Firm Export Responses to Tariff Hikes*

Facundo Albornoz Irene Brambilla Emanuel Ornelas

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Abstract

We study how firms react to unexpected increases in import tariffs. We identify our results from a sudden removal of American preferential tariffs applied on Argentine imports under the Generalized System of Preferences, which reflected American retaliation to a dispute over intellectual property between the two countries. Critical for identification, the tariff hike affected a third of Argentine exports enjoying preferential access in the American market, but did nothing to the other two thirds. We find that the higher tariffs reduced export participation of affected Argentine firms in the US market, whereas resilient exporters dealt with the cost increase by reshuffling their export baskets away from the products whose tariffs increased. In fact, affected firms were more likely both to drop suspended products from their export basket and to start exporting new (non-suspended) products to the US. Interestingly, the extensive margin effects carry over third markets, where policy did not change: after the policy shock, affected firms selling to the US were less likely to export to other markets. This happened, however, only for firms that also exited the American market. Those findings reveal the nuanced consequences of tariff preferences on the behavior of exporting firms, highlighting that their effect tend to spill over other products and other markets.

Keywords: Tariffs; GSP; exporting firms; multiproduct firms; third-market effects

JEL classification: F13, F14, F55, F63, O19, O24

*Albornoz: University of Nottingham and CONICET-IIEP; facundo.albornoz@nottingham.ac.uk. Brambilla: UNLP and CONICET; irene.brambilla@econo.unlp.edu. Ornelas: Sao Paulo School of Economics-FGV, CEPR, CESifo and CEP; eaornelas@gmail.com. We thank Lorenzo Caliendo, Giacomo de Giorgi, Amit Khandelwal, Feodora Teti, seminar participants at CAF, ESSEC, Inter-American Development Bank, University of Geneva,, University of Georgia, University of Melbourne, Monash University, 2019 LACEA-LAMES Conference, 2019 SBE Conference, 2018 Moscow International Economics Workshop, 2020 Villars Workshop on "Challenges to the Global Trading System," and especially Eduardo Morales and Andrés Rodriguez-Clare for very helpful comments and suggestions. Diana Beltekian and David Contreras provided outstanding research assistance.

1 Introduction

How do sudden increases in import tariffs affect firm export behavior? Do firms avoid the market where tariffs increased? Do they change their export basket composition? Does the tariff change in one market influence firm export participation in other markets? Answering those questions is important for our understanding of the consequences of trade policies, and it also sheds light on how multi-product firms operating across different markets respond to an increase in the variable cost of selling some goods in a specific market.

We carry out the analysis in a context that allows us to credibly identify those effects. We find that tariff hikes on specific products reduce firm export participation but have little effect on the aggregate foreign sales of resilient exporters. This happens because of the reshuffling of products within firms. Interestingly, firms affected by the tariff hike, if sufficiently exposed to the affected market, alter their export participation behavior in a similar way also with respect to other markets, even though tariffs did not change there.

Our institutional context is that of the General System of Preferences (GSP). Since the 1970's, all signatories of the General Agreement on Tariffs and Trade (GATT, which in 1995 became the World Trade Organization) have been formally allowed to offer nonreciprocal trade preferences to developing countries. Whilst those preferences represent a blatant exception to GATT's principle of nondiscrimination,[1] they have become pervasive; currently, all developed countries have their own GSP program.

In this paper, we exploit a dispute between the US and Argentina in the mid-1990s over the rules and the enforcement of foreign intellectual property rights in Argentina—in particular, the application of a patent law to pharmaceuticals. The conflict led the US to suspend preferences on around a third of Argentina's exports that benefited from GSP on over 100 different non-pharmaceutical products in 1997. As a result, some Argentinian products previously enjoying duty-free entry in the American market started to face higher export costs associated with the (most-favored-nation) import tariffs. On average, import tariffs on the affected goods increased by almost 4 percentage points for Argentinian exporters. That exogenous increase in tariffs (from the perspective of the Argentinian firms) provides a rare opportunity to identify the causal effect of

[1] Specifically, GATT's Article I states that members cannot discriminate across sources of imports. Article XXIV permits discrimination but only under reciprocal liberalization in the context of free trade areas and customs unions.

country-specific tariffs hikes on export outcomes at the firm level.

Before getting to the firm-level analysis, we confirm that, at the product-level, the policy shock had a significant impact on trade flows. Specifically, we find that exports of suspended goods from Argentina to the US fell after the shock both relative to non-suspended goods and in absolute terms. In fact, we estimate a trade elasticity of 10 at the 8-digit level. Interestingly, at higher levels of aggregation the estimated elasticity drops considerably (to 5 and to 1.8 at the 6- and 4-digit levels, respectively), consistent with the tariff change causing substitution across related products.

When we move to the firm-level analysis, comparing the reactions of the firms affected by the suspension with the behavior of firms whose products were unaffected by tariff changes, we find that the tariff increase induced some firms to stop exporting to the American market altogether. Among those that continued to serve the US, there is no clear evidence that the total volume of their exports fell. This is explained by a rearrangement of products within firms, away from suspended goods and toward non-suspended ones. Those findings show, on one hand, that tariffs can be a deterrent of firms' foreign market participation. On the other hand, more resilient exporters are able to partially circumvent heterogeneous tariff increases through (potentially inefficient) shift of resources across products. Effectively, this indicates firm-level *product substitutability within a market*—implying that, to increase exports of a product, a firm may need to decrease its foreign sales of other products. This suggests the presence of diseconomies of scope at the firm-market level.

To understand that mechanism better, we develop a simple, partial-equilibrium framework that features diseconomies of scope at the firm level. We then derive additional consequences of a tariff increase on some goods in that setting, which we summarize in two "predictions." First, the firms most likely to stop exporting because of the tariff hike are the smallest exporters. Second, medium-size exporters of affected goods become more likely to export other, unaffected goods. We find empirical support for both of them, thus providing additional evidence that firms react to product-specific increases in variable trade costs by substituting across products.

Perhaps even more surprising is our finding that the extensive margin results obtained for the American market carry through to third markets, *where there was no policy change* regarding imports from Argentina. This result suggests the existence of firm-level *product complementarity across markets*—implying that, if the variable cost of exporting a certain product to a market rises,

firms will cut down exports of that product not only to that market but also to markets where export costs did not change. Accordingly, we extend our framework to incorporate increasing returns at the firm-product level. Developing its logical consequences, it implies, first, that the firms that exit third markets because of the suspension must have also left the American market. We confirm that this is indeed the case: the extensive margin result in third markets is restricted to firms that exit the US. Second, the firms that are most likely to exit third markets because of the suspension are the smallest exporters. That prediction is confirmed empirically as well. Furthermore, we find that third-market effects are restricted to the firms for which sales of suspended products in the US were relatively important in their overall exports. Overall, these results relay important evidence about how firms define their global export strategies.

To our knowledge, our findings are new not only in the literature exploring the effects of GSP, but also in the broader literature on the export behavior of multiproduct firms. Of course, they are drawn from a specific trade policy change, and one needs to be cautious before generalizing the conclusions to other settings. Nevertheless, it is worth stressing that our environment provides a rather clean opportunity to infer the causal effects of tariff changes on firm behavior. Most existing studies rely either on across-the-board programs of unilateral liberalization or sweeping liberalization in the context of free trade agreements.[2] By design, those tariff changes are endogenous. Moreover, they usually shift the whole spectrum of tariffs. Both features impose a series of identification challenges. In our case, one can reasonably claim that the tariff increase in the American market was exogenous for the affected Argentinian firms. And while the products were surely chosen non-randomly by the US government, we find no evidence that the product selection reflected pre-shock import levels or import growth from Argentina. In fact, while some products were relatively important in the context of Argentina's GSP, others were not—some were not even exported by Argentina to the US right before the shock. The finding that pre-shock Argentinian export levels and growth do not explain the product selection may reflect the fact that American imports from Argentina under GSP are tiny from the US's perspective.

It is worth noting that the policy shock we exploit shares some interesting resemblances to recent American tariff changes. First, and most obviously, the market affected directly is the same: the US. Second, unlikely what is commonly observed in most related studies, tariffs increase rather

[2]See, for example, the survey by Goldberg and Pavcnik (2016).

than decrease. Additionally, the tariff hikes happen on a discriminatory basis, being targeted at specific countries (in our paper, just Argentina; recently, mainly China but also other countries). Fourth, only a set of products are affected; that is, it is not an across-the-board change in tariffs, as for example when countries sign free trade agreements. Finally, in both cases the policy shock was relatively sudden and unanticipated (or at least not fully anticipated, in the case of Trump's tariffs). We should also have in mind that the GSP program has become one of the targets of the Trump's administration, with Turkey and India having their GSP eligibility in the American market removed in June 2019. If the Administration is to be believed, others may soon face the same fate, highlighting the importance of understanding the consequences of those preferences on firm export behavior.[3]

On the other hand, the policy shock we study and recent trade policy changes in the US differ significantly in their magnitudes and their time frame. The former is tiny for the US and its consequences have already been fully developed. By contrast, the latter is sizeable and its consequences are still ongoing. The advantage of observing the whole aftermath of the shock is obvious. There is also a methodological advantage from the "smallness" of the shock; as we argue, it makes the econometric identification of the implications for the affected firms particularly transparent. Moreover, at least until we have studies showing how firms affected by the Trump tariffs are reacting, our findings offer a hint of what we may find out.

1.1 Related literature

We contribute to four different but interconnected research agendas. First, our results shed light on how firm export strategies are affected by changes in exporting costs. We can interpret the unexpected removal of preferential status as an exogenous (from the firms' perspective) increase in the variable costs of exporting, which allows us to understand how product-country specific variable export costs affect firm export decisions of other products and to other destinations. In that sense, we join a burgeoning literature on export dynamics at the firm level. Most of that literature focuses on the effects of sunk and fixed costs (e.g. Albornoz, Fanelli and Hallak, 2016; Arkolakis, 2016;

[3]As U.S. Trade Representative Robert Lighthizer has pointed out, "President Trump has sent a clear message that the United States will vigorously enforce eligibility criteria for preferential access to the U.S. market. Beneficiary countries choose to either work with USTR to meet trade preference eligibility criteria or face enforcement actions" (https://ustr.gov/about-us/policy-offices/press-office/press-releases/2017/december/trump-administration-enforces).

Das, Roberts and Tybout, 2007; Impullitti, Irarrazabal and Opromolla, 2013; Morales, Sheu and Zahler, 2019). We offer a complementary perspective on how changes in variable export costs affect export decisions.

Within the broader literature on firm export strategies, more recently some authors have looked at how changes in demand or in export costs in one market affect firm sales to other markets. One stream of the literature explores the connection between serving the domestic market and exporting at the firm level. Vannoorenberghe (2012) and Blum, Claro and Horstman (2013) provide initial evidence supporting the existence of substitutability between domestic sales and exports. More recently, Almunia, Antràs, Lopez-Rodriguez and Morales (2020) study the reaction of Spanish firms to the Great Recession and find that, due to increasing marginal costs, firms redirected sales to foreign markets as a reaction to the slump in the domestic market. Medina (2020) finds similar results when examining how Peruvian apparel producers reacted to rising domestic competition from China, exporting more and better products. Those results contrast with the findings of Berman, Berthou and Heriocut (2015), identifying foreign demand shocks at the firm-level, they find that an exogenous increase in exports due to demand shocks induces French firms to increase their domestic sales, suggesting complementarity between domestic and foreign sales. Another line of work focuses on the connection between different export markets. Defever and Ornelas (2019) study how the elimination of quotas on some textile and clothing products in the US and the EU in 2005 affected Chinese exports of those products to other markets. Interestingly, despite their completely different context, they also find a positive third-market effect at the extensive margin, but not at the intensive margin.[4] Our results provide well-identified evidence consistent with complementarities of export activities across foreign markets. At a more general level, an important message from this recent but growing literature is that the consequences of a policy (or demand) shock are best viewed at the *firm*, not the firm-market, level.

Second, our results are informative to the literature on multi-product firms in international trade. A common finding in that literature is that both tougher market competition and general trade liberalization tend to induce firms to concentrate on their best-performing products. That, in turn, tends to increases firm productivity. For example, Mayer, Melitz and Ottaviano (2016) look

[4]Also exploring changes in tariffs, Albornoz, Calvo-Pardo, Corcos and Ornelas (2019) show that worldwide tariff changes shape the pattern of market entry of French firms.

at the effects of demand shocks as the force behind productivity-enhancing changes in the product mix. Their main finding is that positive demand shocks induce firms to skew their exports towards their best-performing products.

However, in that literature, changes in the trade cost of a product typically affect the sales of that product, but not of others sold a firm, at least if we abstract from demand-side effects.[5] This follows the usual modeling of cost functions as a pre-determined collection of varying constant marginal costs, possibly dependent on the destination.[6] In contrast, our results show that changes in the variable cost of exporting a product affect the profitability of exporting other products. Specifically, we find that a higher tariff on a product induces some firms to export more and to start exporting other products. This suggests the presence of decreasing returns to scope at the firm-market level: fewer exports of a product to a market make it worthwhile to export other products to that market. This reveals, in particular, that the identity of a firm's best-performing product(s) is highly sensitive to variable trade costs. Furthermore, we find that a tariff increase can compel firms to stop exporting even to third markets. Once again in contrast to the received literature, this points to possible increasing returns to scale at the *firm-product* level, since there were no changes in trade costs to those markets. Overall, those results reveal novel channels through which tariffs can affect firms' product scope within a market, as well as their presence in different markets.[7]

Third, we contribute to the understanding of the effects of nonreciprocal preferences. The formal goal of GSP is to foster export-led growth in developing economies through preferential access to large, high-income markets. Despite the apparent benefit of such preferences for poorer countries, there are numerous criticisms to the institutional design of the system. For example, they do not induce the recipient countries to liberalize their own markets; the 'donor' countries have significant discretion over the selection of products and on how long the preferences will be in place;

[5]Those usually work through cannibalization effects within the firm, as for example in Eckel and Neary (2010) and Dhingra (2013). While important in some context, where firms are large in the market, it is unlikely to play a meaningful role in our context, where Argentinian firms selling to the US are very small and fit best the "atomistic" assumption adopted, for example, by Bernard, Redding and Schott (2011) and Mayer, Melitz and Ottaviano (2014).

[6]Arkolakis, Ganapati and Muendler (2019) add a market-access cost schedule to that setup, which affects the market-specific profitability of products away from a firm's core. Qiu and Zhou (2013) develop a relate analysis.

