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

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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 GSP+, a sub-scheme of the main programme. We find that the reform increased EU imports from GSP+ countries by about 7% on average whilst tariffs stayed the same. This trade impact is driven by the country-sector pairs most exposed to NRTPs uncertainty pre-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

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 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, 2018) 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 An important flaw of NRTPs schemes, however, 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 need periodic renewal (Hakobyan,

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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, 2018; 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.

2017b); some schemes feature mechanisms for preference removal from competitive countries or sectors (Hakobyan, 2017a).

All these aspects result in NRTPs to be surrounded by uncertainty, which is likely to undermine their main purpose: to stimulate exports from the beneficiary countries. Exporters might 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. This 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 which 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 caused a shift in the level of EU imports from affected countries, which appears to be due to an increase in their exporting activity, rather than a re-direction of trade from alternative destinations. The details of the reform as well as a first summary of our findings, are given in subsection 1.1.

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 pre-Brexit referendum finding that greater TPU 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.

1.1 EU's GSP: background and the 2014 reform

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,

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

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 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.

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.

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 graduation*. 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

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.

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

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 7.5%, 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 uncertainty removal 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. We find statistically identical effects of about 7% on the two latter product subgroups, this reassuring that the aggregate trade impact we estimate

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, respectively in 2011 and 2014, and from GSP, respectively in 2015 and 2019.

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.

is due to lower preference uncertainty, rather than to lower tariffs.

Second, the removal of the graduation threshold should be of relevance only 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, compute the distance from the threshold, and find that the reform had an impact on EU imports under GSP+ which increases as the distance decreases. However, the distribution of country-section pairs over the distance distribution is extremely skewed.¹⁴ For this reason, to identify more flexibly the range of the distance distribution over which the threshold removal shows its impact, we divide the distance in (5 percentage points) bins and find that the impact of the reform is about 10 times stronger on products in sectors in the first two bins, relative to the remaining part of the distribution.

Third, other than altering the graduation mechanism for GSP+ countries, the 2014 GSP reform amended also 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

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 our empirical exercises.

in competition in the EU market in favour of GSP+ countries, and stimulated their exports to the EU. To disentangle the effect of this more favourable competitive position from that of lower uncertainty, we exploit the fact that the GSP reform was announced in 2012, but only implemented in 2014. This timing implies that, for GSP+ countries, in 2013 only the effects of lower preferences uncertainty should have been at work. In support of this hypothesis we find that EU imports from GSP+ countries increased already in 2013: this finding is particularly salient, as it is obtained only for products which in 2014 were not going to experience any change in preferential tariffs.

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 2 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.

2 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 concurring routine

of Van Beveren et al. (2012).¹⁸

Second, information on tariff rates applied by the EU on 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.¹⁹

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*.

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%.

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.

¹⁸This 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.

¹⁹The tariff line data in TRAINS were exported at the finest level available (12-digit) and aggregated to the 8-digit level in preparation for merging this information to trade data.

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.

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 accounting for approximately 55% (21/38) of the GSP eligible imports from these

countries.²⁰ 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.²¹ The figures in the columns labelled “of which at 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 large²² and show that country-section graduations represented a serious threat for the majority of trade eligible for GSP preferences.

²⁰Note 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.

²¹We 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.

²²Since 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.

Preferences utilization rates can further reinforce our understanding of the relevance of both GSP preferences and of the risk represented by graduations, as they inform on 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 applied, 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.

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.

Taken together, the descriptive figures in Tables 1-3 imply that the EU's GSP scheme is 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 the removal of the graduation threshold, to assess whether there was a trade effect that can be attributed to the change in NRTPs uncertainty.

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.²³ We remove from the estimation sample countries that, over the 2009-2011 period, were not in the GSP scheme, as for these countries we cannot compute a GSP import-share and the distance from the graduation threshold.²⁴ We decided to remove from the control group also

²³In 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+.

²⁴These 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.

