GSP Expiration and Declining Exports from Developing Countries

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Abstract

This paper investigates whether the 2011 expiration of the most comprehensive trade preference program (Generalized System of Preferences or GSP) offered by the US had a detrimental impact on the exports from developing countries. The impact of GSP expiration is examined with a triple difference-in-differences estimation that controls for both country- and product-level export changes. Even though the duties collected during the period of expiration are ultimately refunded after GSP is reauthorized, the findings of this paper suggest that the expiration of GSP had a considerable impact on the level of exports to the US; on average exports dropped by 3 percent in 2011, with exports of agricultural products and textiles and clothing declining as much as 5 and 9 percent, respectively. The decline is increasing in the tariff rates and rates of utilization, and decreasing in the size of exports.

Keywords: Generalized System of Preferences (GSP), GSP expiration, exports from developing countries, trade policy uncertainty

JEL Classifications: F13, O19

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"So, what's the impact [of GSP expiration]? Well, the actual amount of goods coming in through the GSP program is relatively small, at $19 billion in 2012 (or just about 2 percent of U.S. imports). And theoretically, the tariffs get refunded when the program is finally reauthorized, so no big deal, right?"

– The Washington Post, August 12, 2013

1 Introduction

Preferential market access is of critical importance to many exporters in developing countries. And a number of developed countries provide preferential including duty-free access to their markets to stimulate exports from developing countries. About one-third of dutiable exports from developing countries to the US are eligible for the Generalized System of Preferences (GSP), the most comprehensive (in terms of country coverage) trade preference program offered by the US.

Notwithstanding the preferential treatment, the existing literature identifies a number of factors that may inhibit the exports from developing countries or lead to low take-up rates under GSP. Examples include stringent rules of origin requirements and eroding preference margins (Hakobyan, 2015; Francois et al., 2006; Reynolds, 2009). An additional hurdle to the utilization of the program, often overlooked in the literature, is its frequent expiration; GSP is not a permanent program and needs to be periodically renewed by the Congress. And even though the duties paid during the periods of expiration have traditionally been reimbursed to exporters after the retroactive re-authorization of GSP, the unexpected expiration of benefits may have detrimental effect on particularly small exporters whose costs rise suddenly for uncertain period of time. Furthermore, the frequent expiration of benefits may also raise uncertainty about the viability of the program in the long run thus discouraging investment in production of GSP eligible products.

This paper takes advantage of Congress' failure to renew the GSP and its unexpected

expiration in 2011 to quantify the effect of GSP expiration on exports from developing countries to the US. The expiration resulted in revocation of tariff exemptions on exports of about 3,500 products – at the Harmonized System (HS) 8-digit level – from about 130 developing countries. Tariffs increased uniformly across all developing countries eligible for the GSP, with the least developed countries becoming subject to tariff increases on additional 1,400 products.[1] This was followed by a reduction in exports claiming duty-free treatment under GSP from $22.5 billion in 2010 to $18.5 billion in 2011.

Because GSP benefits apply to certain countries and certain products, I am able to estimate the impact of revocation of tariff exemptions using triple difference-in-differences (product, country, expiration). As the rhetorical quote above from The Washington Post suggests we should not observe much impact on exports due to GSP expiration because the duties are ultimately refunded (DePillis, 2013). The findings of this paper, however, suggest otherwise; the expiration of GSP in 2011 had a considerable effect on the level of exports and propensity to export to the US. Exports dropped by about 3 percent on average in 2011, with exports of textiles and apparel products declining by as much as 9 percent. The probability of a GSP eligible country exporting a GSP eligible product to the US decreased by 0.34 percentage points (1.25 percentage points for textiles and apparel). The impact of GSP expiration was the largest in product categories facing higher tariffs; exports of products facing 15 percent or higher tariff rates dropped by about 11 percent. GSP exports with higher pre-expiration utilization rates experienced a larger drop, in particular 77.5 percent drop in exports that fully claimed duty-free treatment prior to expiration. Finally, the expiration hit small exporters (defined at the country-product level) the hardest suggesting that credit constraints in the short run may partly explain the decline in exports from developing countries. Furthermore, large exporters also experience decline in their exports, albeit much smaller in magnitude, pointing to the possible role that trade policy uncertainty may have played in reducing exports. These findings emphasize the impor-

[1] 43 least developed countries qualified for these additional benefits in 2010.

tance of uninterrupted preferential market access in maintaining and stimulating exports from developing countries, and are relevant to the recurring policy debate on the renewal of GSP which is expected to expire again on December 31, 2017.