[7]Such interdependencies across markets and products within a firm are highlighted in the broad model developed by Bernard et al. (2018). In their setting, "global firms" choose the markets to serve, the products to sell in each of those markets, the markets where to source inputs, and the inputs to source in each of those markets. Indirect cross-cost effects arise through the firms' sourcing strategies, potentially generating economies of scope. Our findings indicate that cross-cost effects can arise even for firms that are small in foreign markets.

and the preferences can be withdrawn at any time. Hence, in theory it is difficult to establish how important GSP is as a springboard for growth in developing countries (Bagwell and Staiger, 2014; Ornelas, 2016). The verdict in necessarily empirical. However, most existing empirical studies are at aggregate levels and yield inconclusive results.[8] In fact, as pointed out by Ornelas (2016), there has not been yet any estimate of how nonreciprocal preferences affect firm-level behavior.[9] Furthermore, to infer causality one needs plausibly exogenous variation in GSP status. This is what we offer in this paper.

Our results indicate that nonreciprocal preferences can be an effective policy instrument to stimulate entry in high-income markets, in line with the goals of GSP. However, firms also exploit variation in preferential tariff rates to acquire export rents through changes in their export basket composition, possibly mitigating aggregate effects for their economies through that adjustment.

Finally, as argued above, our policy shock shares several features observed in the tariff changes currently happening in the United States. The first reaction of the literature was to study the effects of those tariff increases (and of the subsequent retaliation of its affected trade partners) on prices and the associated welfare consequences (Amiti et al., 2019 and 2020; Cavallo et al., 2019; Fajgelbaum et al., 2020; Flaaen et al., 2019). Since this event is recent (and ongoing), those papers focus on estimating the pass-through from tariffs to prices in the short run. We provide a complementary analysis of how tariffs hikes affect exporters, focusing instead on how they adjust to the tariff shock, with emphasis on product substitutability within markets and on third-market effects.[10]

In the next section, we detail the institutional setting of the policy shock and provide evidence that it affected exports at the product level. In section 3, we develop the firm-level empirical

[8] There are mainly two branches of the literature estimating the trade effects of nonreciprocal preferences. One relies on country-level gravity estimations to evaluate the aggregate effect of the preferences—e.g., Herz and Wagner (2011), Gil-Pareja et al. (2014) and Ornelas and Ritel (2020)—with conflicting results due to data and methodological issues, as well as the treatment of heterogeneity. The other estimates the trade effects of specific nonreciprocal agreements at the product level—e.g. Frazer and Van Biesebroeck (2010) study the African Growth and Opportunity Act; Hakobyan (2017, 2019) exploits, respectively, the suspension of country-product pairs from the program when exports to the US increased "too much" and periods in which the American GSP program expired (to be later reinstated); Gnutzmann and Gnutzmann-Mkrtchyan (2017) study the EU's withdrawal of GSP preferences from Belarus in 2007; Garred and Kwon (2017) assess the expansion of unilateral preferences in OECD economies since the late 1990s. Those studies generally find positive, but relatively small, effects of preferences on exports of beneficiaries.

[9] In independent work in progress, Teti (2020) studies how the Andean Trade Preferences Act—a program that gives better access to the American market for firms from Bolivia, Colombia, Ecuador and Peru—affected firm-level exports to the US and find finds positive effects for Peruvian firms.

[10] Flaaen et al. (2019) look at related dimensions, but from a very different angle: the price effects on complementary products within a market, and third-market effects due to changes in production patterns within multinational firms.

analysis toward the United States. We develop a simple framework to rationalize those results and derive additional implications in section 4. In section 5, we then explore the consequences of the policy shock for the behavior of affected firms toward third countries. We conclude in section 6.

2 The policy shock and its product-level impact

2.1 The policy shock

The American GSP has been in place since January 1976. It currently offers duty-free access on over 3,500 tariff lines to 121 countries. Although often significant for the exporting countries, the imports entering the US under GSP ($23.6 billion in 2018, https://ustr.gov/sites/default/files/files/gsp/GSP_By_The_Numbers_March_2019.pdf) correspond to less than one percent of total American imports. The program specifies 15 criteria that a developing country must meet to qualify—respect internationally recognized worker rights, provide intellectual property protection, combat child labor, etc. Countries that do not meet those criteria may be taken out, permanently or provisionally, fully or partially, from the recipients' list. The trade policy shock we exploit is one of such partial suspensions.

Specifically, on April 15, 1997, the US government partially withdrew duty-free treatment offered to Argentina under GSP. The decision followed a conflict between the two countries regarding the application of patent laws to pharmaceutical production in Argentina. As a consequence, several products exported from Argentina to the US, which had previously benefited from free entry under GSP, lost the preferential treatment and began to incur import tariffs.[11] That unilateral change in trade policy provides a sizeable variation in export variable costs, exogenous from the perspective of the affected Argentinian firms, which saw the duties on some of their products rise from zero to the Most Favored Nation (MFN) tariff in the American market.

Table 1 clarifies the importance of the suspended products for Argentina. It shows exports from Argentina to the US in 1996, the year before the suspension. Out of 1340 8-digit products that were exported, 595 were eligible for the American GSP program, amounting to US$388 million of exports entering the US free of duty. That value corresponds to 17 percent of total Argentinian

[11] See Blanchard and Hakobyan (2015) for a rich account of the potential and the observed discretion exercised by the US government when deciding eligibility of countries, products and country-product pairs. As they stress, the system is far from a 'generalized' system.

exports to the US in that year. The average MFN tariff of the eligible products, weighted by import share in 1996, was 3.7 percent. The tariff preference was claimed in 90% of the eligible exports. The vast majority of those exports were in manufacturing (the bottom panel of the table).

In 1997, 123 products were suspended from GSP (120 of them in manufacturing). Of those products, 91 recorded positive exports in 1996; the remaining suspended products were not exported by Argentina to the US in 1996. In Table A1 we provide the list of suspended products. Importantly, in the list there are no pharmaceutical goods. That was not a choice; pharmaceutical goods were not eligible for GSP in the first place, and therefore could not be suspended. The list has products from related industries, like chemicals, but also many other goods from entirely different industries, like agriculture, apparel and furniture. In terms of export value, products suspended in 1997 account for 5.5% of total exports and for 32.5% of GSP exports from Argentina to the US in 1996. The average MFN tariff of the suspended products was 3.6 percent, very close to the average MFN tariff of all products eligible for preferences. The figures are very similar if we consider only manufacturing products.

Importantly, the policy shock was largely unanticipated by the Argentinian firms. To recover the timeline of the patent dispute and its escalation to the partial GSP suspension, we have searched, using a variety of key terms, through the main daily newspaper in Argentina, *La Nacion*. The controversy started in December of 1995, but at that moment it was restricted to the suitability of Argentina's new patent law, which was challenged by US authorities—apparently under the pressure of American pharmaceutical multinationals. The US government raised the possibility of taking the case to the World Trade Organization but never did it (according to some Argentinian authorities, because the US anticipated losing it). Without the backing of a favorable WTO resolution, the options for trade sanctions were limited. The possibility of suspending Argentina from GSP was then publicly raised on January 1997. At first, the US indicated a suspension of 50% of the products, but ended up including fewer products than that. On the other hand, there was no presumption that the suspension would be revoked any time soon. In fact, the suspended products were never granted preferential treatment in the American market again. In the Appendix we provide a more detailed account of the events leading to the policy shock.

2.2 Selection of products

The rationale for the choice of products was not made public and remains unclear. First, we note that, while exports under GSP were significant for Argentina (17% of their total exports to the US), from the American perspective they were very small, corresponding to 0.05 percent of its total imports in 1996. If we consider only the products suspended, their share in American total imports in 1996 was less than 0.02 percent. Since those shares are tiny, it is plausible that the choice of products to suspend by the American government was not directly linked to their importance in the American market.

To verify whether that was indeed the case, we use USITC data to 'predict' which products were suspended based on pre-1997 import levels and import growth. We also include the level of the MFN tariff in our estimation, since it is a variable that the American policymakers may plausibly consider when deciding which products should have their tariff reversed to the MFN rates. The equation we estimate is

$$I(SUSP)_i = \beta_1 M96_i + \beta_2 \Delta M(96/93)_i + \beta_3 MFN_i + \varepsilon, \tag{1}$$

where i indexes products; $I(SUSP)_i = 1$ if product i was suspended and 0 otherwise; $M96_i$ denotes American imports of good i in 1996, $\Delta M(96/93)_i$ represents the growth of imports of good i between 1993 and 1996, defined as the log difference between the sum of imports in 1995 and 1996 and the sum of imports in 1993 and 1994[12]; and MFN_i indicates good i's MFN tariff rate. The sample is composed of all products exported by Argentina under GSP in 1996. We estimate equation (1) as a linear probability model.

Table 2 shows the results. Since in principle the decision to include a product can be based on overall imports or on imports from Argentina alone, columns 1-2 consider only imports from Argentina, whereas columns 3-4 include imports from the rest of the world. Column 1 reports the estimation on the import level and MFN tariff only; column 2 adds import growth; column 3 includes import level and growth from the rest of the world; column 4 adds industry-fixed effects at the 2-digit level. The results do not indicate that previous trends or levels in imports from

[12]We generate 2 two-year periods to be more flexible and mitigate problems with missing values generated by the sparsity of imports at the HS8-digit level.

Argentina, or from *ROW*, or the MFN tariff level, were key factors in the decision to suspend a product. Hence, the rationale for the selection of products seems to have been based on factors unrelated to the economic variables on which we focus in our analysis.

2.3 The product-level impact

Before getting to the firm-level analysis, we investigate the impact of the policy shock on product-level exports from Argentina to the US. To do so, we use USITC data from 1996 to 1999, leaving aside 1997, the year where the suspension was implemented. We calculate product-level shares of goods exported to the US from Argentina and investigate how the suspension affected them. Specifically, we estimate the following regression specification:

$$sh_{it} = \alpha SUSP_i \times POST_t + \phi_i + \phi_t + \epsilon_{it}, \tag{2}$$

where i indexes products and $t = 1996, 1998\text{-}1999$ indexes period, where we aggregate the post-suspension years to have a single period both before and after the shock. The dependent variable sh_{it} corresponds to the share of 8-digit product i in total exports from Argentina to the US in period t: $sh_{it} \equiv M_{it}/M_{Arg,t}$, where M_{it} denotes American imports of product i from Argentina in period t and $M_{Arg,t}$ indicates total American imports from Argentina in period t. In turn, $SUSP_i$ is an indicator taking the value of one for suspended products and zero otherwise, while $POST_t$ is an indicator taking the value of one when $t = 1998\text{-}1999$. The $\{\phi\}$ variables correspond to product and year fixed effects.

Now, one concern with specification (2) is that there may be shocks that affect all foreign sales of suspended products in the American market. For that reason, it is useful to also consider imports from markets other than Argentina in the regression. We therefore estimate as well the following triple-difference specification:

$$sh_{imt} = \alpha SUSP_{im} \times POST_t + \phi_{im} + \phi_{it} + \phi_{mt} + \epsilon_{imt}, \tag{3}$$

where we keep the same definitions as in (2) but add a third dimension by considering exports from the rest of the world (ROW) to the US. Specifically, the dependent variable sh_{imt} now

corresponds to the share of 8-digit product i in total exports of market m to the US in period t: $sh_{imt} \equiv M_{imt}/M_{mt}$, where M_{imt} denotes American imports of product i from market m in period t and M_{mt} indicates total American imports from m in period t, where $m = Argentina,\ ROW$. The indicator $SUSP_{im}$ takes the value of one for suspended products when $m = Argentina$ and zero otherwise. In turn, the $\{\phi\}$ variables now correspond to product-origin, product-year and origin-year fixed effects.

Under the assumption that ROW exports to the US are not directly affected by the GSP suspension of Argentina's preferences in the American market, the triple-difference coefficient α gives us the effect of the suspension on the relative Argentinian sales of those products to the US. Or put differently, it gives us the extent of the relative loss of importance (if $\alpha < 0$) of those products in Argentina's exports to the American market. It has an analogous interpretation in the double-differences specification.

Table 3 shows the results. We consider four samples: only imports from Argentina (columns 1 and 2), following specification (2), and imports from both Argentina and ROW (columns 3 and 4), following specification (3). Columns 1 and 3 consider all products with strictly positive imports from Argentina before and after 1997. Columns 2 and 4 restrict the sample to products granted GSP to Argentina in 1996.

The results indicate that the suspension of GSP preferences reduced the importance of the affected products in Argentina's export basket to the US. Specifically, on average the suspension reduced the share of a product in Argentina's exports by 43 percent (when we consider the double-differences specification: $\hat{\alpha}/average\ share = -.025/.058 \sim 43\%$) and by 34 percent (when we consider the triple-differences specification: $\hat{\alpha}/average\ share = -.020/.058 \sim 34\%$). Thus, although the average share of a single suspended product in Argentina's exports pre-1997 is obviously small (0.058%), in relative terms the changes are large. Naturally, the impact is higher when we consider only GSP products. Those findings are broadly consistent with the results of other detailed product-level analyses of the concession of nonreciprocal preferences, as discussed in the Introduction.

The purpose of the triple-difference (relative to the double-difference) is to control for product-specific American import demand shocks. Since the results with the double and triple differences are very similar, they suggest that on average the suspended products were subject to about the same type of demand shocks as other products, so that is not what drives the changes in Argentina's

exports basket.

2.3.1 Product-level trade elasticity

Another way to evaluate the impact of the suspension at the product level is to estimate how imports from Argentina were affected by the resulting tariff changes. That is, to take advantage of our specific but well-identified trade shock to estimate a reduced-form trade elasticity at the product-level.

To do so, we run the following regression specification:

$$\log M_{it} = \gamma \tau_{it} + \phi_i + \phi_t + \epsilon_{it}, \tag{4}$$

where τ_{it} represents the ad valorem tariff faced by Argentinian exporters of good i in the US in year t, $t = 1996, 1998$. For suspended goods, τ_{it} is zero in 1996 and equal to the US MFN tariff in 1998; for other GSP goods, τ_{it} is zero in both years; for non-GSP goods, τ_{it} is the US MFN tariff in both years.

We estimate (4) at the 8-digit, 6-digit and 4-digit levels. In the last two cases, the average tariff is computed using the share in total US imports from Argentina in 1996. Comparing the estimates at different levels of aggregation is useful to understand the degree of substitutability across products.

Table 4 shows the results. At the 8-digit level, we obtain a relatively high trade elasticity of 10. As we move to more aggregated estimates, the elasticity drops considerably, to 5 (6 digits) and to 1.8 (4 digits). This provides a first indication that there is potential for significant substitutability across products. As we will see, such a substitution is very present at the firm level.

3 Firm-level analysis

3.1 Data

The analysis in section 2 shows that the suspension from the American GSP program reduced Argentinian exports of the affected products to the US. A concern is that, even if exports fall at the product level, they may not change as much at the firm level. This could happen if firms could

easily substitute exports across products or markets. In that case, GSP may be interpreted mostly as a device that increases rents for the exporters enjoying the preferences, possibly generating misallocation of resources in their countries, rather than an engine for export-led growth, as its formal justification in the GATT purports. A similar interpretation may extend to tariff changes on isolated products more generally. To investigate that possibility, we now move to the firm-level analysis.

