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Go ahead and trade: The effect of uncertainty removal in the EU's GSP scheme

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Working Paper No. 691

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Go ahead and trade

The effect of uncertainty removal in the EU's GSP scheme

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Go Ahead and Trade:

The Effect of Uncertainty Removal in the EU's GSP Scheme*

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Abstract

We estimate the trade effect of removing uncertainty about future trading conditions in the context of the 2014 reform of the Generalized System of Preferences (GSP) of the European Union (EU). EU GSP members receive non-reciprocal trade preferences (NRTPs), but only as long as they are not too competitive; i.e. they will graduate in case their share of EU GSP imports in a sector exceeds a certain threshold. However, the 2014 reform removed the threat of these competitiveness-related graduations for members of the so-called “GSP+”, a sub-scheme of the main programme. We find that the reform increased EU imports from GSP+ countries by about 45% on average whilst tariffs stayed the same. This trade impact is driven by the country-sector pairs most exposed to NRTPs uncertainty prior to the reform. The effect is robust to taking into account other aspects of the reform, such as the reduction in GSP membership and changes in tariff margins, respectively.

JEL Classification: F13, F14

Keywords: GSP, trade preferences, trade policy uncertainty

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1 Introduction

The Generalized System of Preferences (GSP) of the European Union (EU) is one of the schemes by which, in the world trading system, developed countries offer “special and differential treatment” to developing countries, in the form of non-reciprocal trade preferences (NRTPs). These preferences schemes have been established since the early 1970s and are founded on the idea of granting non-reciprocal and non-discriminatory preferential market access to developing countries, with the objective of increasing their export earnings, promoting their industrialization and accelerating their rates of economic growth (UNCTAD, 1968).¹ Currently there are 27 NRTPs schemes in force (Ornelas and Ritel, 2020) which are often available to all developing countries (i.e. the GSPs), although some schemes are limited to countries from a specific region, or else feature more preferential sub-schemes reserved for Least Developed Countries (LDCs).

NRTPs schemes have been found to affect positively exports of developing countries, especially in studies focusing on a single scheme and exploiting detailed product-level data (Frazer and Van Biesebroeck, 2010; Thelle et al., 2015).² However, a potentially important downside of NRTPs schemes is the uncertainty that accompanies the preferences. The non-reciprocal nature of the preferences confers some discretion to the donors in determining both country and product eligibility to the schemes, as well as the power to revoke the schemes altogether (Grossman and Sykes, 2005); NRTPs schemes have limited duration, can expire and/or need periodic renewal (Hakobyan, 2017b); and some schemes feature mechanisms for preference removal from competitive countries or sectors (Hakobyan, 2017a).

All these aspects render the benefits of NRTPs uncertain, which in turn is likely to undermine their main purpose: to stimulate exports from the beneficiary countries. Exporters might

¹Resolution 21(II) on “Preferential or Free Entry of Exports of Manufactures and Semi-Manufactures of Developing Countries to the Developed Countries”, UNCTAD meeting 1968.

²Studies exploiting bilateral country-level data and searching for an aggregate effect of NRTPs schemes have come up with both negative (Eicher and Henn, 2011; Herz and Wagner, 2011) and positive findings (Gil-Pareja et al., 2014; Ornelas and Ritel, 2020; Tobin and Busch, 2019). Both Ornelas & Ritel and Tobin & Busch, however, find that WTO membership interacts with NRTPs: the first study shows that the positive NRTPs impact on exports vanishes with WTO membership, due to low preferences margins in WTO context; the latter study finds that WTO membership reduces imports of beneficiaries. See (Ornelas, 2016) for a comprehensive review on the studies on the impact of NRTPs.

be induced to under-invest in products eligible for preferences schemes, or in products which satisfy the Rules of Origin requirements (Limão, 2016), thereby leading to under-utilization of preferences. In spite of these important shortcomings of NRTPs schemes, there is, to the best of our knowledge, no work that investigates the trade effects of uncertainty related to NRTPs. Our paper intends to fill this gap in the literature.

We use the 2014 reform of the EU's GSP scheme to identify the impact of removing (NRTPs) uncertainty on trade by beneficiary countries. The aspect of the reform that we focus on is a decrease in uncertainty for GSP+ countries (a subset of all GSP beneficiaries), resulting from the elimination of the possibility to lose trade preferences in case they become "too competitive." In other words, with the reform GSP+ countries obtain the certainty of their preferential access to the EU, regardless of whether their exports to the EU grow beyond a certain limit. We isolate this change in uncertainty from other modifications to the GSP scheme introduced by the reform and find that EU imports from GSP+ countries increased in a robust and economically important way. Furthermore, the reform did not lead to a re-direction of trade from alternative destinations but instead to a genuine increase in exporting activity towards the EU.

This paper adds both to the aforementioned literature on trade effects of NRTPs as well as to a fast growing strand of literature on the effects of trade policy uncertainty (TPU) (Handley, 2014; Handley and Limao, 2015; Handley and Limão, 2017; Crowley et al., 2018a,b; Carballo et al., 2018; Graziano et al., 2018). Handley (2014) and Handley and Limao (2015) develop heterogeneous firm models of export entry under TPU and apply them to the context of the reduction in tariff overhangs in Australia (gap between bound and applied tariffs) and the EU accession of Portugal, showing that in both cases the reduction in TPU explained a large fraction of the increase in exporters' entry that followed these events. Handley and Limão (2017) extend their 2015 model to allow also for technology upgrading investments by incumbent exporters, and show that the elimination of TPU that followed China's WTO entry explains about 30% of the increase of Chinese exports to the US post-accession. Crowley et al. (2018a) examine

the negative impact of an increase in TPU generated by *tariff-echoing*³ on the likelihood of entry into exporting by Chinese firms, whereas Carballo et al. (2018) find that, in the 2008-09 crisis, the increase in TPU determined a stronger reduction of US exports to markets with which the US did not have a preferential trade agreement (PTA), relative to PTA markets. Also the impact of Brexit has been exploited to investigate the effects of a change in TPU: Crowley et al. (2018b) show that the switch to a renegotiation regime between the UK and the EU led to a reduction of entry of UK exporters into the EU market; Graziano et al. (2018) use instead the uncertainty of the political process pre-Brexit referendum and find that greater uncertainty corresponded to reduced trading activity between the EU and the UK.

This paper adds to the TPU literature by examining the trade effects of a different source of uncertainty, namely the uncertainty created by the graduation rules in the EU's GSP scheme. It is the first work that examines empirically the trade effects for developing countries of a reduction in TPU related to NRTPs.

2 Institutional Background

2.1 The EU's GSP Scheme

The EU's GSP was established in 1971 and, over the past four decades, has been reformed considerably, with the stated goal of rendering trade preferences more predictable, certain and limited to those countries most in need. Currently, the EU's GSP features three sub-schemes, with increasing stability of preferences and level of market access in the EU: the standard GSP, the GSP+ and the Everything but Arms (EBA) initiative.

The standard GSP grants lower than MFN or zero import duties on about 66% of the tariff lines applied by the EU, defined at the CN-8 digit product level, to a list of fourteen

³The increase in the probability of the application of an anti-dumping duty, following the application of such a duty in a neighbouring country.

beneficiaries⁴ falling into the categories of low and lower-middle income countries.⁵

The GSP+ extends this preferential treatment, allowing duty free imports of all the products covered by the standard GSP.⁶ Membership to the GSP+ is reserved to GSP members which the EU considers economically vulnerable⁷, and is conditional on the ratification of a list of 27 international conventions on sustainable development and good governance. Currently there are eight GSP+ members.⁸ Finally, the EBA initiative grants the most preferential treatment, as it allows duty-free imports of all products shipped by the group of 48 Least Developed Countries (LDCs)⁹, except arms and ammunition.

The preferential treatment offered by the EU across the three GSP sub-schemes differs not only in terms of product coverage and preference margins, but also in terms of stability of preferences. Since 1995, the EU has been withdrawing preferences from those countries and sectors which are no longer considered in need of a preferential treatment, through the mechanism of graduation. This exclusion mechanism has undergone various modifications since it was first introduced. In its current form, introduced in 2005 (European Union, 2005), graduation works both at the country and the sector level, respectively, with important differences across standard GSP, GSP+ and the EBA initiative.