The remainder of this paper is organized as follows. Section 2 provides background on the US GSP expiration and discusses the relevant literature. The empirical specification is introduced in Section 3 and the data in Section 4. Results are reported in Section 5, and concluding remarks are provided in Section 6.

2 Background and Related Literature

The GSP program was first enacted in January 1975, reauthorized in 1984, and has been renewed twelve times since (Appendix Table A1). Prior to 2006 the GSP was always renewed retroactively from the expiration date to the date of enactment. The 2006 renewal (until December 2008) was the first time since 1993 that the program had not been allowed to lapse prior to its renewal. And such renewal was implemented two more times in 2008 and 2009. However, in 2010 Congress failed to renew the GSP and, it lapsed as of January 1, 2011 until November 5, 2011 when it was renewed again retroactively. It is worth noting that when the GSP is renewed retroactively to the date of its expiration, the duties paid by exporters are ultimately refunded to them. Nevertheless, there is no statutory requirement to refund duties or renew GSP retroactively.

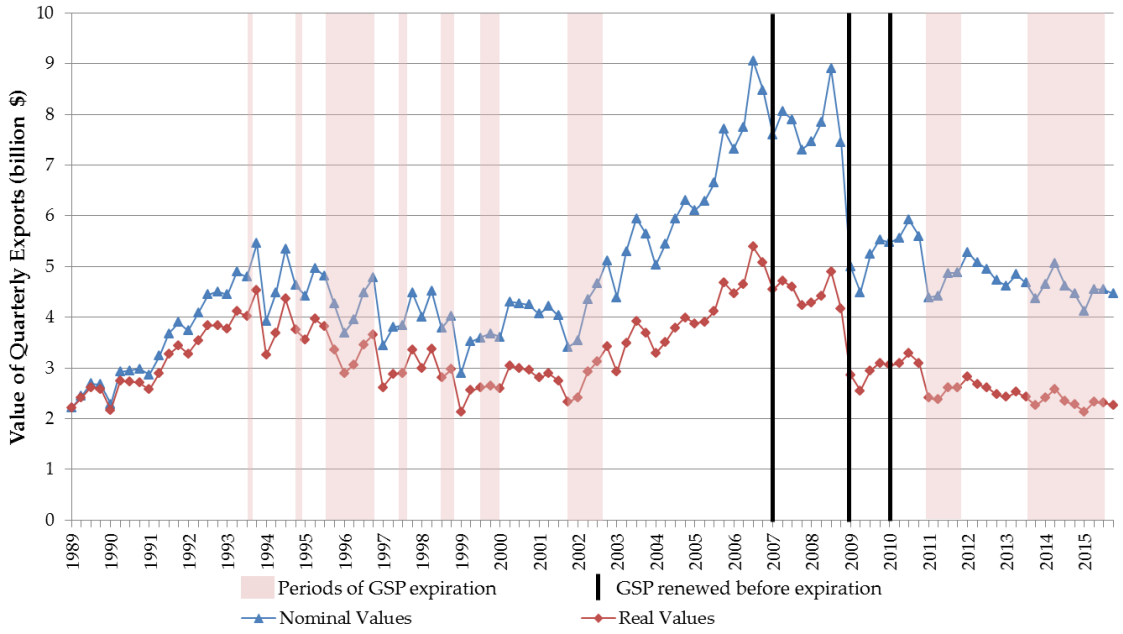
Past episodes of GSP expiration ranged from 36 days to two years. Four episodes lasted over 300 days – 1995-96, 2001-02, 2011 and 2013-15. The expiration in 2011 lasted 10 months, similar in duration to the expiration in 2001-2002. Yet, the former is more appropriate for the analysis here in several respects. First, all the other episodes of expiration begin and end mid-year, not an ideal setting for analyzing the impact on annual exports. Second, the 2011 expiration was unexpected; after being renewed three times *prior* to its expiration between 2002 and 2010, there may have been some expectations

