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ORIGINAL ARTICLE

Political–Economic Determinants of External Import Protection under a Preferential Trade Agreement

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Abstract

The stalling of WTO multilateralism and the proliferation of preferential trade agreements in recent decades have drawn substantial attention to the impacts of preferential liberalization. A critical question is how they affect the trade barriers imposed against outsiders. I examine the relationship between preferential trade liberalization and protection against non-member countries by testing the predictions of a political–economy model based on the previous literature. Focusing on a specific model allows me to uncover the *mechanisms* via which preferential liberalization affects external import protection, whereas most of the existing literature has focused on establishing the *sign* of the effect only. Furthermore, I focus on not only tariffs, as most studies do, but also on the temporary trade barriers of antidumping and safeguards. I test the predictions for Latin America and obtain results that provide solid evidence supporting two mechanisms from the theory, which lead to lower protection against non-members of a preferential trade agreement. First, a lower preferential import protection level means that the increase in preferential imports from increasing the external tariff creates a smaller increase in tariff revenue. Second, as preferential import protection is cut, there is a decrease in the markup and sales of domestic firms, and thus raising the external import protection generates less profit. Moreover, this second effect is present when the political motivation of the government is sufficiently strong.

JEL: F13

Keywords: preferential trade agreements; multilateral liberalization; tariffs; antidumping; safeguards; temporary trade barriers; building block

1. Introduction

In recent decades, a notorious and substantial slowdown of World Trade Organization (WTO) multilateralism has taken place. With the growing disillusionment with multilateralism leading to the pursuit of alternative strategies, its decay has been accompanied by a flourishing of preferential trade agreements (PTAs). Each WTO member went from having an average of about five PTA partners at the end of the Uruguay Round (the last round of multilateral negotiations), to around 20 at present.[1] Becoming a key instrument of international economic policy, PTAs have thus attracted significant attention from both researchers and policymakers alike. A naturally important question is whether they are good or bad for world welfare. The answer crucially (though non-exclusively) depends on how they affect the trade barriers imposed against non-member countries. With their rapid spread, it thus became increasingly important to discern

web: https://sites.google.com/site/patriciatovarrod/. I thank two anonymous referees for very helpful comments and suggestions.

[1]Calculations based on the dataset constructed by Scott Baier and Jeffrey Bergstrand, available at https://www3.nd.edu/~jbergstr/.

whether PTAs would be a positive force ('building block') or a negative force ('stumbling block') for the attainment of global free trade.

There is a notable body of literature addressing this question from a theoretical perspective, with the outcome that different effects may be at play in alternative models, and therefore no consensus has arisen on whether preferential liberalization helps or hinders multilateral liberalization. Empirically, the literature is not as developed and it has mainly tried to find out whether tariffs against non-members of the PTAs have increased or decreased with preferential liberalization, without (in most cases) seeking to establish the *mechanisms* via which those effects occur.[2] Given that the effects of a PTA on the tariffs against non-member countries have consequences for the welfare impact of the agreement, it is also critical to uncover the mechanisms that are behind those effects, in order to use suitable policies that could shape them, as well as to correctly predict and assess the more specific microeconomic impacts of PTAs. In this paper, I aim to contribute to answering that question by testing the predictions of a specific model that incorporates political–economy motives for trade protection. The model is based on Krishna (1998) and was importantly modified by Ornelas (2005a), who endogenizes external tariffs.

The model predicts different effects that shape the relationship between preferential liberalization and trade protection against non-member countries. In Ornelas (2005a), they are classified as a terms-of-trade effect, a tariff revenue effect, a strategic effect, and a distributive effect. The effects can be described as follows. First, when the preferential tariff falls, imports increase via higher imports from the PTA partner, and hence the terms of trade deterioration from increasing the external tariff becomes more prominent, creating an incentive to reduce the external tariff. Second, a lower preferential tariff translates into a smaller increase in tariff revenue obtained from the increase in preferential imports due to increasing the external tariff, which in turn pushes toward a lower external tariff. Third, as the preferential tariff decreases, the markup and the sales of domestic firms fall, with the implication that the increase in both the domestic firms' market share and the domestic price due to an increase in the external tariff generate less profit. Hence, the external tariff will fall. Moreover, this last mechanism becomes stronger the more politically motivated are the governments.

In this paper, I test those predictions using a sample of eight Latin American countries during the 1990s, a period characterized by the implementation of a substantial number of PTAs. Another important feature of the sample countries for the purposes of this study is that, although in principle their external tariffs could rise or fall following a PTA because their applied MFN tariffs are considerably below their WTO ceilings for most products, beginning with Estevadeordal et al. (2008), there has been strong evidence of a building block effect of preferential liberalization for Latin America's free trade areas in the 1990s, consistent with Ornelas' (2005a) model's predictions that external tariffs will fall with a free trade area.[3] This makes Latin America a natural environment to test those predictions and examine the political–economy *channels* behind the effect.[4] I also expand on the existing literature by considering import protection measures that include not only applied import tariffs, but also temporary trade barrier (TTB) policies, while most studies focus only on tariffs. In that regard, an additional suitable characteristic of the Latin American countries is that they also began a more regular use of the TTB policies of antidumping and safeguards in the 1990s, coinciding with the preferential liberalization period.

The empirical findings solidly support two of the three theoretical mechanisms, and there is evidence of a building block from preferential liberalization. First, a larger preferential tariff cut leads to a larger fall in the tariff against non-member countries, providing evidence in support of

[2]I discuss the relevant literature below.

[3]This building block finding for the region during the 1990s was then confirmed by Crivelli (2016) and Tovar (2019) under different empirical specifications.

[4]I thank an anonymous referee for pointing this out.

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the tariff revenue effect. Second, the more profits decrease, the more the external tariff diminishes following a preferential tariff cut, which supports the strategic and distributive effects. Furthermore, this second mechanism is present when political–economy forces are sufficiently strong. Importantly, those results also hold strongly when I extend the measures of import protection to include the TTB policies of antidumping and safeguards. Conversely, there is no consistent evidence supporting the terms of trade effect. In addition, I find that the tariff revenue mechanism is predominant during the first part of the sample period (1990–1994), whereas the strategic and distributive channel prevails during the second subperiod (1995–1999), which is when the two South American customs unions were in force. The results are economically significant as well. First, considering only tariffs, a one standard deviation increase in each of the variables associated to the theoretical effects generates an overall 1.47 percentage point reduction in the MFN tariff, which is 10 percent of the sample's median MFN tariff. The results using instrumental variables lead to a decrease of 3.41 percentage points in the MFN tariff, or 23.2 percent of the median MFN tariff in the sample, which is substantial. Furthermore, the building block effect is also present and becomes a bit smaller when the import protection measures include TTBs.

One body of literature related to this paper is composed of the theoretical studies on the relationship between preferential liberalization and protection against PTA outsiders (see the surveys by Panagariya, 2000 and Baldwin and Venables, 1995). Another is given by the empirical studies that examine such relationship. Freund and Ornelas (2010) and Limão (2016) provide recent surveys of this literature. Studies that find a stumbling block effect include Limão (2006) for the US, and Karacaovali and Limão (2008) for the EU. Papers finding a building block effect include Estevadeordal et al. (2008) for ten Latin American countries, and Calvo-Pardo et al. (2011) for ASEAN. Tovar (2012) finds evidence of an initial stumbling block followed by a building block effect for the case of the Central America Free Trade Agreement (CAFTA-DR).[5] These studies analyzed whether tariffs against non-members increase or decrease due to preferential liberalization, finding very different results, and without (mostly) exploring so far the *channels* that lead to such changes in external tariffs. I am able to do that by testing predictions from a specific model in a way that is directly linked to the theory.

A few studies do test predictions based on a theoretical model. Firstly, although not explicitly focusing on the impact of preferential *tariff* (or other import protection measures) reductions but on preferential imports, Bohara et al. (2004) studied the case of Argentina and tested a hypothesis guided by Richardson's (1993) model, finding evidence of a decrease in external tariffs following an increase in preferential imports (and trade diversion) from Brazil with Mercosur.

Secondly, two studies that use Limão's (2006) methodology are Ketterer et al. (2014) and Ketterer et al. (2015). The first study finds that preferential liberalization implemented under CUSFTA generated a building block effect for Canada's multilateral tariff liberalization in the Uruguay Round. Although the authors argue that their results are in line with the 'rent destruction effect' from Ornelas (2005b), their findings are also consistent with other possible theoretical building block mechanisms. In that regard, their study does not use particular theory-based variables that would allow to determine which *mechanisms* are driving the results. They use as the relevant explanatory variable only an indicator for whether a product was imported preferentially from the US, not being clear what is the particular channel that is behind the effect. The second study by the same authors examines the impact of the unilateral Generalized System of Preferences (GSP) on Japan's multilateral tariff liberalization during the Uruguay Round, finding a stumbling block effect. They use a similar methodology and thus the same caveat applies. And it also applies to Limão (2006), who studied how preferential liberalization undertaken by the US in trade agreements involving cooperation in non-trade issues affects its multilateral liberalization under the Uruguay Round. His results provide evidence of a stumbling block effect.[6]

[5]These lists are not exhaustive, and I mention some other studies on these topics below.

[6]Also, Karacaovali and Limão (2008) use a similar methodology and find equivalent results for the EU.

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Thirdly, Mai and Stoyanov (2015) used a model that includes some channels from the literature and also find a building block for the case of CUSFTA. A limitation of their study (recognized by them) is that they do not instrument for the preferential tariff changes; therefore, we cannot give a causal interpretation to the results. An additional distinction from this paper is that they do not aim to examine the different effects predicted by Ornelas (2005a). They find evidence of tariff complementarity, which from their model is given only by the change in the preferential tariff interacted with the share of the partner in the home country's market for the good, as well as partial evidence of tariff cooperation (larger tariff cuts in industries creating the least revenue to US exporters). Thus, the channels identified here are also different.