A beneficiary that is classified as a high- or an upper-middle income country by the World Bank for three consecutive years, or enters into an alternative trade agreement with the EU granting similar or better than GSP preferences, leaves the GSP entirely, through *country grad-*

⁴This is the number of beneficiaries as of the time of writing. The membership base has changed considerably over time and is now at its lowest since the launch of the programme. Tables with members of the Standard GSP, GSP+ and EBA initiative are in Appendix, where we make a distinction between the current membership base, and the one used in the analysis (2009-2016).

⁵This income categories are based on the World Bank classification.

⁶The share of tariff lines eligible for the duty-free GSP+ treatment is virtually the same as that for standard GSP (66%), with the difference that about 50% of standard GSP tariffs, although lower than MFN, do not go to zero (Ornelas, 2016). The tariff lines eligible for standard GSP or GSP+ treatment are among those on which the EU applies a positive MFN tariff.

⁷Vulnerability is expressed in terms of a country's size, i.e. the country's share of total EU GSP imports being less than 6.5%, and concentration of the export portfolio, i.e. the share of the seven largest sectors in total EU GSP imports from that country being larger than 75% (European Union, 2015)

⁸Paraguay left the GSP+ scheme in 2019, but given the time span under investigation in this paper, we will include this country in the analysis.

⁹The identification of LDCs follows the long-standing UN definition, which is based on the three main criteria of income, human assets and economic vulnerability. The group of LDCs has been very stable over time, with the last country to leave the group being Samoa, in 2019.

uation. This income-related graduation can happen at any point in time and can affect any type of GSP member.

Trade competitiveness in a certain product section¹⁰, measured as a country's share of EU imports under GSP in that section, can instead lead to *country-section graduation*: preferences are removed from a beneficiary in a section if its import-share exceeds a certain threshold. This graduation import-share threshold was initially set at 15% (12.5% for textiles) but, because the share is computed out of GSP eligible imports, the threshold is revised upwards when some beneficiaries leave the scheme.¹¹ The threshold was increased to 17.5% (14.5% for textiles) in 2014, due to the membership restriction imposed by the 2014 GSP reform, and to 57% (47.5% for textiles and 17.5% for minerals, live plants, animal and vegetable oils) in 2015 following some income-related graduations, among which that of China.

These competitiveness-related graduations are evaluated at three year intervals; i.e. every three years the EU computes the import-shares of all country-section pairs eligible for GSP preferences and then decides about the graduations that will apply for the next three years.

Importantly, the existence of a graduation threshold in the form of an import-share generates uncertainty. A country in receipt of GSP preferences in a section is at risk of losing them, every three years, if either its exports to the EU in that section increase, or other countries' exports to the EU in that section decrease. Further, the closer a country-section's import share is to the threshold, the higher the likelihood of losing preferential status upon exceeding the threshold.

Standard GSP preferences are currently the least certain out of the three sub-schemes, because they can be lost through both country- and country-section graduations. Conversely, EBA members have benefited from the most stable preferences since the creation of this programme in 2001 (European Union, 2001), as they were never exposed to the threat of a competitiveness-

¹⁰Product sections are the sectors in which the EU divided the products eligible for GSP preferences, for purposes of preferences removal. As of 2014, there are 32 sections, based on the 21 sections of the Harmonised System (HS) classification.

¹¹This is done to avoid that the remaining beneficiaries would mechanically graduate because of the reduction of the total out of which the shares are calculated.

related (country-section) graduation but only to income-related (country) graduations.¹²

2.2 The 2014 GSP Reform

In this ranking of “preference-security”, GSP+ economies lie in between the standard GSP and the EBA initiative. Importantly, GSP+ members underwent a change in regime over time: they were at risk of having their preferences removed under both country and country-section graduations from 2006 to 2014; then, the GSP reform of 2014 removed the threat of competitiveness-related (country-section) graduations (European Union, 2012). GSP+ members, therefore, experienced a change in uncertainty related to their preferential market access in the EU, as since 2014 they are no longer subject to the threat of graduating in case their competitiveness grows beyond the established import-share thresholds.¹³ This change in uncertainty is at the core of the empirical analysis performed in this paper.

We find that the 2014 GSP reform led to an increase in EU imports of GSP+ products from GSP+ countries by 47%, on average. To assess whether this trade effect is due to lower preference uncertainty, we exploit various aspects of the reform.

First, we take into account that Pakistan, the Philippines and Kyrgyzstan moved from the standard GSP to the GSP+ over the years affected by reform, implying that these countries benefited both from the removal of uncertainty and lower tariffs in the EU, respectively. We isolate the uncertainty effect from that of lower tariffs by either controlling for the applied tariff rate, or by obtaining separate estimates for products whose tariffs changed and products whose tariffs did not change at the time of the reform. When conditioning on the applied tariff we find that, on average, EU imports from GSP+ countries increased by 45%; when splitting the effect

¹²Note also that only a handful of countries left the group of LDCs/EBA members over the years, with even fewer actually undergoing an income-related graduation. The Maldives and Samoa are the only two countries graduating both from the group of LDCs, in 2011 and 2014, respectively, and from GSP in 2015 and 2019, respectively.

¹³GSP+ countries can experience a temporary or permanent removal of their preferences also because of violations in the implementation of the list of international conventions they had to ratify to access GSP+. So far this happened only once, for Sri Lanka, between 2010 and 2017, which during those years fell back to the standard GSP membership. Violation of the international conventions in the GSP+ list can, however, lead also to standard GSP and EBA preferences removal. There is, therefore, no differential treatment across GSP sub-schemes as far as this aspect is concerned, which was also not affected by the 2014 reform.

of the reform we find that EU imports increased by 36% for products whose tariffs remained unchanged, and by 96% for products which benefited from both the reduction in uncertainty and lower tariffs.

Second, the removal of the graduation threshold should be of higher relevance for country-section pairs exposed to the graduation threat, i.e. those with import-shares close to the pre-reform (15%) threshold. To explore this rationale we use each country-section's import-share and compute the distance from the threshold. However, as the distribution of country-section pairs over the distance distribution is extremely skewed¹⁴ rather than relying on a continuous distance measure, we divide the distance in two equal 7.5 percentage points bins and find that the impact of the reform is about 72% (or 34 percentage points) higher on products in sectors in the first bin, relative to the remaining part of the distribution.

Third, other than altering the graduation mechanism for GSP+ countries, the 2014 GSP reform also amended other aspects of the scheme. The overall aim of the reform was to re-focus the EU's GSP, to make preferences more certain and meaningful for the countries most in need (UNCTAD, 2015). To achieve this, for the first time the scheme was renewed for a period of 10 years, in contrast with the three-year extensions applied thus far in the past.¹⁵ In addition, the membership base of the GSP was drastically reduced: all upper-middle income countries, together with the overseas territories under the administration of developed countries, and countries with alternative preferential trade agreements with the EU, were stripped of their GSP membership. GSP beneficiaries were thus restricted to low and lower-middle income countries¹⁶ and the overall number of beneficiaries was more than halved, from 177 to 88 (European Union, 2012).¹⁷ This large change in the number of beneficiaries could have implied a change in

¹⁴There are only 14% of the "treated" observations in the first 10 percentage points away from the 15% threshold

¹⁵This is also in sharp contrast with GSP schemes of other donors, e.g. the US scheme needs to be renewed every year (Hakobyan, 2017b)

¹⁶This income-based definition includes all LDCs, which remained GSP beneficiaries under the EBA scheme.