about its unfailing renewal by the Congress in future. Yet, at the end of 2010 Senator Jeff Sessions (R-AL) blocked the legislation extending the GSP program in Congress.[2] On the contrary, the 1995-96 and 2001-02 expirations were preceded by several brief (up to 6 months) lapses of GSP and hence could have been anticipated. The most recent expiration in 2013-15 was also preceded by relatively lengthy period of expiration in 2011. Finally, the 2001 expiration coincided with September 11, 2001 attacks on the World Trade Center when exports from all countries to the US collapsed due to increased security at the border. Thus, it might be difficult to disentangle the effect of 9/11 from the effect of GSP expiration.

The existing literature typically examines the effect of extending preferential access by studying the trade patterns following the removal of tariffs. The clear focus is to gauge how these preferences stimulate exports of beneficiary countries. The general consensus among the findings in this literature is that trade preference programs tend to foster exports from developing countries in the short run (Hoekman and Özden (2005), Agostino et al. (2007) and Cardamone (2007) provide extensive surveys) but not in the long run (Herz and Wagner, 2011; Özden and Reinhardt, 2005). More specific to the US trade preference programs, Lederman and Özden (2007) examine the impact of various US preferential arrangements and find that exporters benefit substantially from regional preferential programs, but not GSP. Frazer and Van Biesebroeck (2010) find that African Growth and Opportunity Act (AGOA) had a large impact on exports to the US, especially for apparel and manufacturing products. A related strand of literature examines the effect of revocation of tariff exemptions for certain countries and products. Hakobyan (forthcoming) and DeVault (1996) explore a feature of GSP that caps the benefits of most successful exporters and find that exports of affected country-product pairs decline after the revocation of tariff exemptions.

[2]At the request of a domestic manufacturer of sleeping bags who competed with Bangladeshi exports of similar products, Senator Jeff Sessions (R-AL) vetoed the legislation to renew GSP in Congress (The New York Times, 2011). (Blanchard and Hakobyan, 2014)

Figure 1: Nominal and Real Quarterly Exports under GSP, 1989-2015 (not seasonally adjusted)



Notes: Nominal values have been deflated using the Consumer Price Index (CPI).

This paper also provides another lens through which to think about trade policy uncertainty. A growing literature on trade agreements and uncertainty provides evidence of the positive effect of uncertainty reducing trade agreements on trade flows and firms' investment decisions (Handley and Limão, 2012; Handley, 2012). Handley and Limão (2013) show that Chinese export growth in 2000-2005 was higher in those industries that faced greater trade policy uncertainty. In the context of GSP, uncertainty may have multiple origins. The GSP expires periodically and there is an uncertainty whether it will be renewed prior to its expiration. If it is not renewed, then an additional uncertainty arises from the duration of the lapse; the past expirations ranged from 36 days to two years (Appendix Table A1). Finally, there is no requirement that the Congress renew GSP retroactively, although this has been the practice in the past. This became important in the recent renewal debates as legislators were reluctant to forgo the collected duties amidst the discussions of greater austerity.

To my knowledge, this is the first paper to empirically examine the effect of the US GSP

expiration on trade flows from developing countries. An annual report on GSP (2013) by The Trade Partnership, a Washington-based consulting firm, is the only source pointing to the possible link between GSP expiration (or the length of expiration) and growth of exports under GSP program. Figure 1 illustrates the quarterly GSP exports to the US between 1989 and 2015 (not seasonally adjusted), with shaded areas representing periods of GSP expiration and solid lines indicating dates when GSP was renewed prior to its expiration. Looking at Figure 1, one may argue that GSP expiration and particularly the frequency of its expiration hamper the growth of exports under GSP program, at least at the onset of the expiration.