Our primary source of data is Argentina's customs data, which contain information on the universe of Argentinian export transactions. The dataset covers every firm-product-destination export combination. Each record contains the firm's unique tax code; the exported good, identified at the 8-digit level using the Nomenclatura Comun del Mercosur (NCM); the destination; and the value and quantities exported. From the United States International Trade Commission (USITC) we have information on preferences granted to Argentina in the American market at the 8-digit level using the Harmonized Tariff Schedule of the United States (HTSUS); on claimed GSP imports; and on American MFN tariffs.

One difficulty is that the NCN and HTSUS product classifications do not match at the 8-digit level. For that reason, we work at the 6-digit level, since at that level of aggregation both systems adopt the harmonized system (HS) of classification.[13] Another difficulty is that there was a change in the HS classification in 1996. We follow the concordance methodology used by the United Nations Trade Statistics (available at https://unstats.un.org/unsd/trade/classifications/correspondence-tables.asp) to make the correspondence. Overall, 24 percent of the products suspended were affected by the reclassification in one way or another.

The dataset spans 1994 to 2001, so it allows us to observe Argentinian firm-level exports both before and after the partial cancellation of GSP in the American market. Since the policy took place in the middle of 1997, we eliminate 1997 from the analysis, so that the periods before and after the shock are clearly defined.

Table 5 shows the number of Argentinian firms exporting to the US in the years prior to the shock (3,267) and, among them, the number that served the American market in the years after the shock (2,036). On average, the surviving exporters to the US served more destinations and

[13]We define a product at the 6-digit level as "suspended" if at least one HS8 product within the HS6 product is suspended. We define "GSP products" at the 6-digit level as a continuous variable between 0 and 1. It is computed from USITC data by calculating the share of HS8 GSP products within an HS6 product.

exported more products than the exiters. The table also shows the average share of suspended, GSP and non-GSP products in the export baskets of Argentinian firms selling to the US before and after the policy shock. We observe that suspended goods lose importance in the export baskets of Argentinian firms after 1997, whereas non-GSP goods become more relevant. That pattern is most visible when we consider the firms that sold at least one suspended product before 1997. We can interpret Table 5 as a first indication that the policy shock induced Argentinian firms to change their export behavior toward the US.

Now, before we start the formal firm-level analysis, a natural concern is whether the firms affected by the suspension were growing at a different pace relative to other Argentinian exporters. If that were the case, our results could capture a pre-suspension trend that persisted after the suspension.

We answer that question in Table 6. We look at pre-1997 export growth (between 1995 to 1996 and between 1994 to 1996). In the table, "suspended firms" are defined as those that exported at least one suspended product to the US in 1996, whereas "non-suspended GSP firms" are those that exported GSP-eligible goods but not suspended ones to the US in 1996. As the t-test on the equality of means indicates, there is no statistical difference between the export growth of firms affected and unaffected by the suspension. Those results indicate that our findings do not reflect pre-shock trends in the affected firms.

3.2 Benchmark specification

Our benchmark specification has the following form:

$$y_{jt} = \beta_1 \left(SUSP_j \times POST_t \right) + \phi_j + \phi_t + \{D_{jt}\} + \epsilon_{jt}, \tag{5}$$

where j indexes firms and t indexes years. We include firm (ϕ_j) and year (ϕ_t) fixed effects. Since firms of different sizes may behave differently, we also include firm-year dummies for firm sizes ($\{D_{jt}\}$), distinguishing among firms below median export size, between the 50th and 75th percentiles, and above the 75th percentile. We cluster standard errors at the firm level. The dependent variable y_{jt} varies across specifications, corresponding to different measures of exports.

The key independent variable is the difference-in-differences interaction $SUSP_j \times POST_t$. The

variable $POST_t$ captures the timing of the policy shock, corresponding to a dummy that is one from 1998 onwards and zero otherwise. In turn, $SUSP_j$ captures the firm exposure to the suspension. Its definition is not as straightforward, because a firm can export both products that had preferences suspended and products that either never had preferential treatment or had it throughout the whole sample period. Furthermore, simply looking at whether a firm exported a product that had its preferential treatment revoked disregards heterogeneity in the value of that preferential treatment. Accordingly, we use different definitions for $SUSP_j$ under different samples, as follows:

D1. The average share, from 1994 to 1996, of suspended products in total firm exports to the US, where the sample includes all firms that exported to the US before 1997.

D2. Same definition as in D1, but restricting the sample to firms for which at least 80% of export value to the US prior to 1997 was of products that received preferences under GSP; we term them "GSP firms."

D3. Average tariff increase for the firm, calculated as

$$\sum_{t=1994}^{1996} \sum_{i} \left(MFN_{it} \times sh_{ijt} \times I_i \right) / 3,$$

where MFN_{it} denotes the American MFN tariff rate for product i in year t, sh_{ijt} is the share of product i in firm j's exports to the US in year t, and I_i is an indicator for whether product i was suspended in 1997.

D4. Same definition as in D3, but with the sample defined in D2.

Definition D1 is the most intuitive: the greater the share of products suspended in a firm's exports to the US, the more exposed to the policy shock the firm was. Definition D3 allows for different intensities of treatment even for firms that exported the same share of suspended products before 1997. It is designed to capture more accurately the value of the lost preferential treatment. For example, if a firm exported mostly products that were suspended but whose MFN tariffs were minuscule, then the loss of preferential treatment should be meaningless. Definition D3 would capture that lack of importance, unlike the simpler definition D1. Conversely, if a firm exported suspended products whose MFN tariffs were very high, then the policy shock would presumably

have a meaningful impact on its behavior even if the share of those products in its total American exports were relatively small. Again, definition D3 would capture the importance of that lost preference, unlike definition D1.

Definitions D2 and D4 are analogous to definitions D1 and D3, respectively, but restrict the sample to firms that are heavy exporters of products that receive GSP treatment in the US. Since those GSP firms may be the most relevant with respect to the policy shock, both as treatment and as control, it is worthwhile to have specifications that focus on them.

3.3 Main results

The core of the analysis is the American market. In Table 7 we consider the extensive margin at the firm level. Columns (1) to (4) correspond to definitions D1 to D4. The dependent variable is a dummy indicating whether firm j exports to the US in year t. Panel A follows the structure of regression (5), whereas Panel B splits $POST_t$ by year to identify possible differential effects over time. For both the full and the GSP samples, the suspension has a precisely estimated negative effect on the probability of exporting to the American market. In terms of magnitudes, if a firm exported only suspended products to the US prior to 1997, then on average the suspension would reduce the probability that this firm would export to the US after 1997 by four percentage points. This compares to a baseline probability of exporting to the US after 1997 of 30.5 p.p. The effect is larger (in absolute value), the greater the tariff increase due to the suspension. When we allow for differential effects by year (Panel B), the results show that the effect is long-lasting. Put together, the results in Table 7 indicate that the suspension of tariff preferences had an important negative effect at the extensive margin of Argentinian firms exporting to the US.

In Table 8 we turn to the intensive margin. In Panel A, the dependent variable is the log of exports of firm j to the US. We consider all firms that export in at least one year before the policy shock and one year after it, aggregating firm exports over all years before and all years after the shock. This allows for a flexible definition of intensive margin that accounts for firms that export often but not every year. In that specification, the difference-in-differences coefficient is not estimated precisely, except when we consider only GSP firms in column (2), where there is mild statistical evidence that the suspension decreased the volume of sales of exporting firms to the American market. In the Appendix (Table A2) we consider variations of the specification in

Panel A.[14] Results are similar: some indication of a negative effect for GSP firms, especially if they do not export every year, but otherwise no statistically significant effect that total export volumes changed for firms that kept exporting.

In panels B and C, we then split firm sales between suspended and non-suspended goods. When we consider just the former (Panel B), we find that the policy shock did reduce exports of suspended products by firms that kept serving the US market. The effect is sizeable. For example, considering a firm for which half of its exported value to the US was composed of suspended products, the estimated coefficient is column (1) would imply a reduction of 35% in export value to the US after the shock.[15]

Interestingly, when we consider only sales of non-suspended goods (Panel C), we obtain the opposite result: the shock induced an *increase* in the exports of those goods to the US by the firms that kept serving that market. The effect is sizeable as well. Again, considering a firm for which half of its exported value to the US was composed of suspended products, the estimated coefficient is column (1) would imply an increase of 66% in export value to the US after the shock.[16] The results from panels B and C reveal that the imprecise estimates for the intensive margin effects in Panel A reflect intra-firm product reallocation, to which we now turn in more detail.

In Table 9 we look explicitly at within-firm substitution patterns between suspended and non-suspended products. The samples in each column are the same used in the equivalent columns of Table 8. But since the goal in Table 9 is precisely to investigate substitution patterns within firms, using pre-suspension shares in the regression would not be adequate. Accordingly, in columns 1 and 2 the key independent variable is simply $POST_t$, rather than its interaction with $SUSP_j$.[17] In columns 3 and 4 we keep the weighted average MFN tariff interacted with $POST_t$ to capture whether the effect varies with the extent of the lost preferential treatment.

In Panel A we confirm that the share of suspended products in the export baskets of Argentina's

[14] Specifically, Table A2 shows results when we consider every year of the sample (except 1997) and keep a balanced panel that includes only firms that export every year; a specification similar to Panel A but further conditioning on positive exports in 1996; and one like Panel A but distinguishing between perennial and occasional exporters.

[15] For that firm, $SUSP \times POST = 0.5$. Thus, comparing before and after the suspension, we obtain $\log(y^{susp}_{after}) - \log(y^{susp}_{before}) = 0.5\widehat{\beta_1} = -0.43$, so that $y^{susp}_{after}/y^{susp}_{before} = \exp(-0.43) = 0.65$.

[16] For that firm, $SUSP \times POST = 0.5$. Thus, comparing before and after the suspension, we obtain $\log(y^{non-susp}_{after}) - \log(y^{non-susp}_{before}) = 0.5\widehat{\beta_1} = 0.505$, so that $y^{non-susp}_{after}/y^{non-susp}_{before} = \exp(0.505) = 1.66$.

[17] We nevertheless show, in Table A3 of the Appendix, results using $SUSP_j \times POST_t$ as the main independent variable. Results are qualitatively similar.

firms toward the US drops significantly after the shock, especially for the firms shipping mostly GSP products, for which the share drops on average by 18 percentage points. Moreover, the effect is greater when the loss of preferences is more valuable. In line with that result, but restricting the analysis to the sub-extensive margin, Panel B shows that the probability that a firm will export a suspended product decreases, and decreases by more for GSP firms and when the loss of preferences is more valuable. Panel C shows that it is not only a matter of dropping affected products; firms also add non-suspended goods to their export baskets to the US after the shock. In absolute value, this positive effect is about half the size of the direct effect on affected products shown in Panel B.

On the whole, Table 9 shows that the loss of tariff preferences induces firms to rearrange their baskets of products sold in the American market. Firms not only shift sales away from suspended products and towards non-suspended ones; they also tend to drop suspended products while adding non-suspended ones.

3.4 Product hierarchy within firms

Another way of looking at firms' product basket adjustment is to consider whether the policy shock affected product hierarchy within firms. We do so in Table 10, where we assess the impact of the suspension on the probability of being the firm's 'core product' (Panel A); the probability of being one of the firm's 'top 2' products (Panel B); and the probability of being one of the firm's 'top 3' products (Panel C). Those product definitions consider the rank order of sales to the US in a year. Panes A, B and C condition on a firm exporting on average at least 2, 3 and 4 products, respectively, to the US during 1994-1996. Since that analysis is at the firm-product level, the variable $SUSP$ is defined simply as a dummy at the product level. Similarly, in columns (3) and (4) we use the MFN tariffs of the suspended products directly. We include firm-product fixed effects, in addition to year fixed effects.

In line with the substitution between suspended and non-suspended products observed in Table 9, Table 10 shows that the suspension reduces the probability that a product will feature prominently within a firm's export basked to the US, regardless of the definition. Again, this effect is more prominent for the GSP firms. For example, using the point estimate for GSP firms, the probability of being a core product falls by 5 p.p. if the product is suspended, whereas the baseline probability of being core is 10 p.p. In general, the effects are also greater when the margin of

preference lost is larger.

Hence, those results further confirm that the change in variable export costs induced firms to rearrange the product composition of their export baskets to the US. Specifically, products whose tariffs increased were downgraded within firms' product hierarchies with respect to their sales in the American market.

3.5 Summary of results in the American market

We find that the elimination of tariff preferences on some Argentinian exports to the US had a negative extensive margin effect, with some firms stopping exporting altogether to the US because of the higher variable costs. On the other hand, the policy shock did not generate sizeable firm-level intensive margin effects. That is, if a firm kept exporting to the US after the tariff hike, it did not change its export volume in a significant way. The reason is that some firms were able to offset the cost of the tariff hikes by reshuffling products within their export baskets to the US.

Indeed, within firms that kept serving the American market, there was significant product substitution. As the trade cost of some products increased, firms shifted the composition of their export basket away from those products and toward others whose trade cost had not changed. Moreover, firms were more likely to drop products that had lost preferential tariff treatment and to add products that did not incur such a cost increase. Furthermore, the policy shock caused a change in the rank order of products within firms' export baskets, with a product becoming less likely to remain the 'core' product of a firm if its tariff preference were removed.

As firms react to the suspension by reshuffling their export basket, we have to consider the possibility that this process was not just a reclassification of the same products into different HS codes as a way to elude the increase in tariffs of suspended products. This concern is mitigated by acknowledging that the US Customs and Borders has enough control over how different products enter the American market—or else the whole structure of the American tariffs would be called into question. Still, we can check whether the unit values of the new products added by a firm after the suspension are similar to the unit values of the products dropped by the same firm after the suspension. If they were very similar, it could be a sign of relabeling. In Table 11, we report the correlation between the unit value of products exported in 1996, hit by the suspension and

dropped, and the unit value of products added in 1998 as a replacement.[18] As the table shows, the correlation between unit values of dropped and added product is very mild (and negative).

To the best of our knowledge, our results are novel. Moreover, they do not follow from standard trade models of multiproduct atomistic firms, where product decisions within firms are often assumed independent. For that reason, in the next section we develop a simple analytical framework that is consistent with our empirical findings. As we will see, although contrasting with most existing trade models of multiproduct firms, it does not take too much to generate those results. In doing so, we also generate (and test) additional empirical predictions.

4 A simple framework with diseconomies of scope

Consider that there are two products sold in the US market by Argentinian firms, product 1 and product 2. There is a large number of varieties of each product, indexed by i, which also indexes firms. Varieties can be domestic or imported. Each of them is produced by a different firm in a monopolistically competitive setting.