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.²⁵

The basic estimating equation is given by:

$$\ln(\text{imp})_{k,cs,t} = \beta_1(\text{ref}_t * \text{GSPplus}_{k,t}^{\text{prod}} * \text{GSPplus}_{cs,t}^{\text{member}}) + \gamma_{cs,t} + \delta_{k,t} + \lambda_{cs,k} + \varepsilon_{k,cs,t} \quad (4.1)$$

where 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: $\text{GSPplus}_{k,t}^{\text{prod}}$, which takes value 1 if a product k is eligible for GSP+ in year t and 0 otherwise; $\text{GSPplus}_{cs,t}^{\text{member}}$, which takes value 1 if a country-section cs is a GSP+ beneficiary in year t and 0 otherwise; ref_t , which takes value 1 in years post-reform, i.e. post 2014, and 0 otherwise. This triple interaction term, therefore, takes 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

²⁵Inclusion of EBA countries in the sample does not alter qualitatively the results.

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.²⁶ 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 Kyrgyzstan 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, 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 preferences uncertainty, 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

²⁶A 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 a control in specification 4.1.

$$\ln(\text{imp})_{k,cs,t} = \beta_1(\text{ref}_t * \text{GSPplus}_{k,t}^{\text{prod}} * \text{GSPplus}_{cs,t}^{\text{member}}) + \eta \ln(\tau_{cs,k,t}) + \gamma_{cs,t} + \delta_{k,t} + \lambda_{cs,k} + \varepsilon_{k,cs,t} \quad (4.2)$$

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.²⁷ $\text{GSPplus}_{cs,k}^{\text{prod},\Delta\text{pref}=0}$, which takes value 1 if the preference margin of a product k imported from country-section cs did not change in the year of the reform, and 0 otherwise; $\text{GSPplus}_{cs,k}^{\text{prod},\Delta\text{pref}\neq 0}$ 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:

$$\ln(\text{imp})_{k,cs,t} = \beta_1(\text{ref}_t * \text{GSPplus}_{cs,k}^{\text{prod},\Delta\text{pref}=0} * \text{GSPplus}_{cs,t}^{\text{member}}) + \beta_2(\text{ref}_t * \text{GSPplus}_{cs,k}^{\text{prod},\Delta\text{pref}\neq 0} * \text{GSPplus}_{cs,t}^{\text{member}}) + \gamma_{cs,t} + \delta_{k,t} + \lambda_{cs,k} + \varepsilon_{k,cs,t} \quad (4.3)$$

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

²⁷For 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.

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 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 2009-2011.²⁸ 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 introduce²⁹ 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, 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 data³⁰, and the pre-reform graduation thresholds (15%; 12.5% for textiles). We then construct a continuous distance measure as the ratio of each country-section's import-share and the graduation threshold, a higher ratio representing higher exposure to the risk of graduation pre-reform. Formally, we then estimate:

$$\begin{aligned} \ln(\text{imp})_{k,cs,t} = & \beta_1(\text{ref}_t * \text{GSPplus}_{k,t}^{\text{prod}} * \text{GSPplus}_{cs,t}^{\text{member}}) + \beta_2 \text{dist}_{cs,t} + \\ & \beta_3 [(\text{ref}_t * \text{GSPplus}_{k,t}^{\text{prod}} * \text{GSPplus}_{cs,t}^{\text{member}}) * \text{dist}_{cs,t}] + \\ & \eta \ln(\tau_{k,cs,t}) + \gamma_{cs,t} + \delta_{k,t} + \lambda_{cs,k} + \varepsilon_{k,cs,t} \quad (4.4) \end{aligned}$$

²⁸The calculation implies computing yearly import-shares for each country-section pair, then taking a three year average over the relevant period.

²⁹The 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)

³⁰We 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.

where β_3 is expected to be positive, implying that the reform had a larger impact on trade of GSP+ country-sections which were closer to the graduation threshold.