Lastly, Tovar (2019) tests the predictions of Bagwell and Staiger's (1999) theory for Latin America and finds support for tariff complementarity and also evidence of the 'punishment effect' and the 'tariff discrimination effect' predicted by the model. An important difference with this study is that Bagwell and Staiger's (1999) model does not incorporate political–economy factors, which have been long recognized as important by the literature on trade policy, and which I find to be an important type of mechanism here as well.[7]

Another feature of studies that examine the link between preferential and multilateral trade liberalization, including all the papers described thus far with the exception of Tovar (2019), is that they mostly focus on tariffs only. The need to analyze how preferential liberalization affects liberalization of non-tariff barriers against outsiders has been emphasized by Limão (2016) and is very relevant given that the share of non-tariff barriers in import protection is rising.[8] This paper contributes to that goal by expanding the import protection measures beyond tariffs to include the TTB policies of antidumping and safeguards.

This study is one of only a small number of papers that analyze the effect of PTAs on TTBs. Blonigen (2005), Prusa and Teh (2010), and Tabakis and Zanardi (2019) focus on antidumping. The first considers how NAFTA impacts the use of antidumping by the US. The second is a cross-country study of how PTAs affect the incidence of antidumping filings, and their estimates indicate that they fall among members of the agreement, but rise against PTA outsiders. Tabakis and Zanardi (2019) study the relationship between PTAs and antidumping applied to PTA outsiders for a group of 15 countries. They empirically contrast some predictions from Tabakis (2010, 2015) and find a building block effect for the case of free trade areas. Their level of aggregation (country–year) is however much higher than this paper's and they do not use the levels of duties but counts of measures, which has important limitations.[9] Moreover, all these studies do not include tariffs (or safeguards). Bown and Tovar (2016) do focus on tariffs, antidumping, and safeguards for Argentina and Brazil in the case of Mercosur. They show that an exclusive consideration of tariffs may result in a mischaracterization of the effects of preferential trade liberalization on multilateral liberalization. One of their results is that incorporating changes in import protection arising through TTBs leads to the vanishing of any building block effect of preferential liberalization found for the period when Mercosur was only an FTA when considering tariffs only.[10] Unlike in this paper, they do not test predictions from a theoretical model, and they used categorical variables instead of ad valorem measures of TTBs. Finally, Tovar (2019), who tests the predictions from Bagwell and Staiger (1999) for a group of countries in Latin America, also includes tariffs, antidumping, and safeguards. Nonetheless, as mentioned above, that theory does not incorporate political–economy aspects, which leaves out relevant mechanisms via which PTAs can affect multilateral liberalization.

The paper is structured in the following way. In the next section, I describe the theory from Ornelas' (2005a) model. In section 3, I present the econometric model and the predictions that I

[7]Moreover, in their model there is no domestic production of the imported good.

[8]See also Bown, Karacaovali, and Tovar (2015).

[9]For a number of limitations on using counts of measures, see Bown (2011).

[10]Bown and Tovar (2011) do not examine PTAs but find that the use of antidumping and safeguards by India offset much of the MFN tariff reductions that were undertaken with the trade liberalization reform in the 1990s.

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test. In section 4, I provide a brief description of the trade reforms and institutional aspects related to the use of antidumping and safeguards in the Latin American countries. I discuss the data that are used in section 5, and then present the empirical results in section 6 and conclude in section 7.

2. Theory

Ornelas (2005a) develops a political–economy oligopolistic model in which external tariffs fall with a free trade area, and there is overall trade creation. The model is based on Krishna (1998), with the important modification that external tariffs are endogenous.

A homogenous good is produced by firms from three countries. Countries X and Y are potential PTA partners and country Z represents the rest of the world. There are n_i firms in country i, which engage in Cournot behavior under segmented markets. The quantity sold by a firm from country i in j's market is q_j^i and the equilibrium price of the good in country j is P_j. The marginal cost of production, c, is constant, and the demand is linear: $Q_i = \alpha_i - P_i$, where $\alpha_i > c$. Government i can impose a specific tariff on imports from j, t_i^j.[11] Each government maximizes a welfare function that is given by consumer surplus, tariff revenue, and profits, which receive an extra weight of $b_i \geq 0$. Thus, for country X:

$$W_x = Q_x^2/2 + (n_y t_x^y q_x^y + n_z t_x^z q_x^z) + (1 + b_x) n_x \sum_{j=x,y,z} (P_j - c) q_j^x \tag{1}$$

The marginal effect of a change in t_x^z on W_x is:

$$\frac{dW_x}{dt_x^z} = (n_z q_x^z + n_y q_x^y + n_x q_x^x)\left(-\frac{dP_x}{dt_x^z}\right) + \left[n_y t_x^y \frac{dq_x^y}{dt_x^z} + n_z\left(q_x^z + t_x^z \frac{dq_x^z}{dt_x^z}\right)\right] + (1 + b_x) n_x \left[q_x^x \frac{dP_x}{dt_x^z} + (P_x - c)\frac{dq_x^x}{dt_x^z}\right]$$

or:

$$\frac{dW_x}{dt_x^z} = \left[n_z q_x^z\left(1 - \frac{dP_x}{dt_x^z}\right) - n_y q_x^y \frac{dP_x}{dt_x^z}\right] + \left[n_y t_x^y \frac{dq_x^y}{dt_x^z} + n_z t_x^z \frac{dq_x^z}{dt_x^z}\right] + \left[(1 + b_x)(P_x - c) n_x \frac{dq_x^x}{dt_x^z} + b_x n_x q_x^x \frac{dP_x}{dt_x^z}\right] \tag{2}$$

Now consider a PTA between X and Y. The PTA implies that $t_x^y = t_y^x = 0$, consistent with Article XXIV of the GATT.[12] All derivatives on the right-hand side of (2) are independent of t_x^y.[13] Therefore, they are unaffected by the agreement's requirement that $t_y^x = 0$. Equilibrium prices and quantities will of course be affected by t_x^y. It can be shown that $dt_x^{z*}/dt_x^y > 0$; that is, a reduction in the tariff that X applies against imports from Y leads to a reduction in the tariff that X imposes against imports from Z.[14] This complementarity between the tariffs that a country applies against imports from different trading partners can be explained by means of three effects,

[11] I maintain Ornelas' (2005a) focus on non-prohibitive tariffs.

[12] Rules of origin apply. Ornelas (2007) uses a similar model to examine the case of customs unions, although it does not incorporate political economy factors (but explains that doing so would strengthen the results). He shows that external tariffs will also fall with the customs union if the number of firms in the non-member country is sufficiently small.

[13] See Ornelas (2005a).

[14] I refer the reader to Ornelas (2005a) for the proof.

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corresponding to the three terms in square brackets in equation (2). Letting a tilde denote a variable in the presence of the PTA, to present the effects more clearly, we compare (2) with the effects of a change in the external tariff, t_x^z, on $\widetilde{W}_x$ (the government's payoff under the PTA), which is given by:

$$\frac{d\widetilde{W}_x}{dt_x^z} = \left[n_z \widetilde{q}_x^z \left(1 - \frac{dP_x}{dt_x^z} \right) - n_y \widetilde{q}_x^y \frac{dP_x}{dt_x^z} \right] + \left[n_y \widetilde{t}_x^y \frac{dq_x^y}{dt_x^z} + n_z t_x^z \frac{dq_x^z}{dt_x^z} \right] + \left[(1 + b_x)(\widetilde{P}_x - c) n_x \frac{dq_x^x}{dt_x^z} + b_x n_x \widetilde{q}_x^x \frac{dP_x}{dt_x^z} \right] \tag{2'}$$

As already mentioned, the derivatives on the right-hand side of (2) are independent of t_x^y. The three effects are hence the following. The first is that, as the tariff against Y decreases, imports $(n_z q_x^z + n_y q_x^y)$ increase via higher imports from the partner, $n_y q_x^y$ (while imports from Z, $n_z q_x^z$, fall), and thus the gain from increasing the external tariff (against Z) decreases. The reason is that, because imports from Y rise, the terms of trade deterioration with Y from increasing the external tariff becomes more prominent.[15] This effect is given by the first term in brackets in (2′). More precisely, equation (2) is the marginal effect of an increase in the external tariff on W_x, and we analyze how equation (2) varies when t_x^y varies (because the PTA will bring about a change in the preferential tariff, t_x^y). Therefore, via the first term brackets in (2'), we compare the change in the terms of trade due to the change in imports, where the increase in imports is given by the fact that the term $n_y q_x^y$ in (2′) increases when t_x^y falls.[16] This is the 'terms of trade effect' in Ornelas (2005a).

The second effect is that, because the tariff against Y is lower (or 0), the increase in tariff revenue resulting from the increase in imports from the partner from increasing the external tariff $(n_y t_x^y dq_x^y/dt_x^z)$ falls (or goes away when $t_x^y = 0$). Note that, when comparing this term, it varies only due to the change in t_x^y, since dq_x^y/dt_x^z does not change.[17] In other words, a lower level of t_x^y with the PTA will make the increase in imports from the partner brought about by an increase in the external tariff fall. This is the 'tariff revenue effect' in Ornelas (2005a).

The third effect is that, as the tariff against Y falls, an increase in the external tariff brings about a smaller increase in profit. This has two components. One is that the markup of domestic firms in X, $(P_x - c)$, decreases, and hence the increase in market share for the domestic firms due to increasing the external tariff generates less profit. This is the 'strategic effect'. The other component is that, when the tariff against Y decreases, sales by domestic firms in X, $(n_x q_x^x)$, decrease, and thus the increase in the domestic price in X from increasing the external tariff generates less profit (or less rents transferred from local consumers to local producers). This is the 'distributive effect'.

Those three effects make dW_x/dt_x^z necessarily fall due to the PTA. Because at the optimal level of t_x^{z*}, $dW_x/dt_x^z = 0$, the new value of $[dW_x/dt_x^z]^{post\ PTA}$ when evaluated at t_x^{z*} is negative, which implies that the equilibrium external tariff decreases with the PTA. Furthermore, the third effect in (2′) is scaled by b_x, the political–economy weight. Thus, the more politically biased are the PTA governments, the more their external tariffs will fall with the PTA.[18]

[15] Because imports from Z fall, the increase in the terms of trade with Z from increasing the external tariff becomes smaller.