Preferences over varieties are CES and the residual demand for each variety i of product j is given by

$$q^i_{j,US}(p^j_{i,US}) = A^i_j(p^j_{i,US})^{-\alpha},\ j = 1, 2, \alpha > 1, \tag{6}$$

where q and p denote quantity and price, respectively. Parameter A^i_j is a demand shifter that includes the US market size, the CES price index of product j and an idiosyncratic demand shifter parameter (products do not need to enter the utility function symmetrically). We refer to A^i_j simply as the idiosyncratic demand shifter. We assume that demands are independent across products. They could be derived from a high-level Cobb-Douglas function in products and low-level non-symmetric CES function in varieties.

We are interested in the behavior of exporters from Argentina. There, firms decide whether to produce and export to the US products 1 and/or 2. Argentina is small relative to the US market; therefore, simultaneous changes in prices of all Argentinian firms do not affect the price index and parameter A^i_j.

[18] As firms may drop or add more than 1 product, we also report the correlation between the unit values of the products with the minimum, maximum and median value among the products dropped and added. See notes in Table 11.

There are ad valorem import tariffs in the US market, given by $\tau_1^{US} > 0$ and $\tau_2^{US} > 0$. However, product 1 belongs to the GSP program. Thus, from the point of view of Argentinian firms, only product 2 is subject to a positive tariff. If an Argentinian firm exports products 1 and 2 in the American market, its revenue for each product is given by

$$\begin{aligned} R^i_{1,US}\left(p^i_{1,US}\right) &= A^i_1 (p^i_{1,US})^{(1-\alpha)} \text{ and} \\ R^i_{2,US}\left(p^i_{2,US}\right) &= \frac{1}{1+\tau_2^{US}} A^i_2 (p^i_{2,US})^{(1-\alpha)}. \end{aligned}$$

A key element of our setup is that the production technology exhibits diseconomies of scope that depend on the quantities produced of each good. This can be represented by a convex variable cost function that depends on total production of goods 1 and 2, such as[19]

$$C(q^i_{1,US}, q^i_{2,US}) = \phi(q^i_{1,US} + q^i_{2,US})^{\beta},\ \phi > 0, \beta > 1.$$

As a result, within a firm, the marginal cost of a product is increasing in the amount produced of the other product: $\partial^2 C / \partial q^i_{1,US} \partial q^i_{2,US} > 0$.[20]

Firms also face a fixed cost of developing and maintaining each product, given by F_1 and F_2. For simplicity, we consider that there is no heterogeneity in costs across firms. Instead, the only heterogeneity across firms is the idiosyncratic demand shifter that makes a firm's product j more or less "likeable," or "popular."

If a firm decides to export product j to the US, it chooses its price. It also chooses between four entry modes: export product 1; export product 2; export both products; or export neither product. Because of the diseconomies of scope, the price and entry decisions are interdependent.

[19] Formally, a technology will exhibit diseconomies of scope if the total cost C to produce quantities $q_1 > 0$ and $q_2 > 0$ of goods 1 and 2 is such that $C(q_1, q_2) > C(q_1, 0) + C(0, q_2)$ for all levels of q_1 and q_2. That is, producing goods 1 and 2 within the firm is more costly than producing each of them in independent production units. See Panzar (1989) for a broader discussion.

[20] Given the diseconomies of scope in production at the firm level, one may wonder why a single firm would ever produce both goods 1 and 2—that is, why a firm that wanted to produce both goods does not disintegrate to avoid the diseconomies of scope. We simply assume that possibility away, but there are many possible explanations for that. One is that there may be complementarities in the development of the two goods. Another, simpler explanation is that there may be sunk cost for a firm to exist.

Maximized profits under each alternative are given by

$$\begin{aligned}
\pi^i_{1,US} &= \max_{p^i_{1,US}} \; R^i_{1,US}\left(p^i_{1,US}\right) - C\left(q^i_{1,US}(p^i_{1,US}), 0\right) - F_1, \\
\pi^i_{2,US} &= \max_{p^i_{2,US}} \; R^i_{2,US}\left(p^i_{2,US}\right) - C\left(0, q^i_{2,US}(p^i_{2,US})\right) - F_2, \\
\pi^i_{1\&2,US} &= \max_{p^i_{1,US}, p^i_{2,US}} \; R^i_{1,US}\left(p^i_{1,US}\right) + R^i_{2,US}\left(p^i_{2,US}\right) - C\left(q^i_{1,US}(p^i_{1,US}), q^i_{1,US}(p^i_{1,US})\right) - F_1 - F_2,
\end{aligned}$$

where $\pi^i_{1,US}$ denotes profits of exporting only product 1, $\pi^i_{2,US}$ denotes profits of exporting only product 2, and $\pi^i_{1\&2,US}$ denotes profits of exporting both products 1 and 2. If the firm chooses to export neither product, it does not pay the fixed cost of development of each product, F_1 and F_2, and profits are zero.

Profits are increasing in the demand shifters. More precisely, the profit of exporting product 1 is increasing in A^i_1, the profit of exporting product 2 is increasing in A^i_2, and the profit of exporting both products is increasing in both A^i_1 and A^i_2. This follows directly from the envelope theorem. As a result, firms with high demand shifters choose to export while firms with low demand shifters exit. Formally, we define four export decision zones (an exit zone, two single-product zones, and a multiproduct zone) as a function of the demand shifters:

$$\begin{aligned}
D_0 &= \left\{ \left(A^i_1, A^i_2\right) \mid \pi^i_{1,US} < 0;\; \pi^i_{2,US} < 0;\; \pi^{1\&2}_{i,US} < 0 \right\}, \\
D_1 &= \left\{ \left(A^i_1, A^i_2\right) \mid \pi^i_{1,US} \geq 0;\; \pi^i_{1,US} \geq \pi^i_{2,US};\; \pi^i_{1,US} \geq \pi^{1\&2}_{i,US} \right\}, \\
D_2 &= \left\{ \left(A^i_1, A^i_2\right) \mid \pi^i_{2,US} \geq 0;\; \pi^i_{2,US} > \pi^i_{1,US};\; \pi^i_{2,US} \geq \pi^{1\&2}_{i,US} \right\}, \\
D_{1\&2} &= \left\{ \left(A^i_1, A^i_2\right) \mid \pi^{1\&2}_{i,US} \geq 0;\; \pi^{1\&2}_{i,US} > \pi^i_{1,US};\; \pi^{1\&2}_{i,US} > \pi^i_{2,US} \right\}.
\end{aligned}$$

The export zones are illustrated in Figure 1, top panel, and are defined over pairwise combinations of A^i_1 and A^i_2. The parametrization is such that the two products are symmetric except that product 1 does not incur tariffs in the US, because of the GSP preference. The exit zone D_0 corresponds to low levels of A^i_1 and A^i_2 (bottom left corner). Firms with low demand shifters in both products choose to exit as their export revenue cannot compensate for the fixed cost of either product. Observe however that, because product 2 incurs a tariff but product 1 does not, the height of the D_0 rectangle is greater than its width. Single-product zones D_1 and D_2 occur

when one demand shifter is high and the other is low. In that case, firms export only the product for which revenue is high enough to compensate paying one fixed cost. Finally, multiproduct zone $D_{1\&2}$ corresponds to cases where firms have high demand shifters in both products (upper right corner). Those firms can afford to pay both fixed costs and still make positive profits with each product.

Observe that zones D_0 and $D_{1\&2}$ are not adjacent. This reflects the diseconomies of scope. Outside the exit zone D_0, there is a range of "medium-level" demand shifters $\{A_1^i,\ A_2^i\}$ where it is profitable to export *one* of the products, but not both. To see why, consider a point inside D_0 but arbitrarily close to its top-right corner. From there, consider simultaneous increases in A_1^i and A_2^i such that $\{A_1^i,\ A_2^i\}$ do not reach the $D_{1\&2}$ zone. The change makes exporting a product j worthwhile. However, as that happens, the marginal cost of product j' $(\neq j)$ rises, and exporting it remains unprofitable despite the higher $A_{j'}^i$.[21] The multiproduct zone is reached only when both demand shifters become sufficiently large.[22]

We now turn to a situation in which preferences on product 1 are suspended for Argentinian firms. Without preferences, firms face tariff τ_1^{US} and their export revenue from product 1 becomes

$$R_{1,US}^i\left(p_{1,US}^i\right) = \frac{1}{1+\tau_1^{US}} A_1^i (p_{1,US}^i)^{(1-\alpha)}.$$

For any given price, export revenue and profits are lower when product 1 is suspended from the system of preferences. It becomes more difficult to offset the fixed cost of product 1 and some firms drop it from their export basket. This may alter firm export decisions on product 2 as well.

The situation is illustrated in Figure 1, bottom panel. The figure shows the original export zones under preferences (limits in black), and the new export zones without preferences (limits in gray). The limits of the export zones without preferences are shifted to the right, as higher A_1^i cutoffs are required to compensate for the loss in revenue of product 1 due to $\tau_1^{US} > 0$. That implies an expansion of the exit zone D_0 and of product-2 zone D_2, together with a decline of product-1 zone D_1 and of multiproduct zone $D_{1\&2}$.

[21] For pairs $\{A_1^i,\ A_2^i\}$ exactly on the indifference segment linking zones D_0 and $D_{1\&2}$, it is undefined which product should be exported, but it is profitable to export only one of them, and not both.

[22] Diseconomies of scope are also reflected in the positive slopes of the $D_{1\&2}$ contour: on the countour, as A_j^i rises, q_j^i rises and the marginal cost of product j' $(\neq j)$ rises for given level of $q_{j'}^i$; therefore, a higher level of $A_{j'}^i$ is required to make exporting j' worthwhile.

First, notice that firms with sufficiently high A_1^i keep exporting product 1 when preferences are removed. Those are the firms with demand shifters in the right side of the figure. Among them there are single-product firms that export product 1, multiproduct firms that keep exporting both products, and a small group of formerly single-product firms that add product 2 to their export basket (as exports of product 1 decrease in volume for given A_1^i, it becomes profitable to add product 2 because the marginal cost of q_2^i falls).

Second, there is a large group of firms that drop product 1 from their export basket when preferences are removed. Those are the firms with low- and medium-level demand shifter A_1^i. They are represented in the figure by the shaded areas. For those firms, the decrease in revenue due to the tariff no longer justifies paying the fixed cost of exporting product 1. Among them, the change in export mode varies according to their demand shifter for the other product, A_2^i. There is a group of single-product firms that decide to exit the export market; these are firms with low A_2^i. There is a group of single-product firms that switch from product 1 to product 2; these are firms with medium-level A_2^i. Finally, there is a group of multiproduct firms that keep exporting product 2 but become single-product firms; these are firms with high A_2^i.

Notice that single-product firms that switch from product 1 to product 2 are driven by the diseconomies of scope. After dropping product 1, exporting product 2 becomes profitable for them because the marginal cost of product 2 falls. Naturally, that would not occur with independent production decisions across goods, as is often assumed in the multiproduct firm trade literature.

4.1 Additional predictions

In addition to providing a rationalization for our previous empirical findings, this framework suggests additional, more precise, predictions. In particular, we have that:

Prediction 1: Small exporters of suspended products are more likely to stop exporting because of the suspension.

As Figure 1 shows, small exporters of product 1 tend to export only that product before the policy shock. This follows from the diseconomies of scope. If q_1^i is small, it must be because A_1^i is also small; in that case, exporting good 1 is profitable only if good 2 is not exported, because otherwise good 1's marginal cost would make it uneconomical to export good 1. Once the preference

on good 1 is removed, exporting becomes no longer worthwhile.

In Table 12 we test that prediction by interacting our independent variable from the extensive margin regression with a dummy that indicates that the firm is a small exporter to the US in terms of suspended products. In each panel, we define different thresholds for the dummy: exports of suspended products below the 10th percentile, below the 25th percentile and below the 50th percentile. For the first two thresholds, we find that the negative impact on the extensive margin is indeed greater for smaller firms. As expected, that result goes away once we use a high threshold, at the 50th percentile, since it includes many firms that are not "small."

Our framework also has specific predictions about the types of firms that are more likely to export non-suspended products because of the shock.

Prediction 2: Medium-size exporters of suspended products are more likely to start exporting non-suspended products.

With the tariff hike, the marginal revenue from exporting good 1 falls, so selling it becomes less profitable. For medium-size exporters, this means either keeping exporting good 1 but selling less than before, or dropping good 1. Either way, exporting good 2 becomes more profitable than before. Some of those firms will therefore start to export non-suspended products as a consequence of the policy shock, as Figure 1 shows.

In Table 13, we evaluate that prediction by replicating our previous estimates of the effect of the suspension on the probability of exporting a non-suspended product, but now interacting the *POST* variable with a dummy indicating whether the firm is "sufficiently large" in terms of exporting suspended products. We define different thresholds for the dummy: exports of suspended products above the 25th percentile, above the 50th percentile and above the 90th percentile. For the first two thresholds, which capture numerous medium-size exporters, we find that, indeed, the positive impact on this sub-extensive margin is greater for larger firms. As expected, that result goes away once we use the 90th percentile as the threshold, since that group no longer includes "medium" firms.

5 Third markets

Having documented the impact of the US tariff increase on Argentina's exports to the American market, we now shift the focus to third markets. That is, markets where policy did not change, but which were also served by Argentinian firms that exported to the US—that were, therefore, potentially affected by the American policy shock. The underlying, broader question is whether a policy-induced change in export behavior to a large market has implications for a firm export behavior also toward other foreign markets.

To study whether tariff hikes trigger third-country effects, we focus on the impact of the suspension in the US on the probability of exporting to the rest of the world. We proceed analogously to our analysis of the extensive margin in the American market. Thus, in Table 14 we consider Argentinian firms that exported to the US before the shock (so they could have been directly affected by the policy shock) and to markets other than the US at some point during our sample. The goal is to see the effects of the suspension on the extensive margin of exports to non-US markets, as in Table 7, but considering the probability of exporting to a non-US market.

The results in Table 14 show that firms that are more exposed to the suspension of preferential treatment in the American market also become less likely to export to other markets. In terms of magnitudes, if a firm exported only suspended products to the US prior to 1997, then on average the suspension would reduce the probability that this firm would export to the ROW after 1997 by four percentage points. This compares to a baseline probability of exporting to the ROW after 1997 of 48 p.p. This third-market effect is increasing in the preferential margin enjoyed before the shock, and is larger for firms whose exports are more concentrated on GSP products. These results are similar to what we find for the American market. Hence, there is a positive externality to other markets; since the shock is negative (a reduction of market access), it affects negatively also export participation in the rest of the world.

This result is also different from what most of the related literature would suggest. Accordingly, in the following subsection we extend the framework we developed in section 4 to make it compatible with our empirical findings on export behavior vis-à-vis third markets. In doing so, we also produce additional empirical predictions and assess them with our data.