Inspection of the pre-reform import-shares and the distance from the threshold, however, reveals a very skewed 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.³¹ This induced us to perform a separate exercise to estimate the impact of NRTPs uncertainty removal with a more flexible empirical specification. We constructed three mutually exclusive binary variables, which separate the country-sections pairs (and their relative product level import flows) in the following categories: $GSPplus_{cs,t}^{member,5pp}$ for import-shares within 5 percentage points from the threshold, $GSPplus_{cs,t}^{member,5-10pp}$ for import-shares between 5 and 10 percentage points from the threshold, and $GSPplus_{cs,t}^{member,>10pp}$ for import-shares more than 10 percentage points away from the threshold. We then construct three triple interaction terms to estimate the impact of the reform for each of these import-shares categories:

$$\begin{aligned} \ln(imp)_{k,cs,t} = & \beta_1(ref_t * GSPplus_{k,t}^{prod} * GSPplus_{cs,t}^{member,5pp}) + \\ & \beta_2(ref_t * GSPplus_{k,t}^{prod} * GSPplus_{cs,t}^{member,5-10pp}) + \\ & \beta_3(ref_t * GSPplus_{k,t}^{prod} * GSPplus_{cs,t}^{member,>10pp}) + \\ & \eta \ln(\tau_{k,cs,t}) + \gamma_{cs,t} + \delta_{k,t} + \lambda_{cs,k} + \varepsilon_{k,cs,t} \quad (4.5) \end{aligned}$$

Specification (4.5) 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 the 2014 reform affected EU imports of GSP+ countries through lower uncertainty, β_1 to be positive and significant, β_2 and β_3 to be progressively smaller and less statistically significant.

³¹Table 9 in the Appendix reports the top 10 import-shares in our sample together with the first largest 15 import-shares of GSP+ countries.

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, were 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. We disentangle these two effects by exploiting the timing of the reform.

The reform was announced in 2012, and applied in 2014. The gap year between the announcement and the implementation allows us to disentangle the trade effect of the change in uncertainty from that of the change in competition. In 2013 no change in competition had occurred yet: some GSP members learned that they will lose their preferences the following year, but had no reason to reduce their exports to the EU already in 2013; on the contrary, they might have been induced to make the most out of the last year of preferential market access. Hence, in 2013 competition might have increased among GSP members or, at least, it should not have changed in favour of GSP+ countries. The change in uncertainty, on the other hand, had already occurred. GSP+ countries learned about the new GSP+ features in 2012, and in mid-2013 the EU accepted their GSP+ applications European Union (2014). If, therefore, we observe an increase in EU imports from GSP+ countries in 2013, relative to the

preceding period, this should have been a consequence of the change in uncertainty brought by the reform, with no effect from the change in competition in their favour. To implement this exercise we recode the reform variable as taking value 1 in 2013, and then explore the impact of the announcement in each following year by interacting the main regressors in specifications (4.1)-(4.3) with year dummies. For instance, the augmented specification (4.3) becomes:

$$\ln(imp)_{k,cs,t} = \sum_{t=13}^{16} \left[\beta_{1,t}(ref_t * GSPplus_{cs,k}^{prod,\Delta pref=0} * GSPplus_{cs,t}^{member}) + \beta_{2,t}(ref_t * GSPplus_{cs,k}^{prod,\Delta pref \neq 0} * GSPplus_{cs,t}^{member}) \right] * T_t + \gamma_{cs,t} + \delta_{k,t} + \lambda_{cs,k} + \varepsilon_{k,cs,t} \quad (4.6)$$

A positive and significant coefficient on $\beta_{1,13}$ would imply that the reform announcement in 2012 induced GSP+ exporters to change their behaviour as soon as the uncertainty was removed, even though they had not yet benefited from a change in competition.³² Importantly, we do not necessarily expect $\beta_{2,13}$ to be positive and significant, as $\beta_{2,t}$ coefficients capture the change in imports due to both lower uncertainty and better market access in the EU, with the latter only available to GSP+ countries since 2014. Finally, recall that Pakistan, the Philippines and Kyrgyzstan entered the GSP+ in the period covered by the GSP reform. Pakistan learned about its GSP+ entry in 2013 (at the same time as the other, former, GSP+ members learned that their status was confirmed for the period beginning in 2014), so might have been among those countries that took advantage of the change in uncertainty in 2013. The Philippines and Kyrgyzstan also learned about the reform in 2012, but only received confirmation about their GSP+ entry in mid 2014 and end of 2015, respectively: in 2013, therefore, they might not necessarily have started taking advantage of the NRTPs uncertainty removal.