[16] Imports from the non-member, given by the term $n_z q_x^z$, decrease, as already mentioned. The derivative $\partial P_x/\partial t_x^z$ equals $n_z/(1+n)$ and it does not change, as noted above. This is an implication of the linearity of demand. As discussed by Ornelas (2005a), his model's qualitative predictions also hold under demand functions that are more general as long as the Hahn condition holds (i.e., a firm's marginal revenue falls as the output of another firm rises). More generally, if we relax the linearity of demand assumption, all derivatives in (2) may not be constant. This paper focuses on testing the specific predictions from Ornelas's (2005a) model, and I leave it to future research to test predictions under different models.

[17] The derivative dq_x^y/dt_x^z is equal to $n_z/(1+n)$.

[18] See Ornelas (2005a) for the mathematical proof of this result.

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As a final note, on the adequacy of this type of model for Latin American and other developing countries' manufacturing industries, see Ornelas (2007). Also, Erosa and Hidalgo-Cabrillana (2008) show that under weak contracts, capital market imperfections arise, which create rents for entrepreneurs and thus, as argued by Ornelas (2007), the use of a model where there are rents is especially applicable to developing countries, where contracting environments can be relatively weak.

3. Econometric Model and Predictions

The theoretical predictions are for how changes in preferential tariffs due to a PTA lead to changes in external tariffs via various mechanisms. Therefore, in order to examine how changes in the import protection level that country j applies on its partners on good i under a PTA impact the import protection level that the same country applies on the same good toward countries that do not belong to the PTA, I estimate the following equation:

$$\begin{aligned}\Delta\tau_{ijt} = {} & \propto_j + \propto_I + \propto_t + \beta(\Delta\text{Pref}_{ijt-1}) + \gamma\Delta\text{M\_PTA}_{ijt} + \delta(\Delta\text{Pref}_{ijt-1})^{*}\Delta\text{M\_PTA}_{ijt} \\ & + \theta\Delta\Pi_{ijt} + \emptyset(\Delta\text{Pref}_{ijt-1})^{*}\Delta\Pi_{ijt} + \sigma bhi_j{}^{*}\Delta\Pi_{ijt} + \rho(\Delta\text{Pref}_{ijt-1})^{*}bhi_j{}^{*}\Delta\Pi_{ijt} + \epsilon_{ijt}\end{aligned} \tag{3}$$

where $\Delta\tau_{ijt}$ is the change in the import protection level that country j applies on good i imported from PTA non-members between years t and $t - 1$, while $\Delta\text{Pref}_{ijt-1}$ represents the lagged change in the bilateral level of import protection that country j applies good i imported from its PTA partners. To explain the inclusion of all the right-hand-side variables, I now refer to the three effects from the theoretical model.

The first effect is that, if the preferential tariff decreases, imports increase via higher imports from the partner, and hence the terms of trade loss with the partner from increasing the external tariff is higher; therefore, the external tariff will decrease. I capture this effect by including the change in preferential imports interacted with the (lagged) change in preferential import protection ($(\Delta\text{Pref}_{ijt-1})^{*}\Delta\text{M\_PTA}_{ijt}$).[19] Because a larger preferential (or external) tariff cut will be measured in this paper as a more negative $\Delta\text{Pref}_{ijt-1}$ (or $\Delta\tau_{ijt}$), according to the theory, the coefficient of this interaction, $(\Delta\text{Pref}_{ijt-1})^{*}\Delta\text{M\_PTA}_{ijt}$, should be positive.

The second effect is that, when the preferential tariff is lower, the increase in tariff revenue derived from the increase in preferential imports generated from increasing the external tariff falls, and so the external tariff will fall. This means that the coefficient of the change in the preferential import protection ($\Delta\text{Pref}_{ijt-1}$) should be positive. As captured by the third term in square brackets in equation (2'), this effect is due only to the change in t_x^y (recall that the derivatives do not change).

The third effect is given by the fact that, as the preferential tariff falls, the markup and sales of domestic firms diminish, and therefore the increase in both the domestic firm's market share and the domestic price from raising the external tariff creates less profit. This effect is expected to be stronger, or more likely to be relevant, when the government is more politically motivated. Therefore, I capture the effect by including the change in profits interacted with the change in preferential import protection ($(\Delta\text{Pref}_{ijt-1})^{*}\Delta\Pi_{ijt}$), as well as the same interaction multiplied by a dummy for a high b_j (denoted bhi_j), which is equal to 1 when the political–economy weight, b_j, belongs to the top tercile in the sample. The sum of the coefficients of both profit interactions (scaled and not scaled by b_j) is expected to be negative, since the effect should be present or larger when political–economy forces are stronger.[20] The political–economy parameters, b_j, are

[19]For robustness, I also use the change in total imports instead of the change in preferential imports, to incorporate the decrease in imports from non-members that is expected to occur.

[20]As robustness, I use a dummy for medium or high values of b_j instead of bhi_j, i.e., for the top two terciles.

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obtained using Gawande et al. (2009)'s estimates of the weight that governments give to social welfare relative to private interests, as explained in section 5. I also include each, the change in imports and the change in profits alone, as controls. There could be some unobservable industry characteristics that impact the *changes* in external import protection. An example would be political–economy factors that can affect the size of import protection changes (e.g. lobbying for import protection can take place at the industry level). I thus add an industry fixed effect, $\propto_I$.[21] I include a country fixed effect, $\propto_j$, as well, to control for country characteristics, such as economic or political factors, that could impact changes in import protection. A year fixed effect, $\propto_t$, captures the impact of broad macroeconomic shocks affecting the Latin American countries. And ϵ_{ijt} is the error term.[22]

An important difference with the majority of the literature, which has focused on MFN and preferential *tariffs* only, is that I also include in my measures of import protection the temporary trade barriers of antidumping and safeguards that country j applies.[23] This means, firstly, that τ_{ijt} in (3) will be defined as the *sum* of the (applied) *ad valorem* MFN tariff plus the *ad valorem* temporary trade barrier that country j imposes on imports of good i from countries that do not belong to its PTAs; and, secondly, that Pref_{ijt-1} in (3) will be defined as the sum of the (applied) preferential tariff plus the *ad valorem* temporary trade barrier that country j applies on imports of good i from countries that are members of its PTAs. In section 5, I explain the procedure I use to sum tariffs and temporary trade barriers.

As in related literature, there are some issues potentially affecting the econometric estimation of the link between changes in import protection against PTA members and outsiders. One is that I use a one-year lag of $\Delta\text{Pref}_{ijt-1}$ because it may be considered predetermined with respect to the MFN tariff (or TTB), and that could generate a lag in its impact (countries negotiate reductions in preferential tariffs in each trade agreement, and they are implemented according to a specified liberalization schedule).[24] Using the lagged variable also helps lower simultaneity bias.

I set the preferential tariff equal to the MFN tariff in the year before a country offers its first preference for a given product, so that the effect of the first preferential tariff cut is measured. When a country does not offer a preference in years t and $t-1$ in an industry, the change in the preferential tariff is set to zero. Moreover, when the MFN tariff is zero, the preferential tariff will also have to be zero, leading to a potential bias in the estimates. Therefore, as it is also standard in this literature, I exclude observations with a zero MFN tariff.

Additionally, given that a country may belong to various PTAs at the same time, I define the preferential tariff that country j imposes in industry i in year t as the minimum of the preferential tariffs that country j imposes in industry i in year t toward all of its different PTA partners, following Estevadeordal et al. (2008) and others.[25]

There is also potential endogeneity. First, it could be that trade liberalization across industries in the Latin American countries may have occurred in a similar manner multilaterally and under PTAs; for example, some products may be easier to liberalize. Second, there may be reverse causation from external import protection to preferential liberalization. Actually, changes in preferential tariffs are predetermined to changes in MFN tariffs (and to temporary trade barriers), given

[21]The industry fixed effects are defined at the three-digit ISIC level, but I also try using more disaggregated fixed effects, as shown later.

[22]The dummy for a high b_j is not included separately since it is perfectly collinear with the country fixed effects.

[23]An exception is Tovar (2019), as discussed earlier. Another is Bown and Tovar (2016), who focus on Mercosur. Nonetheless, with their focus on Argentina and Brazil, they are not able to use the *ad valorem* temporary trade barriers and are forced to work with categorical variables instead.

[24]I also allow for the existence of a lag in the impact of $\Delta\text{Pref}_{ijt-1}$ on the other variables that change as a result of preferential liberalization, that is, the change in imports and the change in profits.

[25]Estevadeordal et al. (2008) indicate that results are qualitatively similar if the share of preferential imports is used as a weight in the aggregation of preferential tariffs, but the previous formulation has the advantage that it avoids issues due to the endogeneity of import shares, and to missing import data.

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that tariff concessions are negotiated in the PTA and their decreases over time occur following a detailed schedule (also established under the PTA). That notwithstanding, it could be that some changes in MFN tariffs were expected when negotiating the preferences and, if so, they could have influenced those preference levels. Therefore, I use instrumental variables to deal with these issues. To instrument for a country's preferential liberalization, I resort to the preferential liberalization of the two countries in the sample most correlated with the country's own preferential liberalization.[26] Such correlations are high, and those instruments are valid provided that the aspects that influence the preferential tariffs of a country's *partners* are not the same affecting the country's *own* MFN tariffs or TTBs (Estevadeordal et al., 2008). Moreover, Tovar (2019) discusses the trade reforms in Latin America in more detail and argues that there exist differences in the patterns of trade liberalization among those countries. It also posits that the use of TTBs varies across those countries along important dimensions as well, which are economically meaningful for my analysis (including variation in the use of TTBs across years, the countries targeted, and the products affected by those TTBs).

Endogeneity may also affect the change in preferential imports and the change in profits. For each country and each of those variables, I use as instruments the corresponding variables from the two countries in the sample for which those variables are most correlated with the country's own variable and which are never its PTA partners during the sample period. I use *non*-PTA partners because the change in preferential imports and the change in profits of a country's PTA partners are affected by market conditions in each of those countries, which in turn could be affected by the preferential liberalization and the change in the aforementioned variables of the country itself. For the change in profits, I also obtained and used data from other Latin American countries for which value-added data are available (Bolivia and Honduras). I included those countries to make the selection of the countries with most correlated data to be used as instruments for the change in profits, in order to improve the correlation between the endogenous variable and its instrument.[27] I use a test to evaluate the endogeneity of the variables and also a test of overidentifying restrictions to confirm the validity of the instruments.