¹⁷The restriction in the membership basis implied that, to maintain proportionality of preferential treatment for the countries which remained in the scheme, the graduation threshold was raised from 15% to 17.5% (from 12.5% to 15.5% for textiles). In the reform, the EU also changed the classification of products into sections, which are used for graduation calculations: the number of sections was increased from 21 to 32, with some of the previous sections divided into two or three sub-sections. We take all these changes to the scheme into account in

competition in the EU market in favour of GSP+ countries, and stimulated their exports to the EU. To mitigate concerns that the estimated increase in trade for GSP+ countries post-GSP reform was due to this more favourable competitive position rather than to lower uncertainty, we re-estimate the effect of the reform by retaining in the estimation sample only the GSP sections in which countries staying in GSP accounted for at least 75% of EU GSP imports pre-reform.¹⁸ This implies a substantial change in sample size, as the number of GSP sections used in estimation is reduced from 32 to 13. All results are upheld in the reduced sample, with minor changes in the magnitude of the estimated effects, thus allowing us to attribute the bulk of the change in trade to the reduction in preference uncertainty.

Finally, we explore the nature of the trade increase caused by the GSP reform and find that GSP+ countries appear to have taken advantage of better (and more secure) trade preferences to EU markets by increasing their overall exporting activity, rather than simply re-directing their exports from alternative destinations.

The remainder of this paper is organised as follows. Section 4.5 describes the data and section 3 provides some descriptive evidence about the relevance of the GSP scheme for its beneficiaries and the threat represented by the graduation mechanism. Section 4 exposes the empirical strategy. Section 5 describes the results, section 6 explores whether GSP+ countries re-directed their trade to the EU from alternative export destinations, and section 7 concludes.

3 Relevance of the EU's GSP and the graduations

The share of EU imports that originates from GSP beneficiaries is substantial. For instance, as Table 1 shows, GSP beneficiaries accounted for over 57% of EU imports in 2009. The largest fraction came from standard GSP members whereas members of trade agreements accounted for nearly 16% of EU imports, and trade partners without any agreement with the EU made up the remaining 27%.

our empirical exercises.

¹⁸Alternatively, we excluded sectors where exiters' import-share is larger than 25%.

Table 1: EU imports by trade regime

Year	Trade Agreement	Standard GSP	GSP+	EBA	No Agreement
2009	0.157	0.533	0.023	0.017	0.271
2010	0.146	0.562	0.020	0.015	0.257
2011	0.172	0.568	0.023	0.019	0.219
2012	0.175	0.572	0.022	0.019	0.211
2013	0.179	0.563	0.023	0.022	0.212
2014	0.240	0.303	0.012	0.024	0.421
2015	0.242	0.094	0.014	0.024	0.626
2016	0.266	0.082	0.009	0.022	0.619

Source: Authors' calculation on COMEXT data.

The 2014 GSP reform changed the relative contribution of these subgroups to EU imports quite drastically. GSP beneficiaries' share decreased to 34% in 2014 and further to 13% in 2015, after the exit of China from the scheme. Within GSP beneficiaries, the shares of both standard GSP and GSP+ countries fell, the former mostly due to GSP exclusions determined by the reform, the latter due to the signing of FTAs between the EU on one hand, and the Central American Region and the countries of the Andean Community, respectively, on the other hand. Note also that the share of imports from countries without any agreement nearly tripled, this being due to GSP membership exclusions, most notably that of China.

Table 2 adopts the GSP beneficiaries' point of view and examines the salience of preferential market access for those exporters. Over the 2009-2013 period, approximately 35% of EU imports from standard GSP members is in products eligible for this scheme. The value share of eligible products increased to about 50% in 2014 but fell again afterwards. Imports from GSP+ countries also showed an increase in the share of GSP eligible products in the year of the GSP reform and this hike is even more pronounced: pre-reform about 15% of EU imports from GSP+ countries were eligible for GSP, increasing to over 50% in 2014. This change in the composition of trade between the EU and GSP countries is mostly due to changes in GSP membership (e.g. for GSP+, entry of Pakistan and exit of Central American and Andean countries), and it demonstrates the relevance of the scheme for its beneficiaries.

Table 2 also offers insights into the quantitatively important threat represented by country-

section graduations. In the period up to the 2014 reform, both standard GSP and GSP+ members were subject to the risk of competitiveness-related preferences removals, although in practice only standard GSP countries were affected by them. The graduations, however, concern a large fraction of trade eligible for GSP preferences: for instance, in 2009 21% of EU imports from standard GSP countries were from country-section pairs which had lost preferential status. This accounted for approximately 55% (21/38) of the GSP eligible imports from these countries.¹⁹ The share of graduated imports increased abruptly in 2014, with the new wave of graduations arising from the reform, and then fell similarly abruptly the following year, when China left the scheme. Due to its size, China was by far the country most affected by competitiveness related graduations.

Table 2: Relevance of the GSP and the graduations for GSP beneficiaries

Standard GSP					GSP+			EBA		
Not eligible		Eligible			Not eligible		Eligible		Not eligible	Eligible
		Graduated	Not graduated							
Of which at risk					Of which at risk					
2009	0.63	0.21	0.17	0.12	0.75	0.25	0.16	0.49	0.51	
2010	0.64	0.20	0.16	0.12	0.78	0.22	0.13	0.46	0.54	
2011	0.65	0.18	0.16	0.12	0.86	0.14	0.08	0.51	0.49	
2012	0.67	0.18	0.16	0.11	0.86	0.14	0.08	0.49	0.51	
2013	0.65	0.19	0.16	0.12	0.85	0.15	0.09	0.50	0.50	
2014	0.49	0.39	0.12		0.47	0.53		0.46	0.54	
2015	0.60	0.06	0.34		0.44	0.56		0.36	0.64	
2016	0.54	0.08	0.38		0.38	0.62		0.27	0.73	

Source: Authors' calculation on COMEXT and TRAINS data.

In order to provide an indication of the overall threat represented by this mechanism, we also report the share of trade that we consider to be “at risk” of graduating. These figures are constructed by computing the distance between the actual country-section’s import-share and the threshold, respectively, and considering the top ten percent (i.e. the first decile of this distribution) to be at risk of graduating.²⁰ The figures in the columns labelled “of which at

¹⁹Note that share of imports graduated from GSP - e.g. the 21% in 2009 - is due to country-sections which remain graduated over the 2009-2013 period, hence the similarity of these import shares in the 2009-2013 years.

²⁰We compute the distance from the threshold applying the pre-2014 reform rules, i.e. pre-reform membership, product-sections and graduation threshold. For this reason we only compute the distance, and the share of trade at risk of graduating, for the pre-2014 reform period. Standard GSP countries face country-section graduations also post-2014, but the column “of which at risk” is discontinued for consistency with the column for GSP+ countries.

risk” in Table 2 have the following meaning: in 2009, out of the 17% of EU imports from standard GSP countries that had not yet been graduated, 12% (or, $12/17 = 70\%$ of it) consists of trade in country-sections in the first decile of the distance distribution. Similar shares are found for GSP+ countries. These figures are large²¹ and show that country-section graduations represented a serious threat for the majority of trade eligible for GSP preferences.

Table 3: Utilization rates by GSP sub-schemes

	Standard GSP		GSP+	EBA
		Out of non graduated		
2009	0.215	0.486	0.828	0.664
2010	0.225	0.502	0.848	0.658
2011	0.245	0.519	0.904	0.786
2012	0.245	0.523	0.871	0.821
2013	0.243	0.522	0.792	0.828
2014	0.150	0.640	0.695	0.858
2015	0.525	0.623	0.593	0.921
2016	0.528	0.635	0.806	0.906

Source: Authors’ calculation on COMEXT and TRAINS data.

Preferences utilization rates can further reinforce our understanding of the relevance of both GSP preferences and of the risk represented by graduations, as they can indicate the severity of the loss that preference removal can impose on GSP beneficiaries. Table 3 shows utilization rates (i.e. the share of EU imports on which a preferential GSP duty is used, out of GSP eligible imports) for the three subgroups of beneficiaries; for standard GSP countries we also compute the utilization rate out of the fraction of EU GSP eligible imports not subject to graduation. GSP+ countries have the highest utilization rates over the first half of the period under analysis, while in the second half the highest utilization rates are found for EBA countries. Standard GSP countries exhibit relatively lower utilization rates, but the figures computed out of non-graduated sections reveal that preferential duties were claimed and applied on at least 50% of imports from these countries.