³²An insignificant $\beta_{1,13}$, however, would not necessarily imply that the reform was ineffective at stimulating trade of GSP+ countries through lower uncertainty, but could result from GSP+ taking some time in adjusting their exporting activity.

5 Results

This section presents the results from estimating the empirical models described in section (4). All models are estimated using the Correia’s estimator for high dimensional fixed effects Correia (2018). 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 7.5%.³³

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

	(1)	(2)	(3)
$ref_t * GSPplus_{k,t}^{prod} * GSPplus_{cs,t}^{member}$	0.0727** (0.036)	0.0680* (0.036)	
$ln(\tau_{k,cs,t})$		-0.628*** (0.163)	
$ref_t * GSPplus_{cs,k}^{prod, \Delta pref=0} * GSPplus_{cs,t}^{member}$			0.0718* (0.039)
$ref_t * GSPplus_{cs,k}^{prod, \Delta pref \neq 0} * GSPplus_{cs,t}^{member}$			0.0749* (0.044)
Country-section-year FE	y	y	y
Product-year FE	y	y	y
Country-section-product FE	y	y	y
N	881137	881137	881137

Note: Standard errors clustered at country-product level in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.001

This impact is statistically robust, but it appears economically modest. 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 meaningfully exposed to NRTPs uncertainty (i.e. their vicinity to the graduation threshold). Further, since GSP+ 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

³³This is the marginal effect computed as $e^\beta - 1$, as the dependent variable is the log of EU imports.

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 -0.6, a figure in line with previous estimates in the literature (Thelle et al., 2015, e.g.). Importantly, there is still a positive impact of the reform on EU imports from GSP+ countries, which we can attribute to NTPRs uncertainty removal: 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 7% 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 2014³⁴, 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 no statistically significant difference between them. This implies that the removal of NRTPs uncertainty was the main factor driving the increase in EU imports from GSP+ countries post reform. Further, the coefficient for products with no change in preference margins can be considered a lower bound estimate of the impact of uncertainty removal.

5.2 Is there a threshold effect?

The first set of 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 mostly for country-section pairs close to the graduation threshold pre-reform. To explore this rationale we estimate specification (4.4), which assesses the relevance of the threshold exploiting a continuous distance measure, and specification (4.5), which unpacks the average effects reported in Table 4 over three subgroups of observations at different distances

³⁴For the Philippines and Kyrgyzstan we used their year of GSP+ entry to identify products with or without changes in preference margins

from the threshold. These results are reported in Table 5.

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

	(1)	(2)	(3)	(4)
$ref_t * GSPplus_{k,t}^{prod} * GSPplus_{cs,t}^{member}$	0.0481 (0.038)	0.0443 (0.038)		
$(ref_t * GSPplus_{k,t}^{prod} * GSPplus_{cs,t}^{member}) * dist_{cs}$	0.640** (0.282)	0.619** (0.282)		
$ln(\tau_{k,cs,t})$		-0.622*** (0.163)		-0.623*** (0.163)
$ref_t * GSPplus_{k,t}^{prod} * GSPplus_{cs,t}^{member,5pp}$			0.540*** (0.190)	0.521*** (0.191)
$ref_t * GSPplus_{k,t}^{prod} * GSPplus_{cs,t}^{member,5-10pp}$			0.528*** (0.150)	0.495*** (0.150)
$ref_t * GSPplus_{k,t}^{prod} * GSPplus_{cs,t}^{member,>10pp}$			0.0663* (0.037)	0.0618* (0.037)
Country-section-year FE	y	y	y	y
Product-year FE	y	y	y	y
Country-section-product FE	y	y	y	y
N	881137	881137	881137	881137