4. Latin America's Trade Liberalization Reforms and Temporary Trade Barriers

Subsequent to the implementation of the import substitution policies, which were characterized by protectionism, the 1980s was the period when most unilateral trade reforms were initiated in Latin America. Most of them were implemented from the mid or late 1980s until the early 1990s (Chile being an exception, with an early and abrupt process started at the end of 1973 by a military government (Sáez, 2006)). They involved decreases in tariffs, the number of tariff levels, a reduction or elimination of quantitative restrictions on imports and other non-tariff barriers, and institutional reforms. Furthermore, the 1990s was a decade in which a number of important preferential trade agreements, including NAFTA and Mercosur, were negotiated and implemented.[28]

With the exception of Argentina, whose antidumping (AD) legislation was enacted in 1972 and allowed the use of safeguards (SGs) as well (Moore, 2011), in the majority of Latin American countries, antidumping legislations were introduced in the 1980s or early 1990s,

[26]I also tried using three countries instead of two, but in that case the Hansen-J statistic indicated that the overidentifying restrictions test did not pass.

[27]For the change in preferential imports, I do not have access to the preferential tariff and preferential import data for countries outside the original sample; nonetheless, I can use the preferential tariff data for Brazil and Paraguay from Estevadeordal et al.'s (2008) dataset to calculate their preferential imports using data on imports from WITS. Thus, for the change in preferential imports, I can also use data from Brazil and Paraguay for the selection of the instruments.

[28]This section draws on Finger and Nogués (2006), who present a series of country studies for Latin America, including their trade liberalization reforms and their creation of the institutional environment for and the use of antidumping and safeguard import restrictions. The PTAs in force in the Latin American countries in the 1990s and considered in this paper are the same as those listed in Estevadeordal et al. (2008).

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overlapping with the trade reforms. The first AD investigations were typically initiated in the late 1980s or early 1990s (i.e., also during the trade liberalization phases). The sector with the largest AD use in Latin America is metals, followed by chemicals, plastics/rubbers, textiles, and machinery/electrical. These sectors are also major users of AD worldwide. The country most frequently targeted by Latin America's AD investigations is China. Other frequent targets are the European Union, the United States, and Brazil. Subsequently, in the 1990s, the legislations were reformed and also brought into consistency with GATT/WTO rules. Legislations on safeguards were usually established in the 1990s, and the first SG investigations were started later in the 1990s or, in a few cases, in the 2000s. As in other countries, AD is by far the most used TTB in Latin America and the use of SGs is much smaller. The legislation in some countries allows the freedom to apply a lesser duty (below the dumping margin), and some include a national interest clause that permits them to deny AD measures even in the presence of dumping and injury. Some preferential trade agreements have rules for the use of TTBs.[29]

5. Data

The data I employ for the estimations are for four-digit ISIC manufacturing industries in eight countries in Latin America (Argentina, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay, and Venezuela) from 1990 to 1999. I obtained data on value added and wage bill to construct the profit variable. The data on value added and wage bill are missing for Paraguay for that period, as well as for many industries in Brazil. Therefore, I do not include those two countries and the countries used are a subset of the ten countries in Estevadeordal et al.'s (2008) dataset.

Data on MFN tariffs were obtained from the World Integrated Trade Solution (WITS). Data on preferential tariffs derive from the tariff schedules of the different preferential trade agreements, which contain the timeline for tariff cuts across products, years, and countries. Simple averages of the preferential tariffs are used to aggregate the data at the four-digit ISIC level.[30]

I measure changes in import protection (in $\Delta\tau_{ijt}$ and $\Delta\text{Pref}_{ijt-1}$ in equation (3)) by including not only changes in applied MFN and preferential tariffs, but also the *ad valorem* TTBs – AD and SG policy measures – that a country imposes against the rest of the world and its PTA partners. To construct the *ad valorem* measure of a TTB, I use data at the exporter–product level. Some AD policies were imposed as specific duties; however, I have the data on the final dumping margin as well, which are measured in *ad valorem* terms.[31] The dumping margin is sometimes reported for each exporting firm in an investigated country but, in some cases, it is only reported as a *range* of values of the import restrictions facing the exporters of the good in a targeted country. Therefore, I compute two alternative variables: (i) AD_min, defined as the average of the minimum AD margins, where the average is calculated across all foreign exporting countries that are being subject to the given country's AD measure in that good; and (ii) AD_max, analogously defined as the average of the maximum AD margins across all foreign exporting countries subject to the country's AD measure in the good.[32] For robustness purposes, I will use and present results with both

[29]See Finger and Nogués (2006) for more information concerning the particular institutions, regulations, and use of antidumping and safeguard policies in each country.

[30]Thanks to Estevadeordal, Freund, and Ornelas for kindly sharing their data. Estevadeordal et al. (2008) explain that the use of the 4-digit ISIC classification allowed to convert preferential tariff codes into a common nomenclature, since the PTAs in the 1990s used different tariff nomenclatures, such as NANDINA, NALADISA, HS, and correspondence tables were only available at the ISIC level.

[31]In a few cases in which the final AD margin was missing, I use the preliminary margin.

[32]In a given range, the minimum is the lowest exporting firm-specific dumping margin (trade barrier) determined by the imposing country's government across all producers from that country in that AD case, and the maximum is the highest exporting firm-specific dumping margin (trade barrier) determined by the imposing country's government across all producers from that country in that AD case. To average across countries, I trade-weight by the exporting countries' share of the imposing country's market in the good, in the following way: $\text{AD\_min}=\sum_j x_{ij}*\text{Impshare}_{ij}$,where x_{ij} is the minimum of the

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measures. An important difference relative to tariffs is that AD duties may be imposed against some exporting countries only. To adjust for this when calculating the final import protection measure, I use the sum of the applied import tariff and the AD margin *weighted* by the affected countries' share in total imports of the good by the imposing country.[33]

I also perform the estimations by measuring the changes in import protection as the sum of tariffs plus AD *and* SGs, using data on the safeguard duties imposed by the Latin American countries. The data on AD and SG import restrictions at the product level are obtained from the *Temporary Trade Barriers Database* (Bown, 2015), and originate from government sources from each of the sample countries.

Data on bilateral imports by sector and year used to calculate imports from the PTA partners are from COMTRADE, obtained via WITS. Profit is calculated as value added or, alternatively, as value added minus payroll, with data from the World Bank's *Trade and Production* database (Nicita and Olarreaga, 2007). These data are at the three-digit ISIC level, and because they are not available for all country years, I use the long change in profits, set as the change from 1990 to 1999.[34] Given that variation in the profit variables is at the three-digit ISIC level, I adjust the standard errors for clustering at the country-ISIC3 level in all regressions. I account for clustering at the country-sector level because variables such as preferential and external liberalization are expected to be correlated for products within an industry in a given country (for example, lobbying for protection usually takes place at the industry level). Finally, I use the political–economy parameters (b_j) derived from estimates of the weight that governments attach to social welfare relative to private interests from Gawande et al. (2009). Using the Grossman and Helpman (1994) model as the theoretical basis, Gawande et al. (2009) provide estimates of the welfare-mindedness of governments (known as parameter a in the literature on the political–economy of trade protection) for 54 countries for the period 1988–2000, including the countries used in this paper. I calculate b_j as the inverse of each country's parameter a from Gawande et al. (2009), and then I define bhi_j as a dummy equal to 1 when b_j belongs to the top tercile in the sample.

6. Estimation Results

6.1 Baseline Estimates and Robustness

I begin by presenting baseline panel estimates of the econometric model. Table 1 reports summary statistics for the variables used in the estimations. Table 2 shows the results from the estimation of equation (3). Beginning with column 1, the dependent variable there is the change only in the MFN tariff applied on a good against PTA non-members. The main explanatory variable is the lagged change only in the preferential tariff applied on a good against PTA partners. The (lagged) change in the preferential tariff has a positive coefficient, statistically significant at the 1 percent level. This is consistent with the 'tariff revenue' effect from the theory, which is that, when the preferential tariff falls, the increase in tariff revenue arising from the increase in imports from the partner from increasing the MFN tariff decreases, and thus the MFN tariff will decrease.

The coefficient of the change in the preferential tariff interacted with the change in preferential imports is positive, in accordance with the model's prediction (the 'terms of trade' effect), but it is not statistically significant.

AD margins corresponding to firms in country j and good i, and Impshare_{ij} is the exporting country j's share in the imposing country's imports of good i (and similarly for AD_max).

[33]Since we may expect imports to fall with an AD measure, I apply the methodology used by Bown (2011) and subsequent studies, which uses as weights the *counterfactual* import shares. They are obtained under the assumption that, beginning in the year of imposition of the AD duty, the imports of the affected products would have grown at the same rate as the imports of the non-affected products in the country.

[34]Due to the availability of the data, for Peru I use the change from 1990 to 1996, and for Venezuela the change from 1990 to 1997.