3 Estimation strategy and data

3.1 Empirical Specification

The revocation of tariff exemptions may force exporters to reduce the volume of exports, as well as prompt them to stop exporting a range of products to the US. To gauge the impact of GSP expiration on the volume of exports (intensive margin) and the propensity to export from developing countries to the US (extensive margin, I examine the pattern of dutiable exports from all countries to the US, regardless of their GSP eligibility. More specifically, following Frazer and Van Biesebroeck (2010), I employ an unrestrictive triple-difference regression specification to measure the magnitude of the GSP expiration effect:[3]

$$lnExports_{cpt} = \beta GSPcountry_c \times GSPproduct_p \times Expired_t + \gamma_{cp} + \delta_{ct} + \theta_{pt} + \epsilon_{cpt}. \quad (1)$$

$lnExports_{cpt}$, the dependent variable, refers to log exports of product p from country c to the US in year t, or is a dummy variable that takes the value of 1 if the country-product-year observation has positive exports to the US and 0 otherwise.[4] The variable $GSPcountry_c$

[3]For a thorough discussion of assumptions in more restrictive and unrestrictive triple-difference specifications, see Fraizer and Van Biesebroeck (2010).

[4]As zero export observations are included in the regression, the estimated effect of the revocation of tariff exemptions on the value of exports includes both the response at the intensive margin - decreased exports -

is a time-invariant dummy that takes the value of 1 if a country is GSP eligible and 0 otherwise.[5] Likewise, the variable $GSPproduct_p$ is a time-invariant dummy that takes the value of 1 for products eligible for duty-free treatment under GSP and 0 otherwise. The variable $Expired_t$ is a dummy that switches from 0 to 1 for all countries and products in 2011 when GSP was expired for the 10 months of the year.[6] The empirical specification allows for a full set of country-product γ_{cp}, country-year δ_{ct} and product-year θ_{pt} fixed effects. These interactive fixed effects allow for heterogeneity in the level of exports of any product from any country in a year when GSP is in effect, the overall exports of any country to the US in any year, and the overall exports of any product to the US in any year. The parameter of interest is the estimated coefficient on the triple interaction term, β, which measures the impact of GSP expiration relative to a country-product specific level of exports in the years when GSP was in effect.

The triple difference-in-differences is superior to the standard difference-in-differences estimation, as the latter might inaccurately attribute country- or product-level trends in exports to the impact of GSP expiration. At the country level, consider a country that lost GSP tariff exemptions at the time when the economic conditions in the country were deteriorating, resulting in an overall decrease in exports to the US. The country-by-country difference-in-differences estimator would mistakenly attribute this negative effect to GSP expiration. On the other hand, at the product level, consider products for which the GSP tariff exemptions were revoked and at the same time the US demand was dropping. In this case, a product-by-product difference-in-differences estimator would again erroneously attribute the negative effect to GSP expiration. The use of triple-difference estimator addresses these concerns.

and at the extensive margin - stopped exports. I am able to isolate the response at the extensive margin by replacing the dependent variable with positive exports dummy.

[5]For the purposes of this paper, GSP eligible countries are defined as those that qualify for duty-free treatment only under the GSP program. Countries that are simultaneously eligible for other trade preference programs (AGOA, CBERA, ATPA) are able to claim duty-free treatment under these alternative programs, and hence, the GSP expiration should have negligible impact on their exports to the US.

[6]This specification already requires a large number of fixed effects, and working with monthly or quarterly data would introduce mostly zero-valued export observations.