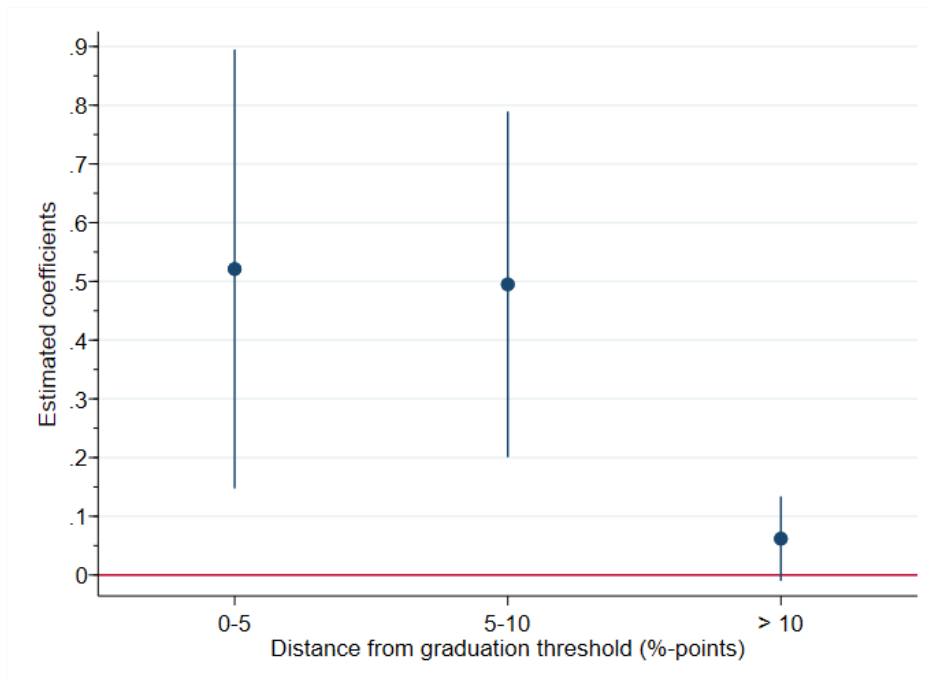
Note: Standard errors clustered at country-product level in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.001

Table 5 shows neatly the existence of a threshold effect, as removing the graduation threshold impacted EU imports from GSP+ country-sections close the threshold more strongly. This is evident in both the exercises we perform. The interaction with the continuous distance measure in columns 1 and 2 is positive, large and significant, with its coefficient being only slightly reduced when we control for the applied tariff rate.

Columns 3 and 4 of Table 5 unpack the threshold effect in a more flexible way. The trade effect of the reform is a great deal stronger and of larger statistical significance on products in country-sections in the first two sub-groups, i.e. those closer to the graduation threshold, relative to products in the third sub-group. Adding the 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 all three the subgroups products, as expected. However, the coefficients for products in sections within 10pp from the threshold retain their

statistical significance, while the coefficient for products in sections more than 10pp away from the threshold is the on the verge of insignificance (t-ratio =1.68). These results have to be interpreted against the very uneven distribution of country-section import-shares across the three subgroups: out of 16,552 treated observations, 1194 belong to country-sections within 5pp of the threshold, 1,187 belong to country-sections between 5 and 10pp of the threshold, and 14,171 (85.6%) belong to country-sections more than 10pp away from the threshold.

Figure 1: Impact of GSP reform by bins of distance from graduation threshold



Note: regression coefficients with 95% confidence intervals. Source: Authors' elaboration.

The finding of an almost insignificant effect on trade of products in country-sections furthest away from the threshold, despite the larger number of observations, can be taken as indication of the fact that the 2014 reform impacted trade of GSP+ countries through a reduction in uncertainty about their trade preferences. Removing the graduation threshold affected strongly those exporters most at risk of losing preferential access to the EU, while the effect for exporters under a lower degree of uncertainty is almost absent.

5.3 Netting out the competition effect from the impact of the uncertainty removal

As described in the introduction, in the 2014 reform the EU tried to make GSP tariffs more certain, but also to limit the beneficiaries to the countries more in need of preferential treatment. This led to the exclusion from the EU's GSP of a large group of countries, which might have conferred a competitive advantage to the remaining GSP members, which could continue to benefit from lower than MFN tariffs.