5.1 Spillovers across markets

We now allow for the possibility that, when preferences are removed in the US, exports to other markets are affected. We want to introduce the minimal additional structure to our previous setting that allows for positive spillovers across markets. To do so, we simply assume that the fixed costs F_1 and F_2 to develop and export a product are unaffected by the number of markets to which the product is exported. This creates firm-level economies of scale across markets.

We group all other markets in the "rest of the world" (ROW). We assume that demand is independent across the US and ROW, and that varieties are not differentiated across markets. That is, a firm that chooses to export product j to both markets sells the same variety to the US and to ROW, although it may choose different prices for each market. We further assume that idiosyncratic shocks are the same across markets except for a multiplicative parameter θ that is constant across firms. The residual demand function for each variety i of product j is given by

$$q^i_{j,ROW}(p^i_{j,ROW}) = \theta A^i_j (p^i_{j,ROW})^{-\alpha}, \quad j = 1, 2, \;\; \theta > 0. \tag{7}$$

The multiplicative parameter θ captures differences in market size between the US and ROW, as well as differences in geographical and cultural distance between Argentina and those markets. It affects all Argentinian firms in the same manner. The variable cost function is just as before, except that it now incorporates exports to both markets:

$$C(q^i_{1,US}, q^i_{2,US}, q^i_{1,ROW}, q^i_{2,ROW}) = \phi(q^i_{1,US} + q^i_{2,US} + q^i_{1,ROW} + q^i_{2,ROW})^{\beta}.$$

There is also an entry cost specific to each market, denoted by F_{US} and F_{ROW}. This cost reflects activities such as market research and establishing networks.[23] With a fixed cost by destination (and not by destination-product), firms have the following options: export to the US (product 1, product 2, or products 1 and 2) and not export to ROW; export to ROW (product 1, product 2, or products 1 and 2) and not export to the US; export the same basket to the US and to ROW (product 1, product 2, or products 1 and 2); or exit both markets.[24]

[23] Without the assumption of market-specific entry costs, once a firm entered in one market, it would always be profitable to enter the other market as well—a pattern that we do not observe in the data.

[24] In reality, firms probably face destination-product fixed costs as well. Allowing for that would significantly expand the possible export modes of a firm in our framework. Since we do not need that to generate positive spillovers across

Formally, we define the following export decisions zones:

$$
\begin{aligned}
E_0 &= \left\{ \left(A_1^i, A_2^i\right) \mid \left(q_{1,US}^i = 0;\ q_{2,US}^i = 0\right);\ \left(q_{1,ROW}^i = 0;\ q_{2,ROW}^i = 0\right) \right\} \\
E_{US} &= \left\{ \left(A_1^i, A_2^i\right) \mid \left(q_{1,US}^i > 0 \vee q_{2,US}^i > 0\right);\ \left(q_{1,ROW}^i = 0;\ q_{2,ROW}^i = 0\right) \right\} \\
E_{ROW} &= \left\{ \left(A_1^i, A_2^i\right) \mid \left(q_{1,US}^i = 0;\ q_{2,US}^i = 0\right);\ \left(q_{1,ROW}^i > 0 \vee q_{2,ROW}^i > 0\right) \right\} \\
E_{US\&ROW} &= \left\{ \left(A_1^i, A_2^i\right) \mid \left(q_{1,US}^i > 0 \vee q_{2,US}^i > 0\right);\ \left(q_{1,ROW}^i > 0 \vee q_{2,ROW}^i > 0\right) \right\}.
\end{aligned}
$$

The zones correspond to not exporting, exporting only to the US, exporting only to *ROW*, and exporting to the US and to *ROW*. Export zones depend on parameter values, and there are many possibilities. Note that, unlike in section 4, where we define export decision zones based on which products are exported, here we define the zones based on which foreign markets are served.

Figure 2 plots two scenarios, which capture most of the relevant tradeoffs. On the left, there is a scenario with only two actives zones: firms choose to export to both markets simultaneously or to exit. That situation arises when potential revenues across markets are similar (similar tariffs and demand shifter θ close to one) and market entry costs (F_{US} and F_{ROW}) are low. On the right, the four zones are active. In that case, firms with low demand shifters exit; firms with high enough demand shifter for at least one product export to both markets; firms with low A_2 and medium levels of A_1 export only good 1 to the US (because of the preference); and firms with low A_1 and medium levels of A_2 export only good 2 to *ROW* (in our example, because the MFN tariff for product 2 is assumed lower in *ROW* than in the US).

Now consider what happens when preferences on good 1 are suspended in the US. The bottom panel of Figure 2 plots that situation. In the left-hand-side case, the shaded area represents firms that exit both the US and *ROW*. This happens because, for any given price, revenue and variable profits from selling good 1 fall. With lower variable profits, it becomes more difficult to cover the fixed cost of good 1, F_1. Furthermore, if the firm exported only good 1, it becomes more difficult to cover the fixed costs of entering markets, F_{US} and F_{ROW}. Thus, firms that were just past the breakeven point to export, and especially those that depended largely on US revenue from good 1, exit both markets.

The right-hand side of Figure 2 is more complex. There is a group of firms that stop exporting

markets, we keep the model parsimonious by abstracting from destination-product fixed costs.

to the US but keep exporting to *ROW*. These are the firms that shipped both goods, no longer find it optimal to pay F_1 to export good 1, but have demand shifter A_2 high enough to keep selling good 2 to *ROW* (where the tariff on good 2 is lower). There is another group of firms that keep exporting to the US and add *ROW*. These are firms that have a high demand shifter A_1 and, for that reason, keep exporting good 1 to the US after the tariff increase. However, as they now sell less of good 1 in the US, their marginal cost of other product-market combinations falls, making it worthwhile to serve *ROW*.[25]

More closely related to our extensive margin results, there is also a group of firms that stop exporting both to the US and to *ROW* (the shaded area). These are firms that sold both goods to both markets, but were just past the breakeven point to export. As in the left-hand-side scenario, with the tariff hike exporting good 1 becomes unprofitable; without good 1, serving each market becomes unprofitable. As a result, those firms exit both markets.

5.2 Additional predictions

This framework with increasing returns to scale at the firm-market level rationalizes our finding that the tariff hike in the US led to the exit of Argentinian firms from other markets. It also generates additional, more specific, predictions. The most direct of them is:

Prediction 3: The firms that exit other markets because of the US tariff hike also exit the American market.

This result, illustrated in the shaded areas in the two cases in the bottom panel of Figure 2, is fairly intuitive. If a firm kept serving the American market after the increase in the tariff, because of the diseconomies of scope the profitability of selling to *ROW* would rise, not fall. In that case, we would not observe exit from *ROW*. On the other hand, if a firm leaves the American market, recovering the product fixed costs by selling only in *ROW* may not be possible, in which case the firm stops exporting altogether.

In Table 15 we test this prediction. Basically, we replicate the regressions in Table 14, but interacting our main variable with a dummy that is one if the firm exits the American market after 1997. The results show that the extensive margin result in third markets is indeed driven

[25] Observe that, in the right-hand-side case, the zone E_{US} (where firms serve only the US) disappears with the tariff shock.

exclusively by firms that also exit the US.

Another prediction that stems from our framework is about firm size:

Prediction 4: Small exporters are more likely to exit third markets because of the suspension.

Figure 2 also offers a good illustration for this prediction. In both the left-hand-side and the right-hand-side cases, the firms that exit ROW are the ones that have relatively small demand shifters A_1 and A_2, which are associated with small sales. In contrast, those that have high demand shifters absorb the tariff hike and keep exporting.

In Table 16 we test that prediction by interacting our main variable with an indicator for small firms based on total firm exports and defined according to different thresholds: below the 10th percentile, below the 25th percentile and below the 50th percentile. For the first two thresholds, we find that the negative impact on the extensive margin in third markets is indeed greater for smaller firms. As expected, that result goes away once we use a high threshold, at the 50th percentile, which includes many firms that are not "small."

More generally, the fundamental force linking the two markets is the existence of scale economies. This implies that exit from ROW must depend on how important the exports to the affected market were for the firm. Specifically, in the presence of scale economies at the firm level, a firm that is forced out of a particular market triggers third-market effects if that market is relatively important for the firm. Accordingly, for firms that exported only a tiny value of suspended products to the US, the shock would have a correspondingly tiny effect on their presence in other markets. Thus, under scale economies, third-market effects should stem mostly from the firms for which sales to the US were more meaningful.

To investigate further that hypothesis, we split firms based on their US exposure. Table 17 reports the estimates of two different groups of exporters according to their US intensity. To measure US intensity pre-1997, let X_{jt}^{US} denote exports of firm j to the US in year t and X_{jt} denote total exports of firm j in year t. We define US intensity as:[26]

[26]In unreported analysis, we explore alternative measures of US intensity. Namely, we use $sh_j^{US2} \equiv \frac{X_{jt'}^{US}}{X_{jt'}}$, where t' is the latest year with non-zero exports to the US before the shock; and $sh_j^{US3} \equiv Max\{sh_{j1994}^{US}, sh_{j1995}^{US}, sh_{j1996}^{US}\}$, where $sh_{jt}^{US} \equiv \frac{X_{jt}^{US}}{X_{jt}}$. Results are very similar using those alternative measures.

$$sh_j^{US} \equiv \frac{\sum_{t=1994}^{1996} X_{jt}^{US}}{\sum_{t=1994}^{1996} X_{jt}}$$

We then define a threshold for a firm's "sufficiently high US exposure." In Table 17 we set the threshold at the median of each measure: "Low US share" ($sh_j^{US} < p50$) and "High US share" ($sh_j^{US} \geq p50$).

The results support the hypothesis of third-country effects being conditional on a relevant participation in the US market. That is, we find a third-market effect that reproduces (qualitatively) the effect in the American market provided that the American market is sufficiently important for the firm, but not otherwise, in which case the policy shock has no effect on the firm's export participation in third markets.

In Table 18 we carry out a sensitivity analysis for different threshold values, focusing on the estimates for the share of suspended products including all firms.[27] Notice that the impact of the suspension increases as we move across the distribution of the US-intensity, which is suggestive of third-market effects depending on how relevant the market hit by the tariff hike is for the firm. The exception is when we look at the firms that are heavily concentrated in the US market, for which the shock probably does not affect the decision to export to the US, and hence the decision to export elsewhere.

6 Concluding remarks

In this paper, we estimate the firm-level impact of tariff hikes on specific products. Our identification strategy is particularly clean. It relies on unanticipated tariff changes by the United States, which affected only imports coming from Argentina, and only a subset of the products exported by Argentina to the American market. The US could impose the tariff hikes without any institutional restriction because they happened in the context of the Generalized System of Preference, which is offered to developing countries on a unilateral basis.

We find that the removal of preferences, which represented an increase in tariffs from zero to its MFN level for the Argentinian firms previously benefiting from them, had a clear negative effect on the extensive margin: firms more affected by the increase in tariffs became less likely to export

[27] Results are similar if we consider instead GSP firms or the average MFN tariff of suspended products.

to the US after the shock. On the other hand, intensive margin effects are less clear: firms that kept serving the American market did not experience a clear drop in total sales to that market.

The lack of clear intensive margin effects is explained by changes in the "sub-extensive" margin, or the reallocation of firm resources across products. Specifically, we find that affected firms reduced the share of affected products in their export baskets to the US. This happened for two reasons. First, they decreased the volume and exported less often the products suspended from the preference list. Second, and more remarkably, affected firms also increased the volume and started to export other, non-suspended products. Those results point to an environment in which firms operate under decreasing returns to scope, which implies substitutability across products. That is, environments where, for a firm, producing a certain good increases the cost of producing other goods. We develop a simple framework that contains that feature, derive additional predictions from it and confirm them empirically.

At least as surprising is the finding that our extensive margin results extend to third-markets, where policy did not change. That is, the firms more affected by the policy shock in the American market not only became more likely to exit that market; they also became more likely to exit other markets and stop exporting altogether. That result points to the existence of increasing returns across markets at the firm-product level. An implication is that there are trade policy spillovers across markets.

A key advantage of our approach is the identification strategy, which relies on an exogenous change in policy from the firms' perspectives that affects imports from only one country and only of some of the products imported from that country. Accordingly, our findings have implications for modeling and understanding how firms choose their export baskets and how they react to changes in variable trade costs, like tariffs.

Specifically to our institutional setting, we find that nonreciprocal preferences can be an effective policy instrument to stimulate foreign market entry, consistent with the GSP goal of promoting export-led growth. Furthermore, since similar effects are observed also in third markets, it follows that preferences to one market can have global consequences. On the other hand, since the preferences are selective across products and induce firms to shift their export focus to the favored goods at the expense of the non-selected ones, for perennial exporters the preferences may serve as a source of extra rents but have little effect on the aggregate productivity of the beneficiary

countries. Those findings can serve as a starting point for a thorough assessment of the merits of programs of nonreciprocal preferences across the globe.

Naturally, our results are drawn from a specific institutional environment, and generalizations must be considered carefully. Nevertheless, it is worth mentioning that our policy shock shares several characteristics with recent changes in tariffs, especially in the US: tariffs rise (rather than fall) suddenly, following unilateral decisions (and not because of bilateral or multilateral negotiations), affecting specific countries and sectors (instead of most trade partners and most goods). In recent history, such cases are relatively rare in developed economies and, therefore, could offer useful insights in case such events become recurring in the future.

