0.0002)	-0.003** (0.0001)	-0.003** (0.0001)
θ_1	0.001** (0.0002)	0.001** (0.0002)	0.002** (0.0002)
# Obs.	3,593	3,593	3,593
L	2,900.58	2,890.74	2,911.72

⁴⁸ Standard errors shown in parenthesis. Superscript "***" means that the coefficient is significant at the 1% level.

Table 3: *Estimating Tariff Preferences - Equation (27) - Second Quartile of $\alpha_k^j \epsilon_k^j$*

	Org. Dummies First Quartile	Org. Dummies Second Quartile	Org. Dummies Third Quartile
ϕ_0	0.26** (0.007)	0.08** (0.01)	0.01** (0.004)
ϕ_1	-0.07** (0.006)	-0.04** (0.006)	-0.01** (0.007)
ϕ_2	-0.25** (0.01)	-0.08** (0.01)	-0.02** (0.007)
a	3.69** (0.45)	1.88** (0.43)	2.39** (2.34)
γ	3.02** (0.16)	11.85** (1.29)	2.39** (13.58)
# Obs.	7,187	7,187	7,187
L	3,385.71	2,964.43	2,812.30

Table 4: *Estimating Tariff Preferences - Equation (28)⁴⁹ - Second Quartile of $\alpha_k^j \epsilon_k^j$*

	Org. Dummy First Quartile	Org. Dummy Second Quartile	Org. Dummy Third Quartile
θ_0	-0.004** (0.0005)	-0.002** (0.0003)	-0.001** (0.0003)
θ_1	0.006** (0.0006)	0.005** (0.0005)	0.007** (0.0007)
# Obs.	7,185	7,185	7,185
L	9,064.69	9,064.19	9,062.46

⁴⁹ Standard errors shown in parenthesis. Superscript "***" means that the coefficient is significant at the 1% level.

Table 5: *Estimating Tariff Preferences - Equation (27)⁵⁰ - Third Quartile of $\alpha_k^j \epsilon_k^j$*

	Org. Dummies	Org. Dummies	Org. Dummies
	First Quartile	Second Quartile	Third Quartile
ϕ_0	0.29** (0.01)	0.13** (0.01)	0.06** (0.01)
ϕ_1	-0.33** (0.03)	-0.14** (0.02)	-0.01 (0.03)
ϕ_2	-0.13** (0.03)	-0.09** (0.03)	-0.09** (0.02)
a	0.40** (0.11)	0.64** (0.30)	8.28 (24.08)
γ	6.62** (1.61)	9.76** (3.10)	9.97** (3.19)
# Obs.	3,592	3,592	3,592
L	1,771.03	1,538.34	1,441.25

Table 6: *Estimating Tariff Preferences - Equation (28) - Third Quartile of $\alpha_k^j \epsilon_k^j$*

	Org. Dummy	Org. Dummy	Org. Dummy
	First Quartile	Second Quartile	Third Quartile
θ_0	0.005** (0.0006)	0.009** (0.0005)	0.01** (0.0004)
θ_1	0.009** (0.0008)	0.006** (0.0007)	0.005** (0.0008)
# Obs.	10,780	10,780	10,780
L	13,598.92	13,598.92	13,598.92

⁵⁰ Standard errors shown in parenthesis. Superscript "***" means that the coefficient is significant at the 1% level.

Table 7: *Estimating Tariff Preferences (No Agricultural Sectors) - Equation (27)*⁵¹ - First Quartile of $\alpha_k^j \epsilon_k^j$

	Org. Dummies First Quartile	Org. Dummies Second Quartile	Org. Dummies Third Quartile
ϕ_0	0.23** (0.006)	0.05** (0.003)	0.01** (0.003)
ϕ_1	-0.007** (0.0008)	-0.005** (0.0009)	-0.004** (0.001)
ϕ_2	-0.23** (0.006)	-0.05** (0.003)	-0.01** (0.003)
a	32.68** (3.96)	9.55** (1.82)	2.48** (0.98)
γ	3.25** (0.11)	18.10** (1.31)	88.30** (23.37)
# Obs.	9,858	9,858	9,858
L	4,824.88	4,297.91	4,187.84

⁵¹ Standard errors shown in parenthesis. Superscript "***" means that the coefficient is significant at the 1% level.

Table 8: *Estimating Tariff Preferences (ISIC3) - Equation (27)*⁵² - First Quartile of $\alpha_k^j \epsilon_k^j$

	Org. Dummies First Quartile	Org. Dummies Second Quartile	Org. Dummies Third Quartile
ϕ_0	0.07** (0.008)	0.04** (0.004)	0.03** (0.004)
ϕ_1	-0.01** (0.004)	-0.002 (0.004)	-0.005 (0.004)
ϕ_2	-0.05** (0.009)	-0.03** (0.006)	-0.04** (0.006)
a	4.02** (1.88)	14.29** (27.31)	-6.85 (5.56)
γ	16.91** (3.12)	31.37** (6.58)	26.16** (4.18)
# Obs.	604	604	604
L	1,216.45	1,013.57	1,199.92

⁵²Standard errors shown in parenthesis. Superscript "***" means that the coefficient is significant at the 1% level.

Table 9: *Estimating Tariff Preferences - Equation (27)*⁵³ - First Quartile of $\alpha_k^j \epsilon_k^j$

	Org. Dummies	Org. Dummies	Org. Dummies
	First Quartile	First Quartile	First Quartile
ϕ_0	0.21** (0.005)	0.40** (0.007)	0.42** (0.008)
ϕ_1	-0.007** (0.001)	-0.003** (0.001)	-0.002** (0.001)
ϕ_2	-0.21** (0.006)	-0.40** (0.007)	-0.42** (0.008)
Imports (m_k^{jw})	-0.04 (0.01)	0.02** (0.006)	0.02** (0.006)
Constant	N.A.	-0.02** (0.001)	-0.03** (.001)
Country and Program Dum.	No	No	Yes
# Obs.	10,779	10,779	10,779
L	4,726.05	5,442.51	5,690.78

⁵³ Standard errors shown in parenthesis. Superscript "***" means that the coefficient is significant at the 1% level. The data on imports was divided by one million.

Table 10: *Estimating Tariff Preferences - Equation (28)*⁵⁴ - First Quartile of $\alpha_k^j \epsilon_k^j$

	Org. Dummies	Org. Dummies	Org. Dummies
	First Quartile	First Quartile	First Quartile
θ_0	-0.004** (0.0007)	-0.004** (0.0006)	-0.002* (0.0008)
θ_1	0.001** (0.0002)	0.001** (0.0001)	0.001** (0.0001)
I_k^{ei}	0.0004 (0.0006)	0.0004 (0.0006)	0.0005 (0.0006)
Imports (m_k^{jw})	N.A.	0.003** (0.001)	0.003* (0.005)
Elasticity (ϵ_k^j)	N.A.	-0.004** (0.00005)	-0.004** (0.0006)
Country and Program Dum.	No	No	Yes
# Obs.	3,593	3,593	3,593
L	2,900.77	2,946.5	3,020.13

⁵⁴Standard errors shown in parenthesis. Superscripts "***" and "**" mean that the coefficient is significant at the 1% and 10% levels, respectively. The data on imports was divided by one million. The data on elasticities was divided by one hundred.

Table 11: Share of Rents Captured by Importers (Product)

Table 12: Share of Rents Captured by Importers (Country)