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Table 1. Summary statistics

Variable	Mean	Std. Dev.	Minimum	Maximum	Observations
ΔMFN	−0.29	3.07	−25.00	100.67	4,807
ΔMFN + AD min	0.11	11.20	−121.76	357.58	4,807
ΔMFN + AD max	0.60	19.31	−165.35	502.88	4,807
ΔMFN + AD + SG min	0.28	22.44	−476.66	1250.44	4,807
ΔMFN + AD + SG max	0.77	27.40	−476.66	1250.44	4,807
L.ΔPref tariff	−3.02	6.40	−55.80	20.00	4,807
L.ΔPref tariff + AD min	−3.01	6.44	−55.80	25.72	4,807
L.ΔPref tariff + AD max	−3.00	6.47	−55.80	25.72	4,807
L.ΔPref tariff + AD + SG min	−2.99	6.56	−55.80	80.55	4,807
L.ΔPref tariff + AD + SG max	−2.98	6.59	−55.80	80.55	4,807
L.ΔPref tariff*ΔM_PTA	−21265	396658	−13900000	3646457	4,807
(*L*.ΔPref tariff + AD min)*ΔM_PTA	−21127	429688	−13900000	5325112	4,807
(*L*.ΔPref tariff + AD max)*ΔM_PTA	−20364	447968	−13900000	8082147	4,807
(*L*.ΔPref tariff + AD + SG min) *ΔM_PTA	−20985	429754	−13900000	5325112	4,807
(*L*.ΔPref tariff + AD + SG max) *ΔM_PTA	−20222	448032	−13900000	8082147	4,807
ΔM_PTA	22071	180633	−988612	5366554	4,807
L.ΔPref tariff*ΔΠ	−608347	4887916	−111000000	88100000	4,807
(*L*.ΔPref tariff + AD min)*ΔΠ	−606550	4910897	−111000000	88100000	4,807
(*L*.ΔPref tariff + AD max)*ΔΠ	−610467	4919732	−111000000	88100000	4,807
(*L*.ΔPref tariff + AD + SG min)*ΔΠ	−603364	4913791	−111000000	88100000	4,807
(*L*.ΔPref tariff + AD + SG max)*ΔΠ	−607282	4922624	−111000000	88100000	4,807
ΔΠ	330841	1062003	−4708580	5801127	4,807
L.ΔPref tariff* bhi*ΔΠ	−415663	3788478	−111000000	4917256	4,807
(*L*.ΔPref tariff + AD min)* bhi*ΔΠ	−415663	3788478	−111000000	4917256	4,807
(*L*.ΔPref tariff + AD max)* bhi*ΔΠ	−412229	3817513	−111000000	17600000	4,807
(*L*.ΔPref tariff + AD + SG min)* bhi*ΔΠ	−412229	3817513	−111000000	17600000	4,807
(*L*.ΔPref tariff + AD + SG max)* bhi*ΔΠ	−411960	3823104	−111000000	18200000	4,807
bhi*ΔΠ	248660	986758	−90407	5801127	4,807

Finally, the sum of the coefficients of both change in profit interactions with the change in the preferential tariff (scaled and not scaled by the political–economy parameter, b_j) is negative and statistically significant at the 10 percent level (as shown at the bottom of the table), which means that, when political motives are sufficiently powerful, the results are aligned with the prediction from the model that, as the preferential tariff falls, both the markup of and the sales by domestic firms decline, and thus increasing the external tariff generates less profit (the 'strategic and distributive' effect). Hence, the external tariff will be lower. Note that the coefficient of the change in the preferential tariff interacted with the change in profits by itself is not significant, which means

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Table 2. The effect of preferential liberalization on import protection against non-members

	Dependent variable:						
Explanatory variables	ΔMFN (1)	ΔMFN + AD min (2)	ΔMFN + AD max (3)	ΔMFN + AD min (4)[1/]	ΔMFN + AD max (5)[1/]	ΔMFN + AD + SG min (6)	ΔMFN + AD + SG max (7)
L.ΔPref tariff	0.094***						
	(0.020)						
L.ΔPref tariff + AD min /SG		0.087***		0.085***		0.090***	
		(0.023)		(0.023)		(0.023)	
L.ΔPref tariff + AD max /SG			0.082***		0.077***		0.086***
			(0.025)		(0.025)		(0.025)
L.ΔPref tariff * ΔM_PTA [2/]	0.015						
	(0.014)						
(*L*.ΔPref tariff + AD min/SG)*ΔM_PTA[2/]		0.033		0.033		0.034	
		(0.047)		(0.047)		(0.047)	
(*L*.ΔPref tariff + AD max/SG)*ΔM_PTA[2/]			0.037		0.039		0.037
			(0.058)		(0.057)		(0.058)
ΔM_PTA [2/]	−0.053***	−0.244***	−0.476***	−0.244***	−0.471***	−0.245***	−0.476***
	(0.014)	(0.084)	(0.151)	(0.084)	(0.151)	(0.084)	(0.151)
L.ΔPref tariff * ΔΠ [2/]	0.003						
	(0.003)						
(*L*.ΔPref tariff + AD min/SG)*ΔΠ [2/]		0.003		0.003		0.003	
		(0.003)		(0.003)		(0.003)	
(*L*.ΔPref tariff + AD max/SG)*ΔΠ [2/]			0.002		0.004		0.002
			(0.003)		(0.003)		(0.003)
ΔΠ [2/]	0.011	0.014	0.001	0.016	0.010	0.009	−0.004
	(0.012)	(0.012)	(0.013)	(0.012)	(0.012)	(0.012)	(0.013)
L.ΔPref tariff * bhi*ΔΠ [2/]	−0.013**						
	(0.0066)						
(*L*.ΔPref tariff + AD min/SG)*bhi*ΔΠ [2/]		−0.009**		−0.009**		−0.009**	
		(0.004)		(0.004)		(0.004)	
(*L*.ΔPref tariff + AD max/SG)*bhi*ΔΠ [2/]			−0.011***		−0.013***		−0.011***
			(0.004)		(0.004)		(0.004)
bhi*ΔΠ [2/]	−0.025**	−0.023	−0.024	−0.024*	−0.034*	−0.019	−0.021
	(0.012)	(0.014)	(0.018)	(0.014)	(0.018)	(0.013)	(0.018)
Sum of coefficients:							
L.ΔPref tariff (+ AD/SG)* ΔΠ + *L*.ΔPref tariff (+ AD/SG)* bhi*ΔΠ [2/]	−0.010*	−0.006*	−0.009***	−0.006*	−0.009***	−0.006*	−0.009***
	(0.006)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
Observations	4,807	4,774	4,774	4,774	4,774	4,771	4,771
R-squared	0.16	0.09	0.05	0.09	0.06	0.08	0.05

Notes: Robust standard errors in parentheses with *, **, and *** indicating statistically significant at 10%, 5%, and 1% levels, respectively. Constant included but not reported. 1/ Columns 4–5 exclude AD measures that are DPU (duty if the price falls under a given level). 2/ Variable is scaled by 100,000. Standard errors are adjusted for clustering at the country-ISIC3 level in all regressions.

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the effect is not present when the political–economy parameter is low, but it is present when political–economy motives are stronger. This is also consistent with the theory's prediction that the effect increases with the strength of the political–economy forces.

Overall, these initial results support most of the predictions from Ornelas' (2005a) political–economy model on the effects of PTAs on trade liberalization toward non-member countries.

In columns 2 and 3, the dependent variable and the main explanatory variable are redefined more comprehensively to include not only tariffs, but also the antidumping import policy restrictions that the country imposed on imports originating from the rest of the world (in $\Delta\tau_{ijt}$), and on imports coming from PTA partners (in $\Delta Pref_{ijt-1}$). In column 2, I present results using the average of the minimum AD margins and in column 3, I use the average of the maximum AD margins (calculated as explained in the previous section). I exclude from the sample some outlier observations in which the dependent variable (the change in the MFN tariff plus the AD duty) was greater than 100 percent or lower than −100 percent.[35] The results are very similar to those from column 1, which only use tariffs. The coefficients of the three variables of interest have the signs predicted by the theory, and the coefficient of the change in the preferential tariff and the sum of the coefficients of both change in profit interactions with the change in the preferential tariff are statistically significant (the latter now at the 1 percent level in column 3).

However, some AD measures are imposed as a duty if the price falls below a given level (DPU) and, in those instances, firms have an incentive to increase their price and 'enjoy' the corresponding rents, instead of facing the duty. In such event, unlike an import tariff or AD duty, there would not be any tariff revenue collected. Since that would affect the first and second theoretical effects from the model (as they are related to tariff revenue), in columns 4 and 5 I exclude AD measures imposed as DPU. The results are again similar. The coefficient of the change in bilateral import protection toward PTA partners alone and the sum of coefficients of the change in profit interactions (in absolute value) are a bit lower when AD is included in the import protection measures (in columns 2–5 relative to column 1), which suggests that the building block effect of preferential trade liberalization falls slightly when more comprehensive measures of import protection toward PTA members and non-members are considered. Other studies have used the first coefficient to establish whether there is a building block or stumbling block effect of preferential liberalization on trade liberalization against non-member countries (e.g. Estevadeordal et al., 2008), although most studies have only used tariffs.[36]

To account for the use of safeguards, in columns 6 and 7 I redefine the import protection variables to include both AD *and* SG measures imposed against other PTA members and against non-PTA members.[37] The estimated results are very similar to the previous ones, providing support for most of the theory (i.e., for all mechanisms except the terms of trade effect).

Turning to the magnitudes of the effects, with the estimates from column 1, a one standard deviation increase in the preferential tariff reduction leads to a decrease of 0.60 percentage points in the MFN tariff, which is sizeable given that median MFN tariff in the sample is 14.7 percentage points. Furthermore, a one standard deviation increase in the sum of the change in profits interactions lowers the MFN tariff by 0.87 percentage points. Adding the two effects, they entail a decrease of 10.0 percent in the MFN tariff when political–economy forces are strong, which is substantial (in the case of low political–economy forces, only the first effect would be present, i.e., a decrease of 4.1 percent in the MFN tariff). If we also consider TTBs, with the coefficients

[35]With this, 33 out of 4807 observations are dropped (less than 1 percent of the sample). The results are similar if the cutoff for dropping observations is greater than 150 or lower than –150 (which means dropping 13 observations only), but the R-square is higher with the 100/-100 cutoff. Also, the results for the tariffs-only specification from column 1 are very similar using the restricted sample.

[36]Below I compare all the effects in more detail.

[37]Here I again exclude the observations where the dependent variable (the change in the MFN tariff plus the AD duty plus the SG duty) is greater than 100 percent or lower than –100 percent (doing this implies excluding only three additional observations).

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from column 7, a one standard deviation increase in preferential liberalization leads to a reduction in protection (MFN tariff plus AD and SGs) against non-member countries by 0.56 percentage points. Meanwhile, the median import protection against non-members in the sample is 15.0 percentage points. Moreover, a one standard deviation increase in the sum of the change in profits interactions decreases protection against non-members by 0.79 percentage points. The sum of the two effects represents a reduction of 9.0 percent in the external import protection. Thus, the building block effect becomes a bit lower when TTBs are taken into account, and the results are not only statistically but also economically significant.