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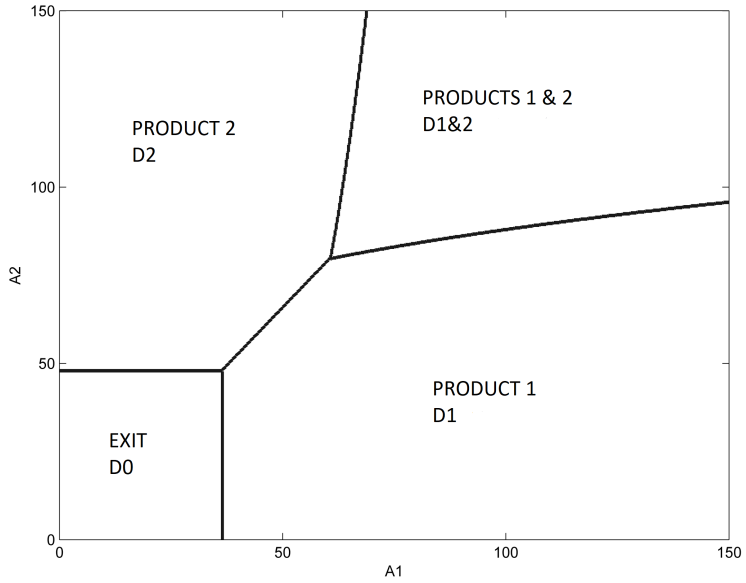
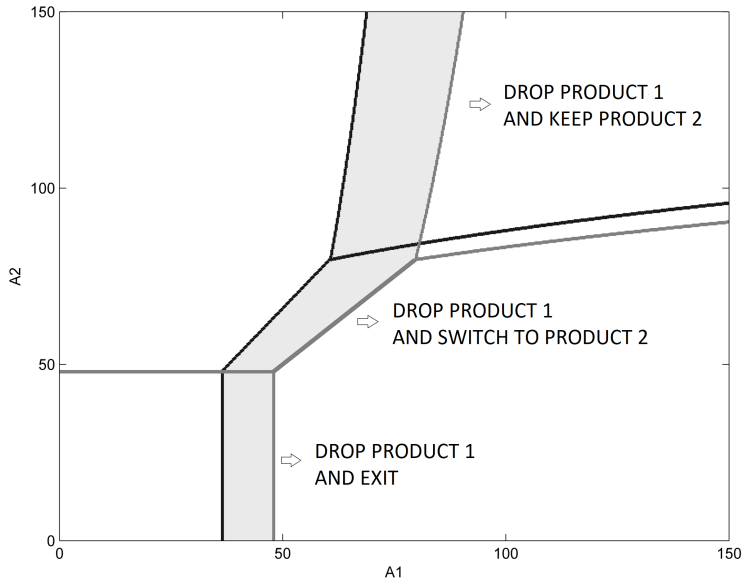
Fig. 1: Substitution across products

(a) Tariff preference on product 1



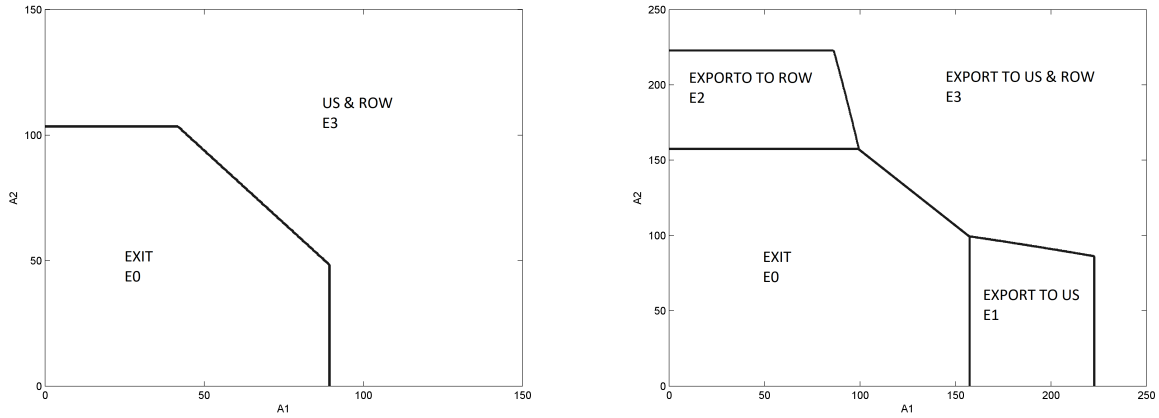
(b) Suspension of tariff preference on product 1



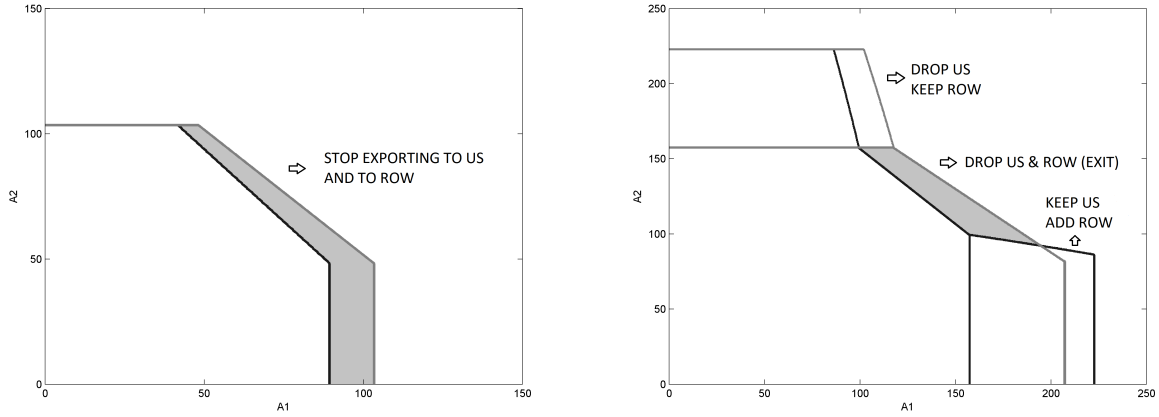
Notes: The figures illustrate firm export decisions derived from profit maximization. The top panel represents a situation with tariff preferences (GSP) on product 1, whereas the bottom panel represents a situation in which product 1 is suspended from the system of preferences. Product 2 is not subject to preferences in any of the two panels. The shaded areas in the bottom panel represent firms that drop product 1 from their export basket when the preferences are removed. The parameterization of the functions is $\alpha = 2$, $\phi = 1$, $\beta = 3$, $F_1 = 10$, $F_2 = 10$, $\tau_1 = 0$ (top panel), $\tau_1 = 0.2$ (bottom panel), $\tau_2 = 0.2$.

Fig. 2: Spillovers across markets

(a) Tariff preference on product 1



(b) Suspension of tariff preference on product 1



Notes: The figures depict firm export decisions derived from profit maximization. The top panel represents a situation with tariff preferences on product 1 (GSP), whereas the bottom panel represents a situation in which product 1 is suspended from the system of preferences. Product 2 is not subject to preferences in any of the two panels. The shaded areas in the bottom panel represent firms that stop exporting to ROW. The parameterization of the functions on the left-hand side scenario is $\alpha = 2$, $\theta = 1$, $\phi = 1$, $\beta = 3$, $F_1 = 10$, $F_2 = 10$, $F_{US} = 10$, $F_{ROW} = 10$, $\tau_1^{US} = 0$ (top panel), $\tau_1^{US} = 0.2$ (bottom panel), $\tau_2^{US} = 0.2$ (both panels), $\tau_1^{ROW} = 0.2$, $\tau_2^{ROW} = 0.2$. The parameterization of the functions on the right-hand side scenario is $\alpha = 2$, $\theta = 1$, $\phi = 1$, $\beta = 3$, $F_1 = 15$, $F_2 = 15$, $F_{US} = 15$, $F_{ROW} = 15$, $\tau_1^{US} = 0$ (top panel), $\tau_1^{US} = 0.2$ (bottom panel), $\tau_2^{US} = 0.5$ (both panels), $\tau_1^{ROW} = 0.5$, $\tau_2^{ROW} = 0$.

Table 1: Argentine Exports to the US, product level, 1996

	All Products (1)	GSP Products (2)	Suspended Products (3)
All Products			
Value (millions of 1996 USD)	2278.4	388.1	126.1
Number of 8-digit products	1340	595	91
Percentage of total exports		17.0%	5.5%
Percentage of GSP exports			32.5%
GSP claimed		90.0%	95.4%
Average MFN tariff	2.4%	3.7%	3.6%
Manufacturing			
Value (millions of 1996 USD)	1987.2	373.3	118.9
Number of 8-digit products	1235	556	88
Percentage of total exports		18.8%	6.0%
Percentage of GSP exports			31.8%
GSP claimed		93.8%	96.8%
Average MFN tariff	2.4%	3.8%	3.9%

Notes: Data from USITC. Number of 8-digit products refers to products with strictly positive exports in 1996 (the list of suspended products involves a total of 123 8-digit lines, with 120 in manufacturing).

Table 2: Selection of Suspended Products

	(1)	(2)	(3)	(4)
Imports 1996 ARG	0.031	0.187	0.176	0.220
	(0.038)	(0.182)	(0.166)	(0.140)
Import Growth ARG		0.007	0.002	0.007
		(0.019)	(0.019)	(0.002)
Imports 1996 ROW			0.006	0.020
			(0.006)	(0.053)
Import Growth ROW			0.094	0.013
			(0.065)	(0.053)
MFN	-0.194	1.136	0.946	2.069
	(0.638)	(1.284)	(1.221)	(1.793)
HS2 Product Fixed Effects				yes
Observations	595	172	172	172
R-squared	0.003	0.018	0.044	0.210

Notes: Data from USITC. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Import Growth$_{Argentina,i,96-93}$ and Import Growth$_{RoW,i,96-93}$ defined as $ln(Imports_{96} + Imports_{95}) - ln(Imports_{94} + Imports_{93})$. Import levels defined in units of US$100 million. Standard errors are clustered at the HS6 product level.

Table 3: Change in the Share of Suspended Products

	Double Difference		Triple Difference	
	All products	GSP products	All products	GSP products
	(1)	(2)	(3)	(4)
$SUSP \times POST$	-0.025^{**}	-0.074^{**}	-0.020^{**}	-0.066^{**}
	(0.010)	(0.026)	(0.011)	(0.024)
Observations	1906	912	1906	912
Products	953	456	953	456
Average share	0.058	0.058	0.058	0.058
Year effects	Yes	Yes		
Product effects	Yes	Yes		
Year-origin effects			Yes	Yes
Product-year effects			Yes	Yes
Product-origin effects			Yes	Yes

Notes: Regressions at the 8-digit product level. Data from USITC between 1996 and 1999, excluding 1997. Dependent variable: share of 8-digit product in total exports of source country m to the US, with $m = \{\text{Argentina}\}$ in double difference, and $m = \{\text{Argentina, rest of the world}\}$ in triple difference. SUSP: binary variable that takes the value of one for products that were suspended from the GSP in 1997 and originated from Argentina. POST: binary variable that takes the value of one for the years 1998-1999. Columns (1) and (3): sample of all products with strictly positive exports from Argentina before and after 1997. Columns (2) and (4): sample of all products granted GSP in 1996 and with strictly positive exports from Argentina before and after 1997. Average share is the average share of suspended products in 1996, defined between 0 and 100. Standard errors clustered at the product level.

Table 4: Trade elasticity at the product level

	8 digits	6 digits	4 digits
	(1)	(2)	(3)
Tariff	-10.22^{***}	-5.09^{**}	-1.78^{+}
	(3.72)	(2.47)	(1.06)
Number of products	1340	1068	551
Product effects	Yes	Yes	Yes

Notes: Data from USITC. Dependent variable: log exports. Tariffs are defined as percentage points. Sample years: 1996 and 1998. Products are defined at the 8-digit (column 1), 6-digit (column 2), and 4-digit (column 3) level of dissagregation. In columns 2 and 3 tariffs are weighted by the share of each 8-digit product in total exports in 1996.

Table 5: Argentine Exports to the US, firm level

	1994-1996 (1)	1998-2001 (2)
Number of firms	3267	2036
Median number of destinations	3	6
Median number of products	4	8
Participation in firms exports		
Suspended products*	0.31	0.26
Suspended products	0.13	0.12
Non-suspended GSP products	0.35	0.34
Non-GSP products	0.51	0.53

Notes: Data from customs. Firms in 1998-2001 are those that exported before 1997 to the US. Suspended goods* considers only firms that sell at least one suspended product to the US between 1994-1996.

Table 6: Pre-suspension comparison of firms

	Suspended firms			Non-suspended GSP firms			Difference	
	Mean	Std.Dev.	Obs.	Mean	Std.Dev.	Obs.	Diff	SE
Exp growth 96-95	0.02	0.042	1,538	0.03	0.037	2,148	-0.01	0.127
Exp growth 96-94	0.07	0.057	1,188	0.08	0.048	1,656	-0.01	0.067

Notes: Data from customs. Table compares export growth to the US between 1995 and 1996 and between 1994 and 1996, of two groups of firms depending on whether they were affected by the change in policy of 1997: suspended firms and non-suspended GSP firms. Suspended firms are defined as those that exported at least one suspended product in 1996. Non-suspended GSP firms correspond to those that exported at least one GSP-eligible good, but not a suspended one, in 1996. Columns (1) and (4) report the mean, columns (2) and (5) the standard deviation, and columns (3) and (6) the number of observations for the two groups of firms. Column (7) reports the difference in means (difference between columns 1 and 4) and column (8) the standard error of the difference.

Table 7: Firm-level exports to the US, extensive margin

	Share of suspended products		Average tariff increase	
	All firms	GSP firms	All firms	GSP firms
	(1)	(2)	(3)	(4)
Panel A: Probability of exporting				
$SUSP \times POST$	-0.04^{***}	-0.05^{***}	-0.58^{***}	-0.55^{**}
	(0.01)	(0.02)	(0.18)	(0.21)
Observations	22869	5803	22869	5803
Firms	3267	829	3267	829
Panel B: Probability of exporting				
$SUSP \times 1998$	-0.04^{**}	-0.05^{**}	-0.59^{***}	-0.65^{**}
	(0.02)	(0.02)	(0.22)	(0.26)
$SUSP \times 1999$	-0.04^{***}	-0.04^{**}	-0.54^{**}	-0.34
	(0.01)	(0.02)	(0.23)	(0.27)
$SUSP \times 2000$	-0.05^{***}	-0.05^{***}	-0.52^{**}	-0.45
	(0.01)	(0.02)	(0.23)	(0.28)
$SUSP \times 2001$	-0.04^{***}	-0.05^{***}	-0.65^{***}	-0.75^{***}
	(0.01)	(0.02)	(0.18)	(0.21)
Observations	22869	5803	22869	5803
Firms	3267	829	3267	829

Notes: Regressions at the firm-year level. Data from Argentine customs. Dependent variable: indicator variable for positive firm exports to the US. Treatment variable: initial firm share of suspended products in total exports during 1994-1996 (columns 1 and 2) and firm weighted average MFN tariff of suspended products during 1994-1996 (columns 3 and 4), both interacted with a POST indicator that is equal to one after 1997. Suspended products are those suspended from GSP from Argentina in 1997. Sample: All firms with positive exports to the US in 1994-1996 (Columns 1 and 3) and firms with more than 80 percent of exports under GSP in 1994-1996 (Columns 2 and 4). Standard errors are clustered at the firm level.