Taken together, the descriptive figures in Tables 1-3 imply that the EU’s GSP scheme is

²¹Since the shares of trade ”at risk of graduating” are computed out of EU imports *eligible* for GSP and *not yet graduated*, China is excluded from most of the numerators and the denominators - having already graduated in most sections in the past.

of high relevance for its beneficiaries, and that *country-section* graduations represent a serious threat in terms of the value of trade that is subject to, or at risk of, preference removal.

4 Empirical strategy

We estimate the effect of a particular aspect of the 2014 reform of EU's GSP scheme. Since 2014, GSP+ beneficiaries are no longer subject to the threat of losing their tariff preferences in case their EU imports in certain product sections grow beyond the graduation threshold. The reform removed a crucial source of uncertainty surrounding GSP+ preferences, related to competitiveness, which we expect could have prompted GSP+ countries to expand their exports to the EU, especially in those sections with pre-reform import shares close to the graduation threshold.

We begin by estimating the aggregate impact of the 2014 reform on EU imports from GSP+ countries; then, we attempt to isolate the various aspects of the reform from the impact due to the removal of the graduation threshold, to assess whether there was a trade effect that can be attributed to the change in NRTPs uncertainty.

All the models in this paper are estimated exploiting a Poisson-Pseudo-Maximum-Likelihood (PPML) estimator and including observations with zero trade flows in the sample of analysis. The large number of zero trade flows due to the level of disaggregation of the trade data, as well as heteroskedasticity issues due to the presence of many small flows, are empirical challenges to be addressed. The PPML estimator is able to efficiently handle both issues, as shown by (Silva and Tenreyro, 2006).

4.1 The aggregate impact of the 2014 reform on EU imports from GSP+ countries

We rely on a triple difference-in-difference estimator, following the work of Frazer and Van Biesebroeck (2010), which exploits the three sources of variation in our data: country eligibility for

GSP+, product eligibility for GSP+ (at the 8-digit level), and the timing of the reform. The impact of the reform is captured by the treated observations, which in our context are EU imports of GSP+ eligible products, from GSP+ countries, post 2014. The control group includes imports from GSP+ countries pre-reform, imports of non-GSP+ eligible product from GSP+ countries post-reform, and all the import flows performed by countries that, over the 2009-2016 period, were beneficiaries of the standard GSP scheme, either throughout the entire period, or for part of it.²² We remove from the estimation sample countries that, over the 2009-2016 period, were not in the GSP scheme, as we cannot compute a GSP import-share and the distance from the graduation threshold for these countries.²³ We decided to remove from the control group also EBA countries: unlike standard GSP and GSP+ countries, EBA countries were never affected by preferences uncertainty, their EU imports therefore representing a less adequate counterfactual for the impact of the reform on GSP+ countries.²⁴

The basic estimating equation is given by:

$$M_{k,cs,t} = \beta_1(ref_t * GSPplus_{k,t}^{prod} * GSPplus_{cs,t}^{member}) + \gamma_{cs,t} + \delta_{k,t} + \lambda_{cs,k} + \varepsilon_{k,cs,t} \quad (4.1)$$

where M denotes the value of imports in thousands of Euros, k denotes products at the 8-digit level, cs denotes country-section pairs and t denotes years. Note that we define the members' eligibility at the country-section rather than at the country level, in order to be able to assign correctly the membership status to countries which graduated in some sections, but not in others. The main regressor of interest is a triple interaction between three binary variables: $GSPplus_{k,t}^{prod}$, which takes the value 1 if a product k is eligible for GSP+ in year t and 0 otherwise; $GSPplus_{cs,t}^{member}$, which takes the value 1 if a country-section cs is a GSP+ beneficiary

²²In the empirical analysis we can easily allow for country exits from the GSP scheme at different points in time, and for transitions between GSP and GSP+.

²³These are the high-income countries, under the World Bank classification. Their inclusion in the regressions where we do not exploit the distance from the graduation threshold leaves the results unchanged. For this reason, and to keep the sample consistent throughout the analysis, we preferred to remove these countries from all the regressions we present in the paper.

²⁴Inclusion of EBA countries in the sample does not alter qualitatively the results.

in year t and 0 otherwise; ref_t , which takes the value 1 in years post-reform, i.e. post 2014, and 0 otherwise. This triple interaction term, therefore, takes the value 1 for GSP+ eligible products, imported from GSP+ countries, post 2014, and its coefficient β_1 measures the impact of the reform. Importantly, we also add three sets of interactive fixed effects: $\gamma_{cs,t}$ denotes a set of country-section-time fixed effects; $\delta_{k,t}$ denotes a set of product-time fixed effects; $\lambda_{cs,k}$ denotes a set of country-section-product fixed effects. The use of these three set of fixed effects implies that the only variation left in the data to identify β_1 comes from country-section-product (cs,k) specific changes in imports post-reform, relative to their pre-reform average.

Frazer and Van Biesebroeck (2010) show that specification (4.1) correctly estimates a triple difference-in-difference model, without the need to add the three non-interacted binary variables together with the three double-interaction terms between them, as they are all replaced by the three sets of interactive fixed effects. These fixed effects are preferable to the double-interactions because they make specification (4.1) less restrictive, as they allow for heterogeneity in the base level of EU imports of any country-section-product combination, the base level of EU imports of any product in any year, and the base level of EU imports from any country-section pair in any year.²⁵ Other than making the estimating equation more flexible, the three sets of fixed effects control for a great deal of unobservable confounding factors at the country-section-time, product-time and country-section-product level.

4.2 Lower uncertainty or better market access?

Over the period under analysis, Pakistan, the Philippines and Kyrgystan were admitted into the GSP+ for the first time, from the standard GSP. Specification (4.1) correctly deals with changes in membership over time, due to the time-varying membership variables and the country-section-time fixed effects. However, the GSP+ treatment is more preferential than the standard GSP,

²⁵A model with the double interactions would be more restrictive, as it would lump all the country-product combinations in four exclusive groups: GSP+ eligible products from GSP+ countries, GSP+ eligible products from non-GSP+ countries, and non-GSP+ eligible products from the two group of countries. This would impose a single base level of imports for each group.

as all GSP+ eligible products can be imported into the EU duty-free, whereas standard GSP tariffs do not go to zero for about 50% of the eligible products. This implies that, EU imports from a country which moves from the standard GSP to the GSP+ at the same time of the reform could have increased both because of the change in uncertainty about preferences, and because of better market access granted by the lower tariffs. The contemporaneous effect of the reform and GSP+ entry affected Pakistan, which entered the GSP+ in 2014, and to a lesser extent the Philippines and Kyrgyzstan, which entered in 2015 and 2016, respectively.

We disentangle the impact of the change in uncertainty from that of better market access for countries which switched from standard GSP to GSP+ preferences in two alternative exercises. The first, simpler, exercise consists in conditioning the impact of the reform on the tariff rate applied by the EU on imports from standard GSP and GSP+ countries. The tariff rate $\tau_{cs,k,t}$ is at the country-section-product-year level, and its impact can be estimated by directly adding it as a control in specification 4.1.

$$M_{k,cs,t} = \beta_1(ref_t * GSPplus_{k,t}^{prod} * GSPplus_{cs,t}^{member}) + \eta \ln(\tau_{cs,k,t}) + \gamma_{cs,t} + \delta_{k,t} + \lambda_{cs,k} + \varepsilon_{k,cs,t} \quad (4.2)$$

Conditional on the applied tariff rate, we still expect β_1 to be positive and significant if part of the trade impact of the reform is due to lower trade policy uncertainty.