In Table 2, profit was measured as value added. Alternatively, I measure profit as value added minus payroll, which may concord better with the theoretical model (for this reason, I keep this measure in all the estimations in subsequent tables as well). Columns 1–3 of Table 3 replicate the specifications from columns 1–3 of Table 2 with the difference in the profit measure only. There is again support for the 'tariff revenue' effect, since the coefficient of the change in the preferential tariff is always positive and highly statistically significant. The coefficient of the preferential imports interaction is again positive, as expected, but not statistically significant; therefore, I do not find evidence of the 'terms of trade' effect. The sum of coefficients of the profit interactions is always negative, as predicted by the theory, and it is statistically significant at the 1 percent level in column 3, when using the average of the maximum AD margins. This provides some support for the presence of the 'strategic/distributive' effect. In columns 4 and 5, I include not only AD but also SG measures (in addition to tariffs), and the results are similar to those with AD only (columns 2–3).

As a sensitivity analysis, instead of using the change in preferential imports, I use the change in total imports. This allows me to also incorporate the decrease in the imports originating from non-members of the PTA that may take place. In Table 4, I replicate the specifications from Table 3 but changing the import measure as explained. The results support all the predictions from the model. The change in the preferential tariff and the change in imports interaction have positive and statistically significant coefficients, and the sum of coefficients of the profit interactions is always negative, and it is significant in most regressions.

Finally, I tried dividing the sample into two periods: 1990–1994 and 1995–1999. The second period begins with the start of the two customs unions in the sample, Mercosur and the Andean Community, which are major PTAs in Latin America and went from being FTAs to becoming CUs in 1995. The results from replicating the specifications from Table 3 indicate that the building block result in period 1 (1990–1994) is always present, both using only tariffs and adding TTBs, similarly to the results I had found for the whole period (in Table 3).[38] Also, the main mechanism that drives this building block effect in period 1 is the 'tariff revenue' effect. In period 2 (1995–1999), there is a building block effect (of around the same magnitude as in period 1) only once TTBs are added to tariffs, which is driven by the 'strategic and distributive' effect (using tariffs only, no effect is found).[39]

These results provide interesting evidence on the dynamics of the effects; in particular, of how different theoretical channels are the main drivers in different periods in Latin America. It is also interesting that the 'strategic and distributive' effect plays a role in the second period, which is the CU period. Since the literature has shown that free-riding issues in lobbying activities can worsen in CUs relative to FTAs (e.g., Richardson, 1994; Panagariya and Findlay, 1996), it is possible that a weakening in lobbying may have contributed to *larger* reductions in external import protection in response to preferential liberalization via the decrease-in-profits channel during the CU period.[40]

[38]These results by subperiod are not shown to save space but they are available upon request.

[39]Similar results for each period are obtained using the specifications from Table 2.

[40]Richardson (1994) shows that in a CU, instead of lobbying only the domestic government for a certain external tariff, a domestic industry has to lobby a larger legislative group, and there is more free riding, which can make CUs less attractive than FTAs to firms. Likewise, Panagariya and Findlay (1996) show that CUs are more effective in diluting the power of special interest groups because the institutional structure of a CU implies that one country's tariff becomes available to all members of the union.

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Table 3. The effect of preferential liberalization on import protection against non-members—robustness to profit measure

	Dependent variable:				
	ΔMFN	ΔMFN + AD min	ΔMFN + AD max	ΔMFN + AD + SG min	ΔMFN + AD + SG max
Explanatory variables	(1)	(2)	(3)	(4)	(5)
L.ΔPref tariff	0.091***				
	(0.019)				
L.ΔPref tariff + AD min /SG		0.083***		0.087***	
		(0.022)		(0.022)	
L.ΔPref tariff + AD max /SG			0.079***		0.083***
			(0.024)		(0.024)
L.ΔPref tariff * ΔM_PTA [1/]	0.015				
	(0.014)				
(*L*.ΔPref tariff + AD min/SG) *ΔM_PTA[1/]		0.033		0.033	
		(0.047)		(0.047)	
(*L*.ΔPref tariff + AD max/SG) *ΔM_PTA[1/]			0.037		0.037
			(0.058)		(0.058)
ΔM_PTA [1/]	−0.054***	−0.245***	−0.477***	−0.245***	−0.477***
	(0.014)	(0.084)	(0.151)	(0.084)	(0.152)
L.ΔPref tariff * ΔΠ [1/]	0.009**				
	(0.004)				
(*L*.ΔPref tariff + AD min/SG)*ΔΠ [1/]		0.009**		0.009**	
		(0.004)		(0.004)	
(*L*.ΔPref tariff + AD max/SG)*ΔΠ [1/]			0.008**		0.008**
			(0.003)		(0.003)
ΔΠ [1/]	0.024*	0.030**	0.018	0.020	0.009
	(0.014)	(0.015)	(0.014)	(0.015)	(0.015)
L.ΔPref tariff * bhi*ΔΠ [1/]	−0.020**				
	(0.008)				
(*L*.ΔPref tariff + AD min/SG)*bhi *ΔΠ [1/]		−0.015***		−0.015***	
		(0.005)		(0.005)	
(*L*.ΔPref tariff + AD max/SG)*bhi *ΔΠ [1/]			−0.018***		−0.018***
			(0.004)		(0.004)
bhi*ΔΠ [1/]	−0.041**	−0.038**	−0.044**	−0.031*	−0.036*
	(0.016)	(0.018)	(0.021)	(0.018)	(0.021)
Sum of coefficients:					
L.ΔPref tariff (+ AD/SG)* ΔΠ + *L*.ΔPref tariff (+AD/SG)* bhi*ΔΠ [2/]	−0.011	−0.006	−0.009***	−0.006	−0.009***
	(0.007)	(0.004)	(0.002)	(0.004)	(0.002)
Observations	4,799	4,766	4,766	4,763	4,763

(*Continued*)

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Table 3. (*Continued.*)

	Dependent variable:				
	ΔMFN	ΔMFN + AD min	ΔMFN + AD max	ΔMFN + AD + SG min	ΔMFN + AD + SG max
Explanatory variables	(1)	(2)	(3)	(4)	(5)
R-squared	0.16	0.09	0.05	0.08	0.05

Notes: Robust standard errors in parentheses with *, **, and *** indicating statistically significant at 10%, 5%, and 1% levels, respectively. Constant included but not reported. 1/ Variable is scaled by 100,000. Standard errors are adjusted for clustering at the country-ISIC3 level in all regressions.

To sum up, the results provide empirical support for most of the theoretical predictions from Ornelas' (2005a) model, according to which preferential trade liberalization will lead to liberalization against countries that do not belong to the preferential trade agreements. More precisely, there is strong support for two of the three theoretical mechanisms (the tariff revenue and the strategic/distributive effects), and only weak support for the terms of trade effect (since the corresponding estimated coefficient is only statistically significant in Table 4). The model incorporates political–economy motives for protection, which turn out to be empirically important, and the results hold not only using tariffs but also using more expansive import protection measures that include AD and SG policies imposed against PTA members as well as outsiders.

6.2 Instrumental Variables Estimates

Since there is possible endogeneity, in this section I address it via the use of instrumental variables. To instrument for the change in preferential liberalization, I use the change in the preferential liberalization of the two countries in the sample most correlated with the country's own preferential liberalization. I use an analogous procedure to instrument for the change preferential imports and the change in profits, with the difference that I now use countries that are not PTA partners at any time during the sample period.

Table 5 presents the results of the estimation using instrumental variables (IV). Column 1 repeats the specification from column 1 of Table 3, but using an IV-GMM estimation procedure, in which I instrument for the change in the preferential tariff, the change in preferential imports, and the change in profits. The coefficients of all the variables of interest have their predicted signs, but only the (lagged) change in the preferential tariff is statistically significant. The Hansen-J statistic (shown at the bottom of the table) confirms the validity of the instruments and their correct exclusion from the equation.[41] In addition, in Table A1 in the Appendix, I provide the results from the first-stage estimations corresponding to column 1.[42] However, I test for the endogeneity of the variables with the Durbin and Wu–Haussman tests, and the results indicate that we cannot reject the null hypothesis of exogeneity of the change in profits. Hence, column 2 replicates the specification from column 1 but considering the change in profits as econometrically exogenous, and instrumenting for the remaining variables. Again, all the coefficients of the relevant variables have signs in accordance with the theory, and the coefficient of the (lagged) change in the preferential tariff and the sum of the coefficients of the change in profits interaction are statistically significant, consistent with the results from the previous section also.

The results from column 2 imply that a one standard deviation increase in the preferential tariff reduction generates a decrease of 0.94 percentage points in the MFN tariff, which is again

[41]To perform the estimations with many fixed effects, I demean the data by country, year, and industry.

[42]I do not show the first-stage results for all the interactions between variables to save space, but they are available on request.