To “net out” the trade impact which could have arisen from lower competition from that of lower preferences uncertainty, we can exploit the timing of the reform. Between the announcement in 2012 and the implementation in 2014, 2013 was a year when no change in competition could have already plausibly affected trade of GSP+ countries, but when the change in uncertainty had already occurred.

This timing is exploited in specification (4.6), and the estimation results are presented in Table 6, which has a structure analogous to that of Table 4. In column 1, where the yearly break-down is performed for the aggregate sample, there does not appear to be any impact of the reform in 2013, whereas an increase in EU imports under GSP+ of about 11.6% with respect to the pre-2013 period is found for 2016. Column 2 controls for the applied tariff rate, and broadly confirms this finding.

In column 3 we separate the yearly break-down performed in column 1 also across products with and without changes in preference margins in the year of the reform. This exercise provides two findings: exporters which could only take advantage from a change in uncertainty, and no change in preference margins, did so as soon as the uncertainty was removed (in 2013); exporters which could benefit also from a change in preference margins, did so only when the change in tariffs actually materialised (in 2014). The impact of uncertainty removal appears already before exporters could benefit also from a change in competition: in 2013, EU imports of products with no changes in preference margins increased by 15.1%, relative to the previous period. This

Table 6: Impact of reform announcement

		(1)	(2)	(3)
$ref_t * GSPplus_{k,t}^{prod} * GSPplus_{cs,t}^{member}$	2013	-0.0251 (0.050)	-0.0265 (0.050)	
	2014	0.0649 (0.055)	0.0562 (0.055)	
	2015	0.0365 (0.047)	0.0392 (0.047)	
	2016	0.101** (0.048)	0.0917* (0.048)	
$ln(\tau_{k,cs,t})$			-0.620*** (0.163)	
$ref_t * GSPplus_{cs,k}^{prod, \Delta pref=0} * GSPplus_{cs,t}^{member}$	2013			0.141*** (0.049)
	2014			0.0783 (0.057)
	2015			0.0728 (0.050)
	2016			0.121** (0.052)
$ref_t * GSPplus_{cs,k}^{prod, \Delta pref=0} * GSPplus_{cs,t}^{member}$	2013			0.0348 (0.060)
	2014			0.214** (0.088)
	2015			0.0165 (0.057)
	2016			0.108* (0.056)
Country-section-year FE		y	y	y
Product-year FE		y	y	y
Country-section-product FE		y	y	y
N		881137	881137	881137

Note: Standard errors clustered at country-product level in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.001

finding provides more evidence in support of the fact that making preferences certain had a positive impact on GSP+ members' exports, over and above other aspects of the 2014 reform which could have stimulated trade of those countries.

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. To obviate to this problem, we construct a binary GSP+ product eligibility identifier at the 6-digit level, $GSPplus_{k,t}^{prod, 6\ dig}$, taking value 1 if at least one of 8-digit product within the 6-digit group is eligible for GSP+, and 0 otherwise. This implies that some of the GSP+ non-eligible products which fall in "mixed" 6-digit groups, are going to be considered as treated by the reform.

We then 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 7: Trade re-direction from the EU to the ROW

		1
EU imports	$ref_t * GSPplus_{k,t}^{prod, 6\ dig} * GSPplus_{cs,t}^{member, D1}$	0.0683' (0.045)
Observations		545349
ROW imports	$ref_t * GSPplus_{k,t}^{prod, 6\ dig} * GSPplus_{cs,t}^{member, D2-D10}$	0.0105 (0.0537)
Observations		460655
Country-section-year FE		y
Product-year FE		y
Country-section-product FE		y

Note: Standard errors clustered at country-section level in parentheses, ' p < 0.15 * p < 0.1, ** p < 0.05, *** p < 0.001

Table 7 shows the results from estimating specification (4.1) on the data aggregated at the 6-digit level: the impact of the reform with EU data is confirmed, although the effect is statistically very weak: on average, EU imports of products affected by the reform increased by 7%, but the estimate at the 6-digit level is only significant at the 13% level (t-ratio=1.51). Importantly, however, this increase in trade is not matched by a decrease in ROW imports: the reform appears to have had no significant impact on ROW imports from GSP+ countries, which reassures 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 industrialised nations to developing countries to increase their trade and economic development, but their effectiveness might be undermined by the significant degree of uncertainty surrounding the stability of the preferences over time.