The second exercise we perform to disentangle the impact of uncertainty from that of lower tariffs is as follows. As a measure of market access in the EU, for each country-section-product triplet we calculate preference margins, as the difference between MFN and GSP tariffs. We then construct two binary variables which separate the country-section-product triplets whose preference margin changed in 2014, from those triplets whose preference margins did not change in the reform year.²⁶ $GSPplus_{cs,k}^{prod, \Delta pref=0}$, which takes value 1 if the preference margin of a

²⁶For the country-section-product triplets belonging to the Philippines and Kyrgyzstan we exploit their year of entry into the GSP+ in the construction of these variables.

product k imported from country-section cs did not change in the year of the reform, and 0 otherwise; $GSPplus_{cs,k}^{prod, \Delta pref \neq 0}$ which takes value 1 if the preference margin of a product k imported from country-section cs changed in the year of the reform, and 0 otherwise. We then use these binary variables to construct two triple interaction terms and augment specification 4.1 in the following way:

$$\begin{aligned}
 M_{k,cs,t} = & \beta_1(ref_t * GSPplus_{cs,k}^{prod, \Delta pref = 0} * GSPplus_{cs,t}^{member}) + \\
 & \beta_2(ref_t * GSPplus_{cs,k}^{prod, \Delta pref \neq 0} * GSPplus_{cs,t}^{member}) + \\
 & \gamma_{cs,t} + \delta_{k,t} + \lambda_{cs,k} + \varepsilon_{k,cs,t} \quad (4.3)
 \end{aligned}$$

Specification (4.3) separates the impact of the reform on 2 sub-groups of observations. β_1 identifies the impact of reform on products for which there was no change in market access to the EU such that, if an effect is found, this must be due to the change in NRTPs uncertainty only. β_2 , instead, identifies the impact of the reform on products which, other than a change in uncertainty, also benefited from better preferences in the EU: this coefficient, therefore, picks up the joint effect of lower uncertainty and better market access. We expect both β_1 and β_2 to be positive and significant, but due to the combined impact of lower uncertainty and better preferences, we expect β_2 to be larger than β_1 .

4.3 The threshold effect

The change in NRTPs uncertainty in the 2014 GSP reform is of a particular kind: it came from removing the import-share threshold which determined competitiveness related graduations for GSP+ countries. Country-section pairs with a low import-share might not have responded at all to the 2014 reform, as their export activity was not constrained by the threshold. The threshold removal should instead have affected country-section pairs with large import-shares: their vicinity to the threshold conferred uncertainty about their GSP+ preferences, as an increase

of their exports, or a decrease of another country's exports, could have determined an increase in the import-share and the loss of duty free access to the EU. This uncertainty could have deterred investments in GSP+ eligible products and therefore constrained the growth of export activity. So, if the 2014 reform caused an increase in EU imports from GSP+ countries, and this effect was due to a reduction in uncertainty, we should find that the increase in trade was strongest for country-sections closest to the graduation threshold.

To unpack the aggregate effect of the reform across country-section pairs which experienced NRTPs uncertainty of varying intensity, we compute the distance from the graduation threshold as the ratio between each country-sections' import-share and the threshold imposed by the EU. In doing so, we consider the timing of the reform and the novelties it introduced. The reform was announced in 2012 (European Union, 2012), and applied in 2014. Further, the EU computes graduation import-shares at three year intervals, by exploiting the import data for the preceding three years; e.g. the graduations applied over the 2014-2016 period were determined with import-shares computed in 2012 with data for 2009-2011.²⁷ Now it can safely be assumed that during the 2009-11 period, GSP+ countries were exporting to the EU without having knowledge of the changes that the 2014 was going to introduce²⁸ and therefore must have informed their exporting decisions under NRTPs uncertainty, whose intensity was given by their expected import-share computed according to the pre-reform rules.

Recall that pre-2014 reform import-shares were computed out of a larger membership and out of 21 sections, while post-reform import shares are computed out of smaller membership and out of 32 sections. Since import-share calculation rules and thresholds introduced by the 2014 reform never applied to GSP+ countries, we consider the pre-reform setting (i.e. membership,

²⁷The calculation implies computing yearly import-shares for each country-section pair, then taking a three year average over the relevant period.

²⁸The EU organized a public consultation in 2011 about which aspects of its GSP were more problematic, but the actual regulation announcing the reform was only published on the Official Journal of the EU at the end of 2012. Furthermore, since the EU GSP scheme was going to expire at the end of 2013, GSP+ countries had to re-apply for this more preferential status to be maintained from 2014 onwards. The EU opened the GSP+ applications only after publishing the 2012 reform, and announced the decision about which countries were granted GSP+ status in August 2013 (European Union, 2014)

sections and thresholds) as the relevant one for the uncertainty that could have affected GSP+ countries' trade. For these reasons, we compute country-section import-shares applying the pre-reform rules, using 2009-2011 import data²⁹, and the pre-reform graduation thresholds (15%; 12.5% for textiles).

Inspection of the pre-reform import-shares and their distance from the threshold, however, reveals a very skewed distance distribution: the majority of the treated observations (the imports of GSP+ products from GSP+ countries post-reform) belong to country-sections with very low import shares.³⁰ This induced us to estimate the impact of NRTPs uncertainty removal by exploiting two mutually exclusive binary variables, rather than using a continuous distance measure. For this purpose we separate the country-sections pairs (and their relative product level import flows) in the two following categories: $GSPplus_{cs,t}^{member,7.5pp}$ for import-shares within 7.5 percentage points from the threshold, and $GSPplus_{cs,t}^{member,>7.5pp}$ for import-shares more than 7.5 percentage points away from the threshold. We then construct two triple interaction terms to estimate the impact of the reform for each of these import-shares categories:

$$\begin{aligned}
 M_{k,cs,t} = & \beta_1(ref_t * GSPplus_{k,t}^{prod} * GSPplus_{cs,t}^{member,7.5pp}) + \\
 & \beta_2(ref_t * GSPplus_{k,t}^{prod} * GSPplus_{cs,t}^{member,>7.5pp}) + \\
 & \eta \ln(\tau_{k,cs,t}) + \gamma_{cs,t} + \delta_{k,t} + \lambda_{cs,k} + \varepsilon_{k,cs,t} \quad (4.4)
 \end{aligned}$$

Specification (4.4) separates the impact of the reform on the observations which, due to their vicinity to the threshold, were exposed to NRTPs uncertainty pre-reform, from the impact on other observations for which NRTPs uncertainty was less of a concern. We therefore expect, if

²⁹We believe that GSP+ countries were operating under uncertainty during the 2009-11 period, and that the most up-to-date information about their distance from the graduation threshold was given by their EU imports in those years. As a robustness check, we also computed import-shares with 2004-2006 import data, i.e. data for the years that determined the 2008 round of graduations and that were known with certainty by GSP+ countries during the pre-reform period that we exploit in estimation (2009-2013). Results are upheld if these alternative import-shares are used to calculate the distance from the threshold.

³⁰Table 8 in the Appendix reports the top 10 import-shares in our sample together with the first largest 15 import-shares of GSP+ countries.

the 2014 reform affected EU imports of GSP+ countries through lower uncertainty, β_1 to be positive and significant, and β_2 to be smaller and/or less statistically significant.

4.4 Disentangling the change in uncertainty from the change in GSP membership

In the 2014 GSP reform the EU attempted to make the preferences offered to developing countries both more predictable, hence the removal of the graduation threshold, and more meaningful. This second aspect was addressed by restricting preferential market access to the EU to the countries most in need, to give them a competitive advantage over the countries that were excluded from the GSP. The EU, in fact, halved the scheme membership, graduating all upper-middle income countries, countries with alternative preferential trade agreements with the EU and the overseas territories under control of EU countries. The large change in the number of GSP beneficiaries could have implied a change in competition in the EU market in favour of the countries remaining in the scheme, which in turn could have stimulated their exports to the EU. GSP+ countries, therefore, could have been exposed to a "double treatment", as they benefited from the removal of uncertainty concerning their preferences, and from a more favourable competitive position, relative to countries that were excluded from the scheme.