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Table 4. The effect of preferential liberalization on import protection against non-members—robustness to import measure

	Dependent variable:				
	ΔMFN	ΔMFN + AD min	ΔMFN + AD max	ΔMFN + AD + SG min	ΔMFN + AD + SG max
Explanatory variables	(1)	(2)	(3)	(4)	(5)
L.ΔPref tariff	0.097***				
	(0.019)				
L.ΔPref tariff + AD min /SG		0.092***		0.096***	
		(0.022)		(0.022)	
L.ΔPref tariff + AD max /SG			0.092***		0.096***
			(0.024)		(0.024)
L.ΔPref tariff * ΔM [1/]	0.032***				
	(0.012)				
(*L*.ΔPref tariff + AD min/SG)*ΔM[1/]		0.062**		0.061**	
		(0.025)		(0.025)	
(*L*.ΔPref tariff + AD max/SG)*ΔM[1/]			0.075**		0.074**
			(0.030)		(0.030)
ΔM [1/]	0.0004	−0.139*	−0.291**	−0.140*	−0.292**
	(0.016)	(0.082)	(0.116)	(0.082)	(0.116)
L.ΔPref tariff * ΔΠ [1/]	0.009**				
	(0.004)				
(*L*.ΔPref tariff + AD min/SG)*ΔΠ [1/]		0.009**		0.009**	
		(0.004)		(0.004)	
(*L*.ΔPref tariff + AD max/SG)*ΔΠ [1/]			0.008**		0.008**
			(0.003)		(0.003)
ΔΠ [1/]	0.022	0.027*	0.015	0.018	0.006
	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)
L.ΔPref tariff * bhi*ΔΠ [1/]	−0.021**				
	(0.008)				
(*L*.ΔPref tariff + AD min/SG) *bhi*ΔΠ [1/]		−0.016***		−0.016***	
		(0.005)		(0.005)	
(*L*.ΔPref tariff + AD max/SG) *bhi*ΔΠ [1/]			−0.018***		−0.018***
			(0.004)		(0.004)
bhi*ΔΠ [1/]	−0.038**	−0.037**	−0.043**	−0.029*	−0.035
	(0.016)	(0.017)	(0.021)	(0.017)	(0.022)
Sum of coefficients:					
L.ΔPref tariff (+AD/SG)* ΔΠ + *L*.ΔPref tariff (+AD/SG)* bhi*ΔΠ [2/]	−0.012	−0.006*	−0.010***	−0.006*	−0.010***
	(0.008)	(0.003)	(0.002)	(0.003)	(0.002)

(*Continued*)

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Table 4. (*Continued.*)

	Dependent variable:				
	ΔMFN	ΔMFN + AD min	ΔMFN + AD max	ΔMFN + AD + SG min	ΔMFN + AD + SG max
Explanatory variables	(1)	(2)	(3)	(4)	(5)
Observations	4,749	4,716	4,716	4,713	4,713
R-squared	0.17	0.09	0.05	0.08	0.05

Notes: Robust standard errors in parentheses with *, **, and *** indicating statistically significant at 10%, 5%, and 1% levels, respectively. Constant included but not reported. 1/ Variable is scaled by 100,000. Standard errors are adjusted for clustering at the country-ISIC3 level in all regressions.

sizeable since the median MFN tariff in the sample is 14.7 percentage points. Furthermore, a one standard deviation increase in the sum of the change in profits interactions lowers the MFN tariff by 2.47 percentage points. Adding the effects, they represent an overall decrease in the MFN tariff of 23.2 percent, a considerable effect.

To account for the use of temporary trade barriers and examine how this might impact the results, in columns 3 and 4 of Table 5, I redefine the variables to incorporate antidumping measures (column 3 uses the average of the minimum of the AD margins and column 4 uses the average of the maximum). The results for the preferential tariff change and the change in profits are qualitatively similar to those from column 2, and the change in profits has a larger effect on external protection once AD measures are included (as shown by the sum of coefficients at the bottom of the table), which could mean that external protection that includes AD is more sensitive to changes in profit (when political forces are strong). Moreover, the effect tends to be stronger, considering both size and significance, with AD_max. Since AD_max uses the average across targeted exporting countries of the maximum AD margins (i.e., of the highest exporting firm-specific dumping margins), using AD_max means that there will be a larger change in external protection due to a given change in profits (relative to AD_min), thus leading to a larger magnitude for the estimated coefficient. However, the change in preferential imports interaction is negative and statistically significant, which goes against the theoretical prediction and implies that there is not support for the terms-of-trade effect. Lastly, in columns 5 and 6 of Table 5, I incorporate not only tariffs and AD but also safeguard measures. The results are similar to those from columns 3 and 4.

Does the inclusion of TTBs strengthen or weaken the building block effect? Considering the results from column 6, a one standard deviation increase in preferential liberalization generates a reduction in external protection (MFN tariff plus AD and SGs) of 0.62 percentage points. Meanwhile, the median external import protection in the sample is 15.0 percentage points. Moreover, a one standard deviation increase in the sum of the change in profits interactions decreases protection against non-members by 4.78 percentage points. On the other hand, a one standard deviation increase in the change in preferential imports interaction now *increases* protection against non-members by 2.33 percentage points. The sum of the three effects represents a net reduction of 20.5 percent in the external import protection. Thus, and as found also in the non-IV results in the previous section, the building block effect becomes a bit lower when TTBs are taken into account, and the results are not only statistically but also economically significant.

Comparing these results with those of Tovar (2019), I obtain that the estimates of this model, which incorporates political–economy forces, lead to a substantially larger building block effect of preferential liberalization in Latin America.[43]

[43]The overall tariff complementarity effect estimated by Tovar (2019) based on the theory of Bagwell and Staiger (1999) leads to a decrease in the MFN tariff of about half the one estimated here.

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Table 5. IV estimates of the effect of preferential liberalization on import protection against non-members

	Dependent variable:					
	ΔMFN	ΔMFN	ΔMFN + AD min	ΔMFN + AD max	ΔMFN + AD + SG min	ΔMFN + AD + SG max
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
L.ΔPref tariff	0.148***	0.156***				
	(0.053)	(0.035)				
L.ΔPref tariff + AD min /SG			0.149***		0.136***	
			(0.041)		(0.035)	
L.ΔPref tariff + AD max /SG				0.126***		0.129***
				(0.040)		(0.038)
L.ΔPref tariff * ΔM_PTA [1/]	0.010	0.164				
	(0.137)	(0.103)				
(*L*.ΔPref tariff + AD min/SG) *ΔM_PTA[1/]			−0.461*		−0.434**	
			(0.244)		(0.200)	
(*L*.ΔPref tariff + AD max/SG) *ΔM_PTA[1/]				−0.567***		−0.524***
				(0.161)		(0.154)
ΔM_PTA [1/]	0.151	0.439	−1.606**	−2.254***	−1.603**	−2.253***
	(0.474)	(0.286)	(0.736)	(0.528)	(0.658)	(0.544)
L.ΔPref tariff * ΔΠ [1/]	0.023	0.016***				
	(0.020)	(0.006)				
(*L*.ΔPref tariff + AD min/SG)*ΔΠ [1/]			0.016***		0.018***	
			(0.006)		(0.006)	
(*L*.ΔPref tariff + AD max/SG)*ΔΠ [1/]				0.016***		0.014***
				(0.006)		(0.005)
ΔΠ [1/]	0.036	0.049**	0.046**	0.041**	0.040*	0.026
	(0.040)	(0.020)	(0.021)	(0.020)	(0.021)	(0.019)
L.ΔPref tariff * bhi*ΔΠ [1/]	−0.030	−0.051***				
	(0.037)	(0.016)				
(*L*.ΔPref tariff + AD min/SG) *bhi*ΔΠ [1/]			−0.080**		−0.081**	
			(0.034)		(0.032)	
(*L*.ΔPref tariff + AD max/SG) *bhi*ΔΠ [1/]				−0.086***		−0.082**
				(0.033)		(0.033)
bhi*ΔΠ [1/]	−0.100	−0.096***	−0.162**	−0.189***	−0.157***	−0.170***
	(0.077)	(0.027)	(0.065)	(0.065)	(0.061)	(0.066)
Sum of coefficients:						
L.ΔPref tariff (+AD/SG)* ΔΠ + *L*.ΔPref tariff (+AD/SG)* bhi*ΔΠ [2/]	−0.007	−0.035**	−0.064*	−0.071**	−0.063**	−0.067**
	(0.007)	(0.015)	(0.033)	(0.032)	(0.031)	(0.032)
Observations	4,255	4,799	4,766	4,766	4,763	4,763

(*Continued*)

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Table 5. (*Continued.*)

	Dependent variable:					
	ΔMFN	ΔMFN	ΔMFN + AD min	ΔMFN + AD max	ΔMFN + AD + SG min	ΔMFN + AD + SG max
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
Hansen J p-value	0.14	0.001	0.06	0.14	0.06	0.25

Notes: Robust standard errors in parentheses with *, **, and *** indicating statistically significant at 10%, 5%, and 1% levels, respectively. Constant included but not reported. 1/ Variable is scaled by 100,000. Standard errors are adjusted for clustering at the country-ISIC3 level in all regressions.

As an additional robustness test, I define the dummy for a high b_j as being equal to 1 when the political–economy weight belongs to the top two terciles in the sample (instead of the top tercile). Columns 1–4 from Table 6 replicate the specifications from columns 3–6 of Table 5, with the difference in the definition of the dummy for the political–economy parameter. The results are very similar to those of Table 5.

Thus far, the industry fixed effects have been defined at the three-digit ISIC level, which is the level of variation of the change in profit variables. In column 5 of Table 6, I re-run the tariffs-only specification from column 2 of Table 5 but using four-digit ISIC level fixed effects. The results remain quantitively very similar, but now the change in preferential imports interaction becomes significant at the 10 percent level (again with the predicted sign). In columns 6 and 7 of Table 6, I repeat the estimations from columns 4 and 6 of Table 5 and the results remain qualitatively and quantitatively similar.[44]

Overall, there is strong support for two of the three predicted mechanisms from Ornelas' (2005a) model – in particular, for the tariff revenue effect and for the strategic/distributive effect – as well as evidence of a building block effect of preferential liberalization for the Latin American countries in the 1990s, which is also a prediction from the model. I do not find evidence supporting the terms-of-trade effect. Theoretically, the magnitude of the terms-of-trade effect depends on the increase in preferential imports. Therefore, one possible reason why there is not support for this theoretical channel in the sample could be that Latin America has a low level of intraregional trade.[45] Bown et al. (2017) show that the Latin American countries have, on average, very similar patterns of revealed comparative advantage. They also have very similar trade structures, import demands, and export baskets (and especially so with the countries that are nearby), which does not necessarily occur in other regions. Bown et al. (2017) argue that the similarity in comparative advantage is one of the constraints to deeper regional integration in the region. It would therefore be interesting to test whether the terms-of-trade effect is present in regions with higher levels of preferential trade.

7. Conclusion

With the rapid spread of preferential trade agreements (PTAs) in recent decades, it became crucial to examine their effects on welfare and their social desirability. In that line, an important question is how they affect the trade barriers imposed against outsiders. In this paper, I tested the theoretical predictions of a political–economy model based on Krishna (1998) and importantly modified by Ornelas (2005a), on the relationship between preferential liberalization and trade protection against non-members countries. The results provide strong support for two

[44]The results using the average of the minimum of the AD margins also remain similar to those from Table 5 but are not shown to save space (they are available on request).