This paper is the first work which empirically investigates the effect of removing uncertainty about non-reciprocal trade preferences on trade of developing countries, by exploiting the context of the 2014 reform of the EU GSP scheme. The reform eliminated the possibility of preferences withdrawal from GSP+ countries, a subset of the EU GSP members, in case their competitiveness grows beyond the limits established by the mechanism of graduation from the scheme. More in detail, 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 growing beyond 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 7.5%, on average. We provide evidence that the reform reduced uncertainty about NRTPs, with this latter having an independent effect on EU imports of GSP+ countries, over and above the effect of the other aspects of the GSP reform.

We adopt two strategies to isolate 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. In both cases we find a positive trade impact of the reform which can be attributed 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 closest to the threshold (within 10 percentage points from it) increased by about 70%, with barely any effect on the remaining part of the distribution.

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.

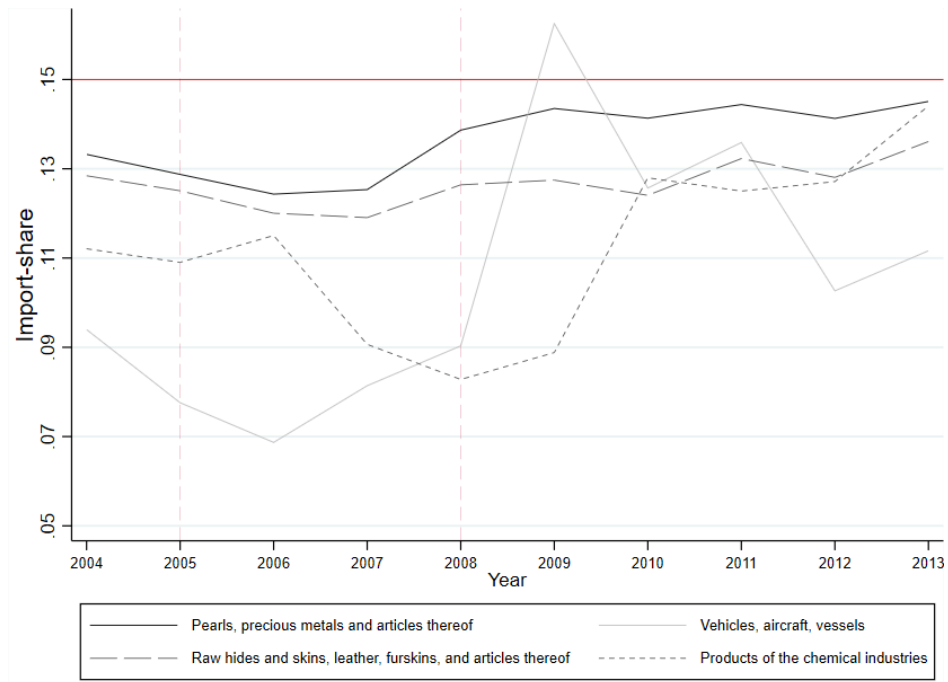
Given how GSP+ countries benefited from the 2014 reform, one might ask whether similar gains could potentially be reaped by economies in the standard GSP scheme, for which preference uncertainty continues to prevail. As an illustrative example, Figure 2 shows the import shares of the four largest Indian sectors over the period preceding the 2014 EU GSP reform³⁵.

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 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

³⁵For 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 2: EU import-shares from India by top sectors, 2004-2013



Source: Authors' elaboration on COMEXT data.

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 8: 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: Authors' elaboration on EU GSP regulations.

Table 9: 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 10: 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.