To reduce concerns that the estimated trade effect for GSP+ countries was mostly due to a more favourable competitive position, rather than the reduction of NRTPs uncertainty, we exclude from the estimation sample the GSP sections where the change in competition could have been substantial. For each section, we calculate the pre-reform share of EU GSP imports for countries that remained in the GSP (stayers) and for countries that were excluded from the GSP (exiters). We then re-assess the impact of the reform estimating specifications 4.1-4.4 on the subsample of GSP sections in which stayers' share of EU GSP imports pre-reform exceeded 75%. This implies a reduction in the number of GSP sections in estimation from 32 to 13, and, if results are upheld, should confirm that the bulk of the trade impact of the 2014 GSP reform

came through the removal of NRTPs uncertainty.³¹

4.5 Data

For the empirical analysis we match and exploit three different data sources. Detailed trade data on EU imports from all partner countries worldwide, at the CN-8 digit product level and at annual frequency, was extracted from COMEXT for the 2009-2016 period. These data contain information on the value imported in Euro, the trade regime applicable to the import flow (MFN, GSP or other preferential tariff), and the trade regime used when the product is imported in the EU. We deal with annual changes in the CN classification by exploiting the concordance routine of Van Beveren et al. (2012).³²

Second, information on tariff rates applied by the EU to all products from all trade partners, including data on GSP, GSP+ and EBA eligible products, was taken from the UNCTAD TRAINS dataset through WITS. We use both preferential and MFN tariff schedules, respectively, which allows us to compute preferential tariff margins as the difference between the MFN tariff and corresponding preferential rate.³³

Thirdly, we also require data on beneficiaries' membership in the EU's GSP programme as well as information on country- and country-section-specific graduation episodes that affected GSP beneficiaries over time. This information was retrieved directly from EU regulations as published in the *Official Journal of the European Union*.

³¹For robustness, we also exploit an even more stringent subsample, estimating the effect of the reform on sectors where GSP stayers accounted for at least 88.5% of EU GSP imports pre-reform (thereby using only 6 GSP sections in estimation).

³²This routine creates a synthetic CN code for those products whose classification has changed over time and allows to concord data at flexible intervals (i.e. from any time period to any time period), as long as the CN concordance tables and the yearly CN classifications are available.

³³The tariff line data in TRAINS were exported at the finest level available (12-digit) and aggregated to the 8-digit level as simple averages, in preparation for merging this information to trade data.

5 Results

This section presents the results from estimating the empirical models described in section (4). All models are estimated with a Poisson Pseudo-Maximum Likelihood (PPML) estimator using the routine that Correia et al. have developed for PPML settings with high dimensional fixed effects Correia et al. (2019). Standard errors are clustered at the country-product level, following Thelle et al. (2015).

5.1 Impact of the 2014 reform

Table 4 presents the results from estimating specifications (4.1)-(4.3). Column 1 shows the aggregate impact of the reform, obtained estimating specification (4.1): on average, the 2014 reform induced an increase in EU imports of GSP+ products from GSP+ countries by 47%.³⁴

Table 4: Impact of 2014 GSP reform on EU imports from GSP+

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample	All				Stayers' import-share >75%.			
GSPplus	0.389*** (0.097)	0.374*** (0.096)			0.338*** (0.105)	0.318*** (0.106)		
Ln(1+tariff)		-1.801*** (0.429)		-1.736*** (0.427)		-3.300*** (0.807)		-3.174*** (0.815)
GSPplus - $\Delta pref = 0$			0.310*** (0.105)	0.302*** (0.105)			0.292*** (0.113)	0.282** (0.113)
GSPplus - $\Delta pref \neq 0$			0.672*** (0.113)	0.630*** (0.112)			0.547*** (0.123)	0.491*** (0.126)
Country-section-year FE	y	y	y	y	y	y	y	y
Product-year FE	y	y	y	y	y	y	y	y
Country-section-product FE	y	y	y	y	y	y	y	y
<i>N</i>	1947436	1947436	1947436	1947436	1348885	1348885	1348885	1348885

Note: Standard errors clustered at country-product level in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01

This impact is statistically robust, and economically sizeable. It must be considered, however, that the coefficient in column 1 captures the average effect across all GSP+ eligible products exported by GSP+ members: this is, no distinction is made across products more or less exposed to NRTPs uncertainty (i.e. their vicinity to the graduation threshold). Further, since GSP+ en-

³⁴This is the marginal effect computed as $e^{\beta} - 1$ as the dependent variable is the value of EU imports.

entrants are included in the treated sub-sample, both the effect of the uncertainty removal and better market access in the EU are embedded in the coefficient in column 1.

Column 2 reports the estimates obtained from specification (4.2), by which we begin to disentangle the impact of lower preferences uncertainty from that of lower tariffs applied on products exported by GSP+ entrants. The tariff rate exhibits an elasticity of -1.8. Importantly, there is still a positive impact of the reform on EU imports over and above the effect of changes in tariffs: as expected, the reform coefficient is somewhat smaller with respect to that in column 1, but still shows an increase in EU imports of approximately 45% since the the 2014 GSP reform.

Columns 3 presents the estimates obtained from specification (4.3), which separates the impact of the reform across country-section-product triplets which, in 2014³⁵, experienced a change in preferences margins from those triplets whose preference margins did not change. The coefficients in column 3 are positive and significant for both subgroups, with magnitudes in line with expectations: the reform induced a larger increase in imports for products which, in addition to the uncertainty removal, benefited also from lower tariffs (95%), than for products whose tariffs did not change (35%). This latter coefficient can be considered a lower bound estimate of the impact of NRTPs uncertainty removal.

Finally, in columns (4)-(8) we show that the main effect of the 2014 reform is reduced only marginally when we attempt to disentangle the impact of lower NRTPs uncertainty from that of a more favourable competitive position for GSP+ countries in the EU. We re-estimate specifications (4.1)-(4.3) on the reduced sub-sample obtained by retaining only GSP sections with a large pre-reform import-share by stayers. All the estimates retain their statistical significance and magnitude despite the lower sample size, thereby reassuring that lower NRTPs uncertainty had a sizeable effect on EU imports from GSP+ countries post reform.

³⁵For the Philippines and Kyrgyzstan we used their year of GSP+ entry to identify products with or without changes in preference margins

5.2 Is there a threshold effect?

The results in Table 4 show that the GSP reform of 2014 affected EU imports from GSP+ countries positively. However, the trade effect of the reform, if due to the removal of uncertainty, should appear more strongly for country-section pairs close to the graduation threshold pre-reform. To explore this rationale we estimate specification (4.4), which unpacks the average effects reported in Table 4 over two subgroups of observations at different distances from the threshold. These results are reported in Table 5.

Table 5 shows the existence of a threshold effect, as removing the graduation threshold impacted EU imports from GSP+ country-sections close the threshold more strongly. The estimated increase in trade post-reform for products in country-sections in the first of the two sub-groups is appreciably higher than that for products in the second subgroup, with the effects being 81% and 47%, respectively. Adding the applied tariff as a control variable, to condition on changes in trade due to better market access for some of the products exported by GSP+ entrants, reduces somewhat the coefficients on both the subgroups, as expected, but both retain their statistical significance.

Table 5: Impact of 2014 reform: relevance of distance from graduation threshold

Sample	(1)	(2)	(3)	(4)
	All		Stayers' import-share >75%.	
GSPplus - Close (dist. <7.5pp)	0.594*** (0.191)	0.539*** (0.193)	0.570*** (0.193)	0.469** (0.198)
GSPplus - Not close (dist. >7.5pp)	0.385*** (0.099)	0.370*** (0.098)	0.331*** (0.108)	0.314*** (0.108)
Ln(1+tariff)		-1.799*** (0.429)		-3.288*** (0.808)
Country-section-year FE	y	y	y	y
Product-year FE	y	y	y	y
Country-section-product FE	y	y	y	y
N	1947436	1947436	1348885	1348885

Note: Standard errors clustered at country-product level in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01

Similarly to Table 4, also in Table 5 we show that the estimated effects are completely robust to excluding from the estimation sample GSP sections where the change in GSP membership

could have resulted in a sizeable competitive advantage for GSP+ countries over the countries that left the GSP. In column 4, importantly, we show that also on the reduced sub-sample, and when controlling for the applied tariff rate, the subgroup of products in country-sections close to the threshold saw an increase in trade of 60% relative to the pre-reform period, as opposed to the 36% increase in trade for products in the second subgroup.

The large coefficient estimated on the subgroup of products not close to the graduation threshold, and its similarity to the aggregate impact of the reform (Table 4), is due to the very uneven distribution of country-section import-shares across the two subgroups: out of 16,552 treated observations, 1227 belong to country-sections within 7.5 percentage points of the threshold, and 15,325 belong to country-sections more than 7.5 percentage points away from the threshold. Nonetheless, the findings in Table 5 can be taken as further indication of the fact that the 2014 reform impacted trade of GSP+ countries through a reduction in uncertainty about their trade preferences, as removing the graduation threshold affected those exporters most at risk of losing preferential access to the EU twice as strongly.