[45]I thank an anonymous referee for suggesting a potential explanation along these lines.

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Table 6. IV Estimates of the effect of preferential liberalization on import protection against non-members: Additional Robustness Tests

	Dependent variable:						
Explanatory variables	ΔMFN + AD min (1)	ΔMFN + AD max (2)	ΔMFN + AD + SG min (3)	ΔMFN + AD + SG max (4)	ΔMFN (5)	ΔMFN + AD max (6)	ΔMFN + AD + SG max (7)
L.ΔPref tariff					0.160***		
					(0.036)		
L.ΔPref tariff + AD min /SG	0.157***		0.146***				
	(0.043)		(0.036)				
L.ΔPref tariff + AD max /SG		0.128***		0.142***		0.126***	0.128***
		(0.043)		(0.037)		(0.041)	(0.039)
L.ΔPref tariff * ΔM_PTA 1/					0.163*		
					(0.099)		
(*L*.ΔPref tariff + AD min/SG) *ΔM_PTA 1/	−0.406*		−0.396**				
	(0.225)		(0.187)				
(*L*.ΔPref tariff + AD max/SG) *ΔM_PTA 1/		−0.576***		−0.420***		−0.499***	−0.446***
		(0.193)		(0.137)		(0.146)	(0.138)
ΔM_PTA 1/	−1.414**	−2.279***	−1.451**	−1.825***	0.453	−2.279***	−2.288***
	(0.695)	(0.680)	(0.618)	(0.500)	(0.295)	(0.470)	(0.480)
L.ΔPref tariff * ΔΠ 1/					0.016***		
					(0.006)		
(*L*.ΔPref tariff + AD min/SG)*ΔΠ 1/	0.018***		0.018***				
	(0.007)		(0.007)				
(*L*.ΔPref tariff + AD max/SG)*ΔΠ 1/		0.016***		0.016***		0.015***	0.014**
		(0.006)		(0.006)		(0.006)	(0.005)
ΔΠ 1/	0.061**	0.049**	0.051**	0.035*	0.049**	0.040**	0.027
	(0.027)	(0.022)	(0.025)	(0.020)	(0.020)	(0.020)	(0.020)
L.ΔPref tariff * bhi*ΔΠ 1/					−0.053***		
					(0.017)		
(*L*.ΔPref tariff + AD min/SG)*bhi*ΔΠ 1/	−0.071**		−0.073**				
	(0.030)		(0.030)				
(*L*.ΔPref tariff + AD max/SG)*bhi*ΔΠ 1/		−0.088**		−0.069*		−0.083**	−0.080**
		(0.044)		(0.035)		(0.033)	(0.032)
bhi*ΔΠ 1/	−0.160***	−0.198**	−0.155***	−0.154**	−0.098***	−0.192***	−0.176***
	(0.060)	(0.082)	(0.060)	(0.067)	(0.028)	(0.066)	(0.066)
Sum of coefficients:							
L.ΔPref tariff (+AD/SG)* ΔΠ + *L*.ΔPref tariff (+AD/SG)* bhi*ΔΠ 2/	−0.053*	−0.072*	−0.054*	−0.053	−0.037**	−0.069**	−0.066**
	(0.028)	(0.043)	(0.029)	(0.035)	(0.016)	(0.032)	0.031

(*Continued*)

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Table 6. (*Continued.*)

Explanatory variables	Dependent variable:						
	ΔMFN + AD min	ΔMFN + AD max	ΔMFN + AD + SG min	ΔMFN + AD + SG max	ΔMFN	ΔMFN + AD max	ΔMFN + AD + SG max
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Observations	4,766	4,766	4,763	4,763	4,799	4,766	4,763
Hansen J p-value	0.04	0.14	0.04	0.28	0.001	0.12	0.22

Notes: Robust standard errors in parentheses with *, **, and *** indicating statistically significant at 10%, 5%, and 1% levels, respectively. Constant included but not reported. 1/ Variable is scaled by 100,000. Standard errors are adjusted for clustering at the country-ISIC3 level in all regressions.

theoretical mechanisms shaping that relationship and thus uncover different *channels* via which trade liberalization under PTAs impact trade protection against outsiders. I focused on a group of eight Latin American countries during the 1990s, a period of significant preferential trade liberalization in the region.

There is evidence of a building block effect of preferential liberalization in Latin America, which occurs through two mechanisms that push toward lower external tariffs. First, a reduction in the preferential tariff level means that the increase in tariff revenue from larger preferential imports resulting from an increase in the external tariff will be lower. Second, when the preferential tariff falls, the markup and sales of domestic firms are reduced, and hence the increase in both the domestic firms' market share and the domestic price due to an increase in the external tariff create less profit. Additionally, I find that the first mechanism predominates during the initial part of the sample period (1990–1994), while the second channel prevails in the second subperiod (1995–1999), which begins with the start of the two South American customs unions. The findings thus highlight two types of benefits that arise from PTAs and lead to lower external import protection, which are of a more specific and microeconomic nature, and have not been previously identified empirically. They also reveal how different theoretical channels may be the main drivers of the effect of preferential liberalization on external import protection during different periods within the same region.

The results are economically significant, with a one standard deviation increase in each of the variables associated to those effects leading to a combined reduction of more than 20 percent in the median external import protection in the sample. Moreover, and turning to the policy implications, since the effects of a PTA on the tariffs imposed against non-member countries have implications for the welfare impact of the agreement, it is vital that policymakers comprehend the mechanisms generating those effects. In particular, the mechanisms uncovered here could help countries identify ways to reduce the extent of trade diversion arising from preferential liberalization, as well as increase world welfare and help push for a general movement toward global free trade. By leading to lower rather than higher external tariffs, those forces may also help reduce or avoid retaliation by non-member countries, which would harm the PTA members.

Some important distinctions from most of the current literature are that instead of focusing only on determining the sign of the effect of preferential liberalization on protection against nonmembers, I seek to uncover the different mechanisms that are behind such an effect, and I also include and find evidence of political–economic channels. Moreover, I examine not only MFN and preferential tariffs, but also the temporary trade barriers of antidumping and safeguards, the use of which also started to increase in the 1990s in Latin America, and thus have an important policy component.

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One question that arises from this study is why the building block effect in Latin America becomes slightly smaller when TTBs are taken into account. The finding that TTBs are used differently than import tariffs and thus that PTAs may be associated with higher TTBs against outsiders is a potential concern and merits further investigation about its causes and consequences. It would also be interesting to know if the same result holds for PTAs in other countries or regions.

Since I do not find evidence of the 'terms-of-trade' mechanism for the Latin American countries, it would be interesting to test if all. or which of, the theoretical effects from Ornelas (2005a) are present in other countries. Furthermore, and more specifically, since the magnitude of the terms-of-trade effect depends on the increase in preferential imports resulting from the trade agreement, one possibility is that the absence of evidence of that effect is related to the low level of Latin America's intraregional trade. Therefore, another question that future research could tackle is whether the terms-of-trade effect is present in regions where preferential trade is larger, and if so, that could potentially lead to further benefits from PTAs for multilateral liberalization in those types of regions, to the extent that it contributes to a larger building block effect.

Moreover, further research may shed light on other potential channels through which preferential trade liberalization might affect protection against PTA non-members, based on alternative theoretical models, not only for Latin America but also for other countries. In particular, since another result from this paper is that incorporating political–economy channels is important and leads to a substantially larger building block effect of preferential liberalization (at least in in Latin America), a focus on models that account for political–economy forces might prove especially fruitful to advance along that path.

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Appendix

Table A1. First-stage estimates

	L.ΔPref tariff	ΔM_PTA [1/]	ΔΠ [1/]
Dependent variable is	(1)	(2)	(3)
L.ΔPref tariff partner 1	0.401***	−0.003***	−0.001
	(0.035)	(0.001)	(0.002)
L.ΔPref tariff partner 2	0.284***	0.002	0.001
	(0.035)	(0.002)	(0.001)
ΔM_PTA partner 1 [1/]	0.155	0.193***	−0.320
	(0.117)	(0.067)	(0.257)
ΔM_PTA partner 2 [1/]	−0.157	−0.015	0.426
	(0.116)	(0.066)	(0.263)
L.ΔPref tariff * ΔM_PTA partner 1 [1/]	0.155	0.193***	−0.320
	(0.048)	(0.051)	(0.052)
L.ΔPref tariff * ΔM_PTA partner 2 [1/]	−0.003	−0.139	−0.103
	(0.031)	(0.125)	(0.153)
ΔΠ partner 1 [1/]	0.084	0.046	3.959***
	(0.122)	(0.051)	(0.921)
ΔΠ partner 2 [1/]	−0.058	0.004	−0.057
	(0.037)	(0.008)	(0.190)
L.ΔPref tariff * ΔΠ partner 1 [1/]	0.045	−0.002	0.013
	(0.031)	(0.002)	(0.009)
L.ΔPref tariff * ΔΠ partner 2 [1/]	−0.013	−0.0001	−0.002
	(0.011)	(0.001)	(0.003)
bhi*ΔΠ partner 1 [1/]	0.181	−5.781***	83.509***
	(1.157)	(2.121)	(24.552)
bhi*ΔΠ partner 2 [1/]	0.189***	0.102**	−1.965***
	(0.052)	(0.044)	(0.560)
L.ΔPref tariff * bhi*ΔΠ partner 1 [1/]	0.695**	−0.044	0.719
	(0.297)	(0.075)	(0.460)
L.ΔPref tariff * bhi*ΔΠ partner 2 [1/]	0.024**	−0.001	−0.0001
	(0.012)	(0.001)	(0.004)
Observations	4,255	4,255	4,255
R-squared	0.34	0.04	0.28
Shea Partial R-squared	0.19	0.013	0.19

Notes: Robust standard errors in parentheses with *, **, and *** indicating statistically significant at 10%, 5% and 1% levels, respectively. Constant included but not reported. 1/ Variable is scaled by 100,000. Since the variables are demeaned, the R-squares are not including the fixed effects.

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