There may be some limitations to my analysis worth noting. First, the triple-difference specification may be biased if exports of non-GSP countries replace those from GSP eligible countries. Hakobyan (forthcoming) provides evidence for such spillover effect when exports of a narrowly defined products excluded from certain GSP eligible countries are replaced by those from other GSP eligible countries and non-GSP countries. When such spillover effects are present, the comparison group of non-GSP countries may be inappropriate in identifying the GSP expiration effect, and a product-by-product difference-in-differences estimator might be more suitable.[7] Second, in all previous instances when the Congress failed to renew GSP prior to its expiration, the GSP was always renewed retroactively, and the paid duties were refunded to exporters. The payment of such refunds has become increasingly easy with the widespread use of electronic payment transactions. For this reason, it is not evident that one would find negative effects from GSP expiration, except for the fact that expirations lasted few months in the past and the wind of political change pointing to greater austerity in 2011. Third, the GSP expiration lasted for the first 10 months of 2011 and GSP benefits resumed for the last two months of 2011, therefore the analysis based on annual data might underestimate the impact of expiration.

3.2 Data

I create a three-way balanced panel of all countries and all dutiable products at the HS 6-digit level in three years of my sample period.[8] The dependent variable in the intensive margin regressions is the log exports of a particular product from all US trading partners to the US between 2010 and 2012, obtained from the US International Trade Commis-

[7] As reported in Table 2 below, the results from product-by-product difference-in-differences estimation are almost identical to those from the triple-difference estimation. Hence, there is little evidence of declining exports from GSP eligible countries being replaced by exports from non-GSP countries. This could be explained by the relatively short span of GSP expiration, compared to the exclusions documented by Hakobyan (forthcoming) that span two years and more.

[8] 26 (primarily island) countries for which less than 5 product categories were observed in any of the three years were dropped from the sample. Of these, 15 were GSP eligible.

sion (USITC).[9] To allow for zero-valued exports, I follow the usual practice of adding one dollar to all export values before taking logarithms following Frazer and Van Biesebroeck (2010).[10] In the extensive margin regressions the dependent variable is a binary variable that takes the value of 1 if exports are positive and 0 otherwise.

The GSP country and product eligibility data are obtained from the USITC and from various notices and presidential proclamations published in *Federal Register*. GSP product eligibility is defined at the HS 8-digit level of aggregation, the same level at which the tariff rates are set. To allow for the estimation given the large number of interactive fixed effects and the number of observations with zero-valued exports, I aggregate GSP product eligibility to the HS 6-digit level by weighing each 8-digit subcategory by its share in US imports in 2010.[11] Thus, the $GSPproduct_p$ variable represents the fraction of eight-digit products (by value) that are eligible for duty-free treatment under GSP. Tariff rates obtained from the USITC are measured as either the ad valorem tariff or the ad valorem equivalent for specific and combined tariffs, and are aggregated to the HS 6-digit level using the same weights as for the GSP product eligibility described above.

Table 1 provides the summary statistics for 2010, the year prior to the GSP expiration. GSP countries export fewer products and smaller amounts on average than an average non-GSP country. From the universe of 3,179 dutiable products, the average GSP country has positive exports in 296, and 174 products enter the US under the GSP (out of potential 2,299 GSP products). The comparable figures for an average non-GSP country are 597 and 444 products, respectively. The values of log exports from an average GSP and non-GSP country with positive exports are 11.17 and 11.59, respectively. Manufacturing products

[9]Throughout the paper I use US imports from all its trading partners obtained from the USITC Trade DataWeb which is a more reliable and accurate source of data for exports from developing countries to the US.

[10]To deal with the estimation challenges posed by the logarithmic transformation and zero trade flows, I also estimate a Poisson Pseudo-maximum Likelihood (PPML) which yields GSP expiration effects of similar magnitude. This is discussed in Section 4.2.

[11]To check the robustness of results, I re-estimate the benchmark regressions at the HS 8-digit level. The results reported in Columns 2 and 4 of the Table 4 are not qualitatively different from those at the HS 6-digit level. Hence, throughout the paper I report the results using the sample at the HS 6-digit level. The results at the HS 8-digit level are available upon request.