Table 8: Firm-level exports of suspended and non-suspended products to the US

	Share of suspended products		Average tariff increase	
	All firms	GSP firms	All firms	GSP firms
	(1)	(2)	(3)	(4)
Panel A: Total exports				
$SUSP \times POST$	-0.21	-0.51^{+}	0.08	-2.28
	(0.19)	(0.27)	(2.49)	(3.04)
Observations	2962	728	2962	728
Firms	1481	364	1481	364
Panel B: Exports of suspended products				
$SUSP \times POST$	-0.86^{**}	-1.10^{**}	-4.09	-3.88
	(0.36)	(0.54)	(2.93)	(2.84)
Observations	585	259	585	259
Firms	402	158	402	158
Panel C: Exports of non-suspended products				
$SUSP \times POST$	1.01^{**}	1.30^{**}	16.06^{***}	13.32^{**}
	(0.43)	(0.56)	(5.68)	(6.60)
Observations	2156	458	2156	458
Firms	1280	282	1280	282

Notes: Regressions at the firm-year level. Data from Argentine customs. Dependent variable: Log total exports (Panel A); Log exports of suspended products (Panel B); Log exports of non-suspended products (Panel C). Treatment variables are analogous to Table 7. Time periods are collapsed into before and after 1997 only firms with positive exports in both time periods are kept in the sample. All regressions include firm and year fixed effects, and firm-year dummies for firm size as controls. Standard errors are clustered at the firm level.

Table 9: Product substitution in US market

	Post binary variable		Average tariff increase	
	All firms	GSP firms	All firms	GSP firms
	(1)	(2)	(3)	(4)
Panel A: Share of suspended products				
$POST$	-0.06^{***}	-0.18^{***}		
	(0.00)	(0.01)		
$SUSP \times POST$			-3.63^{***}	-3.14^{***}
			(0.28)	(0.27)
Panel B: Probability of exporting at least one suspended product				
$POST$	-0.08^{***}	-0.22^{***}		
	(0.01)	(0.02)		
$SUSP \times POST$			-3.89^{***}	-3.10^{***}
			(0.29)	(0.27)
Panel C: Probability of exporting at least one non-suspended product				
$POST$	0.04^{***}	0.12^{***}		
	(0.00)	(0.01)		
$SUSP \times POST$			2.39^{***}	2.22^{***}
			(0.25)	(0.27)
Observations	22869	5803	22869	5803
Firms	3267	829	3267	829

Notes: Regressions at the firm-year level. Data from Argentine customs. Dependent variable: firm share of suspended products in total exports (Panel A); indicator variable for positive exports of suspended products (Panel B); indicator variable for positive exports of non-suspended products (Panel C). Treatment variable: POST indicator variable for years after 1997 (Columns 1 and 2) and firm weighted average MFN tariff of suspended products during 1994-1996 interacted with the POST dummy (Columns 2 and 4). Suspended products are those suspended from GSP from Argentina in 1997. Sample: All firms with positive exports to the US in 1994-1996 (Columns 1 and 3) and firms with more than 80 percent of exports under GSP in 1994-1996 (Columns 2 and 4). All regressions include firm and year fixed effects, and firm-year dummies for firm size as controls. Standard errors are clustered at the firm level.

Table 10: Product hierarchy within firms, US market

	Suspension dummy		Tariff increase	
	All firms	GSP firms	All firms	GSP firms
	(1)	(2)	(3)	(4)
Panel A: Probability of being core				
$SUSP \times POST$	-0.01^{+}	-0.05^{***}	-0.23^{+}	-0.72^{**}
	(0.01)	(0.02)	(0.12)	(0.31)
Observations	72978	16815	54691	13347
Firm-products	15372	3567	11680	2902
Panel B: Probability of being top 2				
$SUSP \times POST$	-0.02^{**}	-0.08^{***}	-0.50^{***}	-1.46^{***}
	(0.01)	(0.02)	(0.16)	(0.40)
Observations	57569	12470	42876	10034
Firm-products	12081	2654	9102	2173
Panel C: Probability of being top 3				
$SUSP \times POST$	-0.02	-0.05^{+}	-0.29^{+}	-1.06^{**}
	(0.01)	(0.03)	(0.16)	(0.42)
Observations	49895	10975	37017	8796
Firm-products	10447	2298	7839	1874

Notes: Regressions at the firm-product level (6 digits). Data from Argentine customs. Dependent variable: indicator variable for core product (Panel A); indicator variable for top 2 product (Panel B); indicator variable for top 3 product (Panel C). Treatment variable: indicator variable for suspended products after 1997 (columns 1 and 2); MFN tariff of suspended products after 1997 (columns 3 and 4). Sample: All firms with positive exports to the US in 1994–1996 (columns 1 and 3) and firms with more than 80 percent of exports under GSP in 1994–1996 (columns 2 and 4). Panel A conditions on the firm exporting more than one product, Panel B conditions on the firm exporting at least three products, and Panel C conditions on the firm exporting at least 4 products, all on average during 1994–1996. All regressions include firm-product and year fixed effects, and firm-year dummies for firm size as controls. Standard errors are clustered at the firm level.

Table 11: Pairwise correlation coefficients: Unit values of dropped and added products

	Dropped			
Added	Single-uv	Max-uv	Min-uv	Median-uv
Single-uv	-0.06			
Max-uv		-0.05		
Min-uv			-0.03	
Median-uv				-0.04

Notes: The sample includes firms with at least one suspended product in 1996 with positive exports in 1998 with a different export basket. "Single-uv" is the unit value of dropped and added products when reshuffling involved only one product. If reshuffling involved dropping or adding more than one product, we select the maximum ("Max-uv"), minimum ("Min-uv") and the median unit value ("Median-uv") of dropped and added products.

Table 12: Probability of exporting. Firm size

	Share of suspended products		Average tariff increase	
	All firms	GSP firms	All firms	GSP firms
	(1)	(2)	(3)	(4)
Small firms: below 10th percentile				
$SUSP \times POST$	-0.04^{***}	-0.04^{***}	-0.54^{***}	-0.52^{**}
	(0.01)	(0.02)	(0.19)	(0.22)
$SUSP \times POST \times SMALL(10\%)$	-0.10^{***}	-0.07^{***}	-0.95^{+}	-0.60^{+}
	(0.03)	(0.02)	(0.49)	(0.34)
Small firms: below 25th percentile				
$SUSP \times POST$	-0.03^{***}	-0.04^{**}	-0.47^{**}	-0.49^{**}
	(0.01)	(0.02)	(0.21)	(0.24)
$SUSP \times POST \times SMALL(25\%)$	-0.06^{**}	-0.05^{**}	-0.66^{+}	-0.33
	(0.03)	(0.02)	(0.35)	(0.33)
Small firms: below 50th percentile				
$SUSP \times POST$	-0.04^{***}	-0.04^{**}	-0.51^{**}	-0.54^{**}
	(0.01)	(0.02)	(0.22)	(0.26)
$SUSP \times POST \times SMALL(50\%)$	-0.00	-0.01	-0.18	-0.02
	(0.02)	(0.03)	(0.37)	(0.41)
Observations	22869	5803	22869	5803
Firms	3267	829	3267	829

Notes: Regressions at the firm-year level analogous to Table 7. Dependent variable: indicator variable for positive firm exports to the US. In Panel A the treatment variable is interacted with a *SMALL* indicator variable that is equal to one when the firm is below the 10th percentile in total exports of suspended products before 1997. Panels B and C explore sensitivity to the definition of *SMALL* to being below the 25th and 50th percentiles. All regressions include firm and year fixed effects, and firm-year dummies for firm size as controls. Standard errors are clustered at the firm level.

Table 13: Probability of exporting at least one non-suspended product

	Post binary variable		Average tariff increase	
	All firms	GSP firms	All firms	GSP firms
	(1)	(2)	(3)	(4)
Large firms: above 25th percentile				
$POST$	0.02^{***}	0.06^{***}		
	(0.00)	(0.01)		
$POST \times LARGE$	0.13^{***}	0.18^{***}		
	(0.01)	(0.02)		
$SUSP \times POST$			2.37^{***}	2.02^{***}
			(0.45)	(0.46)
$SUSP \times POST \times LARGE$			0.02	0.24
			(0.53)	(0.54)
Large firms: above 50th percentile				
$POST$	0.03^{***}	0.08^{***}		
	(0.00)	(0.01)		
$POST \times LARGE$	0.14^{***}	0.17^{***}		
	(0.02)	(0.02)		
$SUSP \times POST$			2.52^{***}	2.40^{***}
			(0.38)	(0.40)
$SUSP \times POST \times LARGE$			-0.21	-0.30
			(0.50)	(0.53)
Large firms: above 90th percentile				
$POST$	0.04^{***}	0.12^{***}		
	(0.00)	(0.01)		
$POST \times LARGE$	0.07^{+}	0.07		
	(0.04)	(0.05)		
$SUSP \times POST$			2.63^{***}	2.46^{***}
			(0.27)	(0.28)
$SUSP \times POST \times LARGE$			-1.62^{**}	-1.70^{**}
			(0.74)	(0.78)

Notes: Regressions at the firm-year level analogous to Table 9 Panel B. Dependent variable: indicator variable that is equal to one for firms that export at least one non-suspended product. The treatment variable is interacted with a *LARGE* indicator variable that is equal to one for firms above the 25th percentile in total exports of suspended products before 1997 (Panel A), above the 50th percentile (Panel B), and above the 90th percentile (Panel C). All regressions include firm and year fixed effects, and firm-year dummies for firm size as controls. Standard errors are clustered at the firm level.

Table 14: Probability of exporting to non-US markets

	Share of suspended products		Average tariff increase	
	All firms	GSP firms	All firms	GSP firms
	(1)	(2)	(3)	(4)
$SUSP \times POST$	-0.04^{**}	-0.08^{***}	-0.68^{***}	-0.94^{***}
	(0.02)	(0.03)	(0.26)	(0.29)
Observations	18116	4487	18116	4487
Number of firms	2588	641	2588	641

Notes: Regressions at the firm-year level. Data from Argentine customs. Dependent variable: indicator variable for positive exports to non-US markets. The treatment variables are defined as in Table 7. Samples condition on positive exports to the US for at least one year between 1994 and 1996 and to a non-US market for at least one year between 1994 and 2001. All regressions include firm and year fixed effects, and firm-year dummies for firm size as controls. Standard errors are clustered at the firm level.

Table 15: Probability of exporting to non-US markets. Firms that exit the US

	Share of suspended products		Average tariff increase	
	All firms	GSP firms	All firms	GSP firms
	(1)	(2)	(3)	(4)
Firms that exit the US market after the suspension				
$SUSP \times POST$	0.01	-0.01	0.01	-0.24
	(0.02)	(0.03)	(0.27)	(0.27)
$SUSP \times POST \times EXIT$	-0.12^{***}	-0.15^{***}	-1.92^{***}	-1.93^{***}
	(0.04)	(0.04)	(0.57)	(0.61)
Observations	18116	4487	18116	4487
Number of firms	2588	641	2588	641

Notes: Regressions at the firm-year level. Analogous to Table 14. The treatment variable is interacted with an *EXIT* indicator variable that is equal to one for firms that exit the US market after 1997. All regressions include firm and year fixed effects, and firm-year dummies for firm size as controls. Standard errors are clustered at the firm level.

Table 16: Probability of exporting to non-US markets. Firm size

	Share of suspended products		Average tariff increase	
	All firms	GSP firms	All firms	GSP firms
	(1)	(2)	(3)	(4)
Small firms: below 10th percentile				
$SUSP \times POST$	-0.04^{**}	-0.08^{***}	-0.68^{***}	-0.94^{***}
	(0.02)	(0.03)	(0.26)	(0.29)
$SUSP \times POST \times SMALL(10\%)$	-0.35^{***}	0.00^{***}	-2.91^{***}	0.00^{***}
	(0.05)	(0.00)	(0.50)	(0.00)
Small firms: below 25th percentile				
$SUSP \times POST$	-0.04^{**}	-0.08^{***}	-0.62^{**}	-0.90^{***}
	(0.02)	(0.03)	(0.26)	(0.29)
$SUSP \times POST \times SMALL(25\%)$	-0.21^{**}	-0.16	-2.40^{***}	-1.81^{***}
	(0.09)	(0.11)	(0.54)	(0.55)
Small firms: below 50th percentile				
$SUSP \times POST$	-0.04^{**}	-0.08^{***}	-0.58^{**}	-0.89^{***}
	(0.02)	(0.03)	(0.25)	(0.28)
$SUSP \times POST \times SMALL(50\%)$	-0.00	0.02	-1.07	-0.57
	(0.07)	(0.08)	(1.06)	(1.16)
Observations	18116	4487	18116	4487
Number of firms	2588	641	2588	641

Notes: Regressions at the firm-year level. Analogous to Table 14. The treatment variable is interacted with a *SMALL* indicator variable that is equal to one for firms that are below the 10th percentile (Panel A), below the 25th percentile (Panel B), and below the 50th percentile (Panel C), both in exports of suspended and non-suspended products. All regressions include firm and year fixed effects, and firm-year dummies for firm size as controls. Standard errors are clustered at the firm level.

Table 17: Probability of exporting to non-US markets, by US exposure

	Share of suspended products		Average tariff increase	
	All firms	GSP firms	All firms	GSP firms
	(1)	(2)	(3)	(4)
Low US share				
$SUSP \times POST$	0.02	0.01	−0.05	−0.14
	(0.02)	(0.03)	(0.29)	(0.33)
Observations	9058	2184	9058	2184
Number of firms	1294	312	1294	312
High US share				
$SUSP \times POST$	-0.11^{***}	-0.18^{***}	-1.42^{***}	-1.91^{***}
	(0.03)	(0.04)	(0.41)	(0.47)
Observations	9058	2303	9058	2303
Number of firms	1294	329	1294	329

Notes: Regressions at the firm-year level. Data from Argentine customs. Dependent variable: indicator variable for positive firm exports to a non-US market. Treatment variable: initial firm share of suspended products in total exports during 1994-1996 (columns 1 and 2) and firm weighted average MFN tariff of suspended products during 1994-1996 (columns 3 and 4), both interacted with a POST indicator that is equal to one after 1997. Suspended products are those suspended from GSP from Argentina in 1997. Sample: All firms with positive exports to the US in 1994-1996 (Columns 1 and 3) and firms with more than 80 percent of exports under GSP in 1994-1996 (Columns 2 and 4). Low and High US share is defined according to whether $sh_j^{US} \equiv \frac{\sum_{t=1994}^{1996} X_{jt}^{US}}{\sum_{t=1994}^{1996} X_{jt}}$ is below or above the median. Standard errors are clustered at the firm level.

Table 18: Probability of exporting to non-US markets, by US exposure; sensitivity analysis (Share of Suspended Products - All firms)

	p10	p25	p50	p75	p90
	(1)	(2)	(3)	(4)	(5)
Low US share					
$SUSP \times POST$	−0.02	0.02	0.02	−0.01	−0.02
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)
Observations	1806	4529	9058	13587	16303
Number of firms	258	647	1294	1941	2329
High US share					
$SUSP \times POST$	−0.05***	−0.07***	−0.11***	−0.16***	−0.12
	(0.02)	(0.02)	(0.03)	(0.04)	(0.08)
Observations	16310	13587	9058	4529	1813
Number of firms	2330	1941	1294	647	259

Notes: Regressions at the firm-year level. Data from Argentine customs. Dependent variable: indicator variable for positive firm exports to a non-US market. Treatment variable: initial firm share of suspended products in total exports during 1994-1996 (columns 1 and 2) and firm weighted average MFN tariff of suspended products during 1994-1996 (columns 3 and 4), both interacted with a POST indicator that is equal to one after 1997. Suspended products are those suspended from GSP from Argentina in 1997. Sample: All firms with positive exports to the US in 1994-1996 (Columns 1 and 3) and firms with more than 80 percent of exports under GSP in 1994-1996 (Columns 2 and 4). Low and High US share is defined according to whether $sh_j^{US} \equiv \frac{\sum_{t=1994}^{1996} X_{jt}^{US}}{\sum_{t=1994}^{1996} X_{jt}}$ is below or above the median. Standard errors are clustered at the firm level.