6 Trade re-direction or an increase in exporting activity?

The empirical analysis of the impact of the 2014 reform revealed an increase of EU imports from GSP+ countries. What did this change in behaviour of exporters in GSP+ countries consist of? Did GSP+ exporters take advantage of the lower uncertainty by increasing their exporting activity, or was their trade re-directed from other export destinations, which, post-reform in the EU, offered less favourable conditions?

Exploring the factors underlying the increase in EU imports is relevant for policy making: it would not be desirable to offer more certain trade preferences, if in response developing countries simply shifted their exports from other destinations to the market where preferences uncertainty fell. If, on the other side, removing uncertainty led to more exporting activity, through more firm entry or an increased amount exported by incumbents, then the effects of the policy intervention

are much more worthwhile, and in line with the primary objective of a GSP scheme.

In this section we investigate whether the increase in EU imports from GSP+ countries was matched by a decrease in their exports to other destinations. To do so, we adopt the same empirical strategy that we exploited to identify the impact of the 2014 GSP reform, but instead of the effect on EU imports, we estimate the impact of the reform on the Rest of the World's (ROW) imports from GSP+ countries.

We extract data on ROW imports, from 2009 to 2016 and at the HS 6-digit level, from COMTRADE. The ROW is defined as the total amount of imports by all countries in the World, minus imports reported by the EU countries.

A difficulty arises when resorting to COMTRADE data, however. A 6-digit product, the finest level of disaggregation available in COMTRADE, might contain both eligible and non-eligible GSP+ products, as GSP+ eligibility is defined at the 8-digit product level. Furthermore, both the structure of the HS classification in terms of 8-digit product lines within 6-digit categories, as well as the number of 8-digit GSP eligible products within 6-digit categories, are rather arbitrary and vary substantially across the various chapters of the HS classification. This makes it difficult to meaningfully aggregate the 8-digit GSP eligibility information to the 6-digit level.

To obviate the problem of identifying GSP products in the COMTRADE data, we construct two alternative binary GSP+ product identifiers at the 6-digit level: $GSPplus_{k,t}^{prod,6\ dig,ONE}$, taking value 1 if at least *one* of the 8-digit products within the 6-digit group is eligible for GSP+, and 0 otherwise; $GSPplus_{k,t}^{prod,6\ dig,ALL}$, taking value 1 if *all* the 8-digit products within the 6-digit group are eligible for GSP+, and 0 otherwise. These two indicators are, respectively, the loosest and the strictest way of reporting GSP eligibility from the 8- to the 6-digit level. Using $GSPplus_{k,t}^{prod,6\ dig,ONE}$ implies that some of the products non-eligible for GSP+ non-eligible which fall in "mixed" 6-digit groups are going to be considered as treated by the reform; using $GSPplus_{k,t}^{prod,6\ dig,ALL}$ implies that some GSP+ eligible products treated by the reform

are going to fall in the control group. As neither of the two alternatives is clearly preferable to the other, we experiment with both indicators.

We perform two empirical exercises: first, we verify the robustness of the main results on EU imports, when the data are aggregated at the 6-digit level. Then, we re-estimate the main model by replacing EU imports with ROW imports on the left-hand-side, to assess whether GSP+ countries re-directed their trade from the ROW to the EU to take advantage of more secure trade preferences.

Table 6 shows the results from estimating specification (4.1) on the data aggregated at the 6-digit level: when exploiting the looser $GSPplus_{k,t}^{prod,6\ dig,ONE}$ identifier, the impact of the reform estimated with EU data is fully confirmed. Interestingly, the magnitude of the effect is very close to that obtained with the 8-digit product identifier, signalling that the distortion introduced by this variable is not substantial. When the stricter $GSPplus_{k,t}^{prod,6\ dig,ALL}$ indicator is exploited, results are instead rather different: the impact of the reform appears to be halved, with its statistical significance reduced to approximately 15%. This suggests that the $GSPplus_{k,t}^{prod,6\ dig,ONE}$ is the preferable 6-digit GSP+ eligibility indicator. Overall, these results reassure that the aggregation from 8- to 6-digit still allows for the detection of a sizeable impact of the reform on EU imports.

Table 6: Trade re-direction from the EU to the ROW

	(1) EU imports	(2)	(3) ROW imports	(4)
GSP+ (6-d one)	0.333*** (0.085)		0.117* (0.070)	
GSP+ (6-d all)		0.140 (0.087)		0.0332 (0.066)
Country-section-year FE	y	y	y	y
Product-year FE	y	y	y	y
Country-section-product FE	y	y	y	y
<i>N</i>	1414113	1414113	1319078	1319078

Note: Standard errors clustered at country-section level in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

More importantly, however, the increase in trade between the EU and GSP+ countries is not matched by a decrease in ROW imports: exploiting the (preferable) $GSPplus_{k,t}^{prod,6\ dig,ONE}$ variable, the reform appears to have had a positive impact on ROW imports, suggesting the existence of a positive spillover effect on exports to the ROW. The positive impact on ROW imports is not strongly significant, but it strengthens the importance of the results obtained for EU imports, as it appears that GSP+ exporters did not simply re-direct their shipments from the ROW to the EU to take advantage of better preferential market access.

7 Conclusion

Non-reciprocal trade preferences (NRTPs) are granted unilaterally by advanced economies to developing countries to increase their trade and support economic development. Yet their effectiveness might be undermined by the significant degree of uncertainty surrounding the stability of preferential market access over time.

This paper is the first work that empirically investigates the effect of removing uncertainty regarding NTPRs on developing countries' trade by exploiting the context of the 2014 reform of the EU GSP scheme. The reform eliminated the possibility of preference withdrawal from GSP+ countries, a subset of EU GSP members, in case their competitiveness grows beyond the limits established by the graduation mechanism. Specifically, the threat of preference removal in specific sectors (i.e. country-section graduation) due to a country's share of EU imports in that sector exceeding a certain threshold, does not apply any longer to GSP+ countries since the reform.

The 2014 reform increased EU imports of GSP+ products from GSP+ countries by 45% on average. We provide evidence that the reform reduced uncertainty about NRTPs, with the latter having an independent effect on EU imports of GSP+ countries, over and above the effect of other aspects of the GSP reform.

We adopt two strategies for isolating the effect of the uncertainty removal from that of better

market access obtained by countries that moved from the standard GSP to the GSP+ around the time of the reform. We condition our empirical results on the tariff applied by the EU on imports from GSP+ countries and, alternatively, we estimate the impact of the reform separately on imports of GSP+ products which did not benefit from changes in preference margins in the reform. Within the subsample of observations for which the preference margin did not change, EU imports increased by 35%, which is solely attributable to lower preferences uncertainty.

Lower NRTPs uncertainty arising from the removal of the graduation threshold should have affected mostly country-section pairs at risk of graduating, i.e. with import-shares close to the threshold. Accordingly, we find that the reform increased EU imports of products in sectors with higher import-shares by more. In particular, imports from sections closer to the graduation threshold (within 7.5 percentage points from it) increased by 71%, or nearly twice as much as imports from sections further away from it.