Appendix

Timeline of news on suspension

17 December 1995: First article mentioning the conflict on patents and the possibility of sanctions The Argentinian government declares that the law was compatible with the GATT but the US demands stronger recognition of property rights for pharmaceuticals. Ambassador Granillo Ocampo explains that the patent law was the only conflict Argentina had with the US and dismisses the possibility of trade sanctions.

Furthermore, because the new patent law was voted by the Argentinian Congress and approved with unanimity, the government had its hands effectively tied. That helps to explain why the government, which at the time was otherwise completely aligned with the US, did not respond to the US pressures with policy changes.

8 January 1997: First article mentioning the possibility of GSP suspensions related to the conflict on patents Enrique Mansilla, the chief of the chamber of exporters, says in an interview that he expected strong pressures from the US in the near future. The article mentions that the potential punishment was the removal from GSP. This possibility was mentioned, according to the article, in the *Journal of Commerce*, which stated that President Clinton would adopt that decision in the "next week," although there was no indication on how the suspension would be implemented.

The article also mentions that another mechanism considered by the US was the introduction of a clause on property rights in the ongoing discussions about the creation of a Free Trade Area of the Americas.

15 January 1997: First indication that the suspension was going to be the removal of 50% of the products receiving preferences under GSP The article came out after the formal communication of the decision of the US Administration to partially suspend Argentina from GSP. It mentions that the cause of the suspension is the patent law on pharmaceuticals. The expectation was that the loss for Argentina would be about US$ 20 million dollars.

The article also mentions that the pressures on Argentina were lobbied for by a chamber of

US pharmaceutical multinational firms and that, according to Argentinian officers, the unilateral sanction demonstrated that the Argentinian law was compatible with the GATT. Moreover, the fact that the sanction included only half of GSP-eligible products was taken as a surprise and was difficult to understand by the Argentinian authorities.

The timeline expected on January 15 was that the US would select the products to be suspended in a month. On February 14, the products would be announced. And on April 1st the sanction would take place.

Subsequent weeks: Substantial political activity trying to convince the Clinton Administration not to implement the sanction Those attempts, nevertheless, did not bear fruit, and the suspension was put in place on 15 April 1997, although with fewer products suspended than anticipated.

Table A1: List of Suspended Products

03037700	Sea bass, frozen, excluding fillets, other meat portions, livers and roes
04049010	Milk protein concentrates
07032000	Garlic, fresh or chilled
16041610	Anchovies, whole or in pieces but not minced, in oil, in airtight containers, th
17011110	Cane sugar, raw, in solid form, w/o added flavoring or coloring, subject to add.
28054000	Mercury
28139050	Sulfides of nonmetals, excluding carbon disulfide and sulfides of arsenic or pho
28323010	Sodium thiosulfate
28399000	Silicates and commercial alkali metal silicates, excluding those of sodium and p
28413000	Sodium dichromate
28415000	Chromates and dichromates except of sodium, potassium, lead or zinc; peroxochrom
28433000	Gold compounds
28491000	Calcium carbide
28500050	Hydrides, nitrides, azides, silicides and borides other than of calcium, titaniu
29021100	Cyclohexane
29051200	Propan-1-ol (Propyl alcohol) and Propan-2-ol (isopropyl alcohol)
29051300	Butan-1-ol (n-Butyl alcohol)
29052250	Acyclic terpene alcohols, other than geraniol and isophytol
29061400	Terpineols
29141200	Butanone (Methyl ethyl ketone)
29141300	4-Methylpentan-2-one (Methyl isobutyl ketone)
29157000	Palmitic acid, stearic acid, their salts and esters
29171450	Maleic anhydride, except derived in whole or in part from benzene or other aroma
29182150	Salicylic acid and its salts, not suitable for medicinal use
29182210	O-Acetylsalicylic acid (Aspirin)
29182250	Salts and esters Of O-acetylsalicylic acid
29291015	Mixtures of 2,4- and 2,6-toluenediisocyanates
29329990	Nonaromatic heterocyclic compounds with oxygen hetero-atom(s) only, nesoi
29334030	Pesticides of heterocyclic compounds with nitrogen hetero-atom(s) only, cont. a
29339055	Aromatic or modified aromatic analgesics, etc., affecting the CNS, of heterocycl
32099000	Paints and varnishes based on synthetic polymers or chemically modified natural
33011910	Essential oils of grapefruit
33019010	Extracted oleoresins consisting essentially of nonvolatile components of the nat
33021010	Mixtures of odoriferous substances, mixtures with a basis of these substances, u
33021020	Mixtures of or with a basis of odoriferous substances, used in the food or drink
33029010	Mixtures of or with a basis of odoriferous substances, used in other than the fo
33030030	Perfumes and toilet waters, containing alcohol
33042000	Eye make-up preparations
33049950	Beauty or make-up preparations & preparations for the care of the skin, excl. m
33051000	Shampoos
33059000	Preparations for use on the hair, nesoi
33072000	Personal deodorants and antiperspirants
33074900	Preparations for perfuming or deodorizing rooms, including odoriferous preparati
34011110	Castile soap in the form of bars, cakes or molded pieces or shapes
35040050	Peptones and their derivatives; protein substances and their derivatives, nesoi;
35069900	Prepared glues and other prepared adhesives, excluding adhesives based on rubber
37011000	Photographic plates and film in the flat, sensitized, unexposed, of any material
37021000	Photographic film in rolls, sensitized, unexposed, for X-ray use; of any materia
37061030	Sound recordings on motion-picture film of a width of 35 mm or more, suitable fo
37079032	Chemical preparations for photographic uses, nesoi

Notes: List of products with suspended preferences in 1997.

38220050	Composite diagnostic or laboratory reagents, nesoi
39019090	Polymers of ethylene, nesoi, in primary forms, other than elastomeric
39021000	Polypropylene, in primary forms
39022050	Polyisobutylene, other than elastomeric, in primary forms
39029000	Polymers of propylene or of other olefins, nesoi, in primary forms
39039050	Polymers of styrene, nesoi, in primary forms
39044000	Vinyl chloride copolymers nesoi, in primary forms
39061000	Polymethyl methacrylate, in primary forms
39069050	Acrylic polymers (except plastics or elastomers), in primary forms, nesoi
39073000	Epoxide resins in primary forms
39076000	Polyethylene terephthalate in primary forms
39079900	Polyesters nesoi, saturated, in primary forms
39091000	Urea resins; thiourea resins
39095050	Polyurethanes, other than elastomeric or cements, in primary forms
39139020	Polysaccharides and their derivatives, nesoi, in primary forms
39219050	Nonadhesive plates, sheets, film, foil and strip, nonflexible, nesoi, of noncell
39239000	Articles nesoi, for the conveyance or packing of goods, of plastics
40111010	New pneumatic radial tires, of rubber, of a kind used on motor cars (including s
42010060	Saddlery and harnesses for animals nesi, (incl. traces, leads, knee pads, muzzle
43031000	Articles of apparel and clothing accessories, of furskins
43039000	Articles of furskin, nesi
44101100	Waferboard, including oriented strand board, of wood
44101900	Particle board and similar board of wood, other than waferboard
44111100	Fiberboard of a density exceeding 0.8 g/cm3, not mechanically worked or surface
48025210	Writing paper, weighing 40 g/m2 to 150 g/m2, cont. n/o 10% by weight total fibe
69109000	Ceramic (o/than porcelain or china) sinks, washbasins, baths, bidets, water clos
70071100	Toughened (tempered) safety glass, of size and shape suitable for incorporation
71141160	Articles of silver nesoi, for household, table or kitchen use, toilet and sanita
72022150	Ferrosilicon containing by weight more than 55% but not more than 80% of silic
72023000	Ferrosilicon manganese
73089095	Iron or steel, structures (excluding prefab structures of 9406) and parts of str
73159000	Iron or steel, parts of chain (other than articulated link chain)
74091150	Refined copper, plates, sheets and strip, in coils, with a thickness over 0.15mm
74092100	Copper-zinc base alloys (brass), plates, sheets and strip, in coils
74199950	Copper, articles nesoi, not coated or plated with precious metal
79011100	Zinc (o/than alloy), unwrought, containing o/99.99% by weight of zinc
79011250	Zinc (o/than alloy), unwrought, o/than casting-grade zinc, containing at least 9
82072000	Interchangeable dies for drawing or extruding metal, and base metal parts thereo
84099150	Parts nesi, used solely or principally with spark-ignition internal-combustion p
84099199	Parts nesi, used solely or principally with spark-ignition internal-combustion p
84099991	Parts nesi, used solely or principally with the engines of heading 8408, for veh
84139190	Parts of pumps, nesi
84223090	Machinery for filling,closing,sealing, capsuling or labeling bottles, cans, boxe
84314910	Parts suitable for use solely or principally with the machinery of heading 8426,
84714937	ADP printer units, nesoi, entered with the rest of a system
84716057	Assembled ADP printer units, nesoi, incorporating at least certain mechanisms, n
84775100	Machinery for molding or retreading pneumatic tires or for molding or otherwise
84792000	Machinery for the extraction or preparation of animal or fixed vegetable fats or
84803000	Molding patterns
84813020	Check valves of iron or steel for pipes, boiler shells, tanks, vats or the like

Notes: Continuation of Table A1.

84818030	Taps, cocks, valves & similar appliances for pipes, boiler shells, tanks, vats
84818090	Taps, cocks, valves & similar appliances for pipes, boiler shells, tanks, vats
84819030	Parts of hand operated and check appliances for pipes, boiler shells, tanks, vat
85030065	Stators and rotors for electric motors & generators of heading 8501, nesi
85243100	Pre-recorded discs for laser reading systems, reproducing phenomena other than s
85243200	Pre-recorded discs for laser reading systems, reproducing sound only
85245210	Pre-recorded magnetic video tape recordings of a width exceeding 4 mm but not ex
85246000	Pre-recorded sound or other similar recorded phenomena, recorded on cards incorp
85249100	Pre-recorded media, nesoi, with recordings of phenomena other than sound or imag
85249940	Pre-recorded media of sound or other similar recorded phenomena, nesoi
85369000	Electrical apparatus nesi, for switching or making connections to or in electric
85389080	Other parts nesi, suitable for use solely or principally with the apparatus of h
87086080	Pts. & access. of mtr. vehic. of 8701, nesoi, of 8702, and of 8704-8705, non-dr
87087060	Pts. & access. of mtr. vehicc of 8701, nesoi, and of 8702-8705, pts. & access.
87089980	Pts. & access., nesoi, of motor vehicles of 8701, nesoi, and 8702-8705
87169050	Parts of trailers and semi-trailers and vehicles, not mechanically propelled, ne
90039000	Parts of frames and mountings for spectacles, goggles or the like
90189010	Mirrors and reflectors used in medical, surgical, dental or veterinary sciences,
91131000	Watch straps, watch bands and watch bracelets, of precious metal or of metal cla
91132060	Parts of watch bracelet of base metal, whether or not gold- or silver-plated, va
94032000	Furniture (o/than seats) of metal nesoi, o/than of a kind used in offices
94035090	Furniture (o/than seats) of wood (o/than bentwood), of a kind used in the bedroo
94036080	Furniture (o/than seats & o/than of 9402) of wooden (o/than bentwood) nesoi

Notes: Continuation of Table A1.

Table A2: Firm-level exports to the US; intensive margin, additional results

	Share of suspended products		Average tariff increase	
	All firms	GSP firms	All firms	GSP firms
	(1)	(2)	(3)	(4)
Panel A: Log exports – year by year				
$SUSP \times POST$	−0.23	−0.43**	−0.94	−2.20
	(0.15)	(0.22)	(1.89)	(2.44)
Observations	2303	546	2303	546
Firms	329	78	329	78
Panel B: Log exports – before and after, conditional on exporting in 1996				
$SUSP \times POST$	−0.26	−0.49**	1.00	−1.72
	(0.16)	(0.23)	(2.22)	(2.73)
Observations	2310	556	2310	556
Firms	1155	278	1155	278
Panel C: Log exports – before and after				
$SUSP \times POST \times YEARLY$	0.04	0.00	1.58	2.61
	(0.18)	(0.25)	(2.15)	(2.58)
$SUSP \times POST \times NONYEARLY$	−0.30	−0.67**	−0.53	−4.11
	(0.24)	(0.31)	(3.31)	(3.82)
Observations	2962	728	2962	728
Firms	1481	364	1481	364

Notes: Compare with Table 7, Panel A. The table shows different sample specifications for estimating the effect of the change in policy on firm log exports. In Panel A observations are year by year and the sample is a balanced panel of firms that export to the US in every year of the sample. In Panel B we aggregate firm exports over the periods 1994-1996 and 1998-2001, as in Table 7, and condition on exporting to the US in the year 1996. Panel C uses the same sample as in Table 7 and adds an interaction with an indicator variable that is equal to one for firms that export to the US in every year during the sample ($YEARLY = 1, NONYEARLY = 0$).

Table A3: Firm-level exports to the US, additional results

	Share of suspended products		Average tariff increase	
	All firms	GSP firms	All firms	GSP firms
	(1)	(2)	(3)	(4)
Panel A: Share of suspended products				
$SUSP \times POST$	-0.34^{***}	-0.35^{***}	-3.63^{***}	-3.14^{***}
	(0.02)	(0.02)	(0.28)	(0.27)
Panel B: Probability of exporting at least one suspended product				
$SUSP \times POST$	-0.36^{***}	-0.34^{***}	-3.89^{***}	-3.10^{***}
	(0.02)	(0.02)	(0.29)	(0.27)
Panel C: Probability of exporting at least one non-suspended product				
$SUSP \times POST$	0.24^{***}	0.27^{***}	2.39^{***}	2.22^{***}
	(0.02)	(0.02)	(0.25)	(0.27)
Observations	22869	5803	22869	5803
Firms	3267	829	3267	829

Notes: Compare with Table 9. In columns 1 and 2 the treatment variable is the initial firm share of suspended products in total exports during 1994-1996 interacted with a POST indicator variable as in Table 7, and unlike Table 9, where the treatment variable is a POST indicator variable.