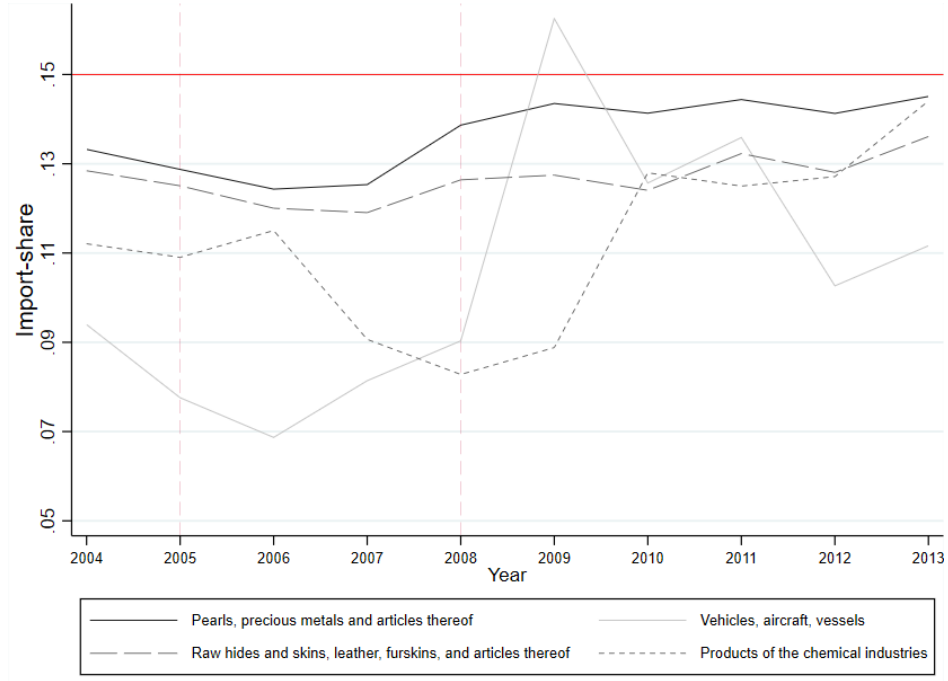
Finally, we also show that the increase in EU imports from GSP+ countries due to the reform is not matched by a decrease in GSP+ countries' exports to alternative destinations. The reform appears to not have triggered the re-direction of trade from the rest of the world to the EU, in order to take advantage of more secure preferential market access.

Given how GSP+ countries benefited from the 2014 reform, one might wonder whether similar gains could potentially be reaped by economies in the standard GSP scheme, for which preference uncertainty continues to prevail. As an illustrative example, Figure 1 shows the import shares of the four largest Indian sectors over the period preceding the 2014 EU GSP reform³⁶.

The import shares grew over time but seem to be hovering just below the 15% threshold, which would have triggered the loss of preferential access to the EU. India is a standard GSP beneficiary and as such was not affected by the reform that we describe in this paper. Yet in light of our empirical results obtained for GSP+ countries, India and other standard GSP

³⁶For this graph we chose to focus on India as this country is currently the largest GSP beneficiary, and therefore features the largest number of sectors close to the graduation threshold

Figure 1: EU import-shares from India by top sectors, 2004-2013



Source: Authors' elaboration on COMEXT data.

beneficiaries could potentially benefit a great deal from uncertainty removal.

Our findings demonstrate that trade policy uncertainty adversely affects trade flows to a significant and quantitatively important extent. For exporters in developing countries to take full advantage of the benefits offered by non-reciprocal preference schemes, there needs to be a sufficiently high degree of stability in trading conditions. Based upon our results, we conjecture that beneficiary countries would benefit from further reform that eliminated discretionary elements from GSP schemes. Beyond trade preferences, there is a wide range of situations in which commitment (or the lack thereof) matters for economic outcomes, and so the insights gained from this policy reform may be informative in other contexts as well, e.g. for foreign direct investment.

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8 Appendix

Table 7: List of GSP members

Standard GSP	GSP+	EBA	
Congo	Armenia	Afghanistan	Madagascar
Cook Islands	Bolivia	Angola	Malawi
India	Cabo Verde	Bangladesh	Mali
Indonesia	Kyrgyz Republic	Benin	Mauritania
Kenya	Mongolia	Bhutan	Mozambique
Micronesia	Pakistan	Burkina Faso	Myanmar
Nauru	Philippines	Burundi	Nepal
Nigeria	Sri Lanka	Cambodia	Niger
Niue		Central African Rep.	Rwanda
Samoa		Chad	Sao Tome and Principe
Syria		Comoros	Senegal
Tajikistan		Congo (Dem. Rep.)	Sierra Leone
Tonga		Djibouti	Solomon Islands
Uzbekistan		Equatorial Guinea	Somalia
Vietnam		Eritrea	South Sudan
		Ethiopia	Sudan
		Gambia	Tanzania
		Guinea	Timor-Leste
		Guinea Bissau	Togo
		Haiti	Tuvalu
		Kiribati	Uganda
		Laos	Vanuatu
		Lesotho	Yemen
		Liberia	Zambia

Note: Autors' elaboration on EU GSP regulations.

Table 8: Country-section import-shares pre 2014 GSP reform

Rank	Member	Import-share	GSP type	HS Section	Section description
1	Russia	0.1448	Std. GSP	IX	Wood, charcoal, cork and articles thereof
2	India	0.1431	Std. GSP	XIV	Pearls and precious metals
3	Mexico	0.1423	Std. GSP	XVII	Vehicles, aircraft and vessels
4	India	0.1414	Std. GSP	XVII	Vehicles, aircraft and vessels
5	Vietnam	0.1335	Std. GSP	XII	Footwear, headgear and umbrellas
6	India	0.1279	Std. GSP	VIII	Leather, raw hides and skins
7	Brazil	0.1224	Std. GSP	XVII	Vehicles, aircraft and vessels
8	Kuwait	0.1201	Std. GSP	V	Mineral products
9	Brazil	0.1183	Std. GSP	IX	Wood, charcoal, cork and articles thereof
10	Bangladesh	0.1145	EBA	XIb	Apparel and clothing
18	Pakistan	0.0974	GSP+	XIa	Textiles
39	Philippines	0.0641	GSP+	III	Animal and vegetable fats and oils
71	Pakistan	0.0385	GSP+	VIII	Leather, raw hides and skins
80	Pakistan	0.0342	GSP+	XIb	Apparel and clothing
82	Philippines	0.0334	GSP+	XVIII	Optical, measuring and medical instruments
149	Philippines	0.0181	GSP+	IV	Prepared foodstuffs
192	Philippines	0.0126	GSP+	XIV	Pearls and precious metals
241	Pakistan	0.0085	GSP+	XX	Works of art and antiques
279	Pakistan	0.0063	GSP+	II	Vegetable products
284	Philippines	0.0059	GSP+	XVI	Machinery and mechanical appliances
288	Philippines	0.0058	GSP+	VII	Plastics and articles thereof
321	Philippines	0.0048	GSP+	XVII	Vehicles, aircraft and vessels
328	Pakistan	0.0046	GSP+	VII	Plastics and articles thereof
337	Armenia	0.0044	GSP+	XV	Base metals and articles thereof

Note: Authors' elaboration on COMEXT data.

Table 9: International Conventions by NTPO area in EU's GSP+

Human rights

Convention on the Prevention and Punishment of the Crime of Genocide
 International Convention on the Elimination of All Forms of Racial Discrimination
 International Covenant on Civil and Political Rights
 Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment

Economic, social and cultural rights

International Covenant on Economic, Social and Cultural Rights
 Convention on the Elimination of All Forms of Discrimination against Women
 Convention on the Rights of the Child
 Convention concerning Forced or Compulsory Labour, No. 29
 Convention concerning Freedom of Association and Protection of the Right to Organise, No. 87
 Convention concerning the Application of the Principles of the Right to Organise and to Bargain Collectively, No. 98
 Convention concerning Equal Remuneration of Men and Women Workers for Work of Equal Value, No. 100
 Convention concerning the Abolition of Forced Labour, No. 105
 Convention concerning Discrimination in Respect of Employment and Occupation, No. 111
 Convention concerning Minimum Age for Admission to Employment, No. 138
 Convention concerning Minimum Age for Admission to Employment, No. 182

Environmental protection

Convention on International Trade in Endangered Species of Wild Fauna and Flora
 Montreal Protocol on Substances that Deplete the Ozone Layer
 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
 Convention on Biological Diversity
 UN Framework Convention on Climate Change
 Cartagena Protocol on Biosafety
 Stockholm Convention on Persistent Organic Pollutants
 Kyoto Protocol to the United Nations Framework Convention on Climate Change

Public health

UN Single Convention on Narcotic Drugs
 UN Convention on Psychotropic Substances
 UN Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances

Corruption

UN Convention against Corruption

Note: Author's elaboration on EU regulation.