Table 1: Summary Statistics, 2010

Panel A: Export Values and Number of Products by Country				
	Log exports (mean)	Log exports (st dev)	N of products (mean)	N of products (max)
	GSP countries (66)			
All dutiable products	0.89	(3.14)	3,179	
All dutiable products with exports>0	11.17	(2.97)	296	2,170
All GSP-eligible products with exports>0	11.43	(2.76)	174	1,468
	Non-GSP countries (139)			
All dutiable products	1.73	(4.30)	3,179	
All dutiable products with exports>0	11.59	(3.07)	597	2,774
All GSP-eligible products with exports>0	12.10	(2.94)	444	1,964

Panel B: GSP Products by Sector: Limited to GSP Eligible Countries				
	All	Exports>0 (mean)	Exports>0 (max)	Avg. Tariff (exports>0)
All	2,299	174	1,468	4.3%
Agricultural	376	40	149	4.4%
Fuel and Minerals	103	15	53	3.0%
Textiles and Clothing	17	6	12	4.3%
Manufacturing	1,803	156	1,254	4.7%

Notes: GSP countries include only those that are GSP eligible and do not qualify for other trade preference programs such as AGOA, CBERA and ATPA. GSP products refer to those at the HS 6-digit level for which the underlying all HS 8-digit products are GSP eligible.

dominate the export basket of an average GSP country; about 90 percent of exported GSP products are manufactures (156 out of 174). The most successful exporting country (India) exports about two-thirds of all GSP eligible products. Average trade-weighted tariff rates for all GSP eligible product categories with positive exports are in the range of 4.3-4.7%, except for fuel and mineral products.

4 Results

4.1 Basic Results

Estimates of equation (1) are reported in Table 2. Column 1 reports the results from a specification with a full set of country-product, country-year and product-year fixed effects estimated using the three-way balanced panel of all countries for all dutiable products between 2010 and 2012. The estimated coefficient on the triple-interaction term suggests that the GSP expiration is associated with a statistically significant (at the 1 percent level) average drop of 2.88 percent in exports to the US.

For comparison, I also report standard difference-in-differences estimates in Columns 2 and 3. The standard difference-in-differences can be implemented by restricting the sample either to all dutiable products exported from GSP eligible countries to the US (product-by-product difference-in-differences) or to GSP eligible products exported from all countries to the US (country-by-country difference-in-differences). Column 2 reports the results from restricting the sample to developing countries that can claim duty-free treatment on their exports only under GSP.[12] The control group is GSP eligible products, with GSP ineligible products representing the treatment group. The GSP expiration effect becomes -2.81 percent and continues to be statistically significant at the 1 percent level. Given how close this estimate is to the one from triple-difference estimation, I conclude that there is little evidence of the "spillover effect" when exports of non-GSP countries replace those of GSP eligible countries, thus the choice of non-GSP countries as a control group is valid.

In Column 3, the sample is restricted to GSP eligible products exported from all countries to the US.[13] This specification identifies the GSP expiration effect from the relative drop in exports from eligible countries (treatment group) versus ineligible countries (control group). The GSP expiration effect is slightly smaller at -2.48 percent, although still

[12] This excludes countries eligible for other US trade preference programs, such as AGOA, ATPA and CBERA.
[13] The sample excludes products reserved for least developed countries.

Table 2: Benchmark Results for the GSP Expiration Effect (three-way balanced panel)

Dependent Variable	$lnExports$	$lnExports$	$lnExports$	Export Dummy
Sample	Full	Only GSP countries	Only GSP products	Full
Method	Triple Diff	Diff-in-Diff	Diff-in-Diff	Triple Diff
	(1)	(2)	(3)	(4)
Marginal effect	-2.88%	-2.81%	-2.48%	
Expired × Country × Product	-0.029***	-0.028***	-0.025***	-0.003***
	(0.009)	(0.007)	(0.006)	(0.001)
Fixed Effects	Country-product, country-year, product-year	Country-product, country-year	Country-product, product-year	Country-product, country-year, product-year
Observations	1,955,085	1,093,576	1,023,565	1,955,085
Number of fixed effects	661,847	369,112	346,318	661,847

Notes: Columns 1 and 4 include all three sets of interactive fixed effects: country-product, country-year and product-year. Column 2 includes country-product and country-year fixed effects, and Column 3 includes country-product and product-year fixed effects. The marginal effects throughout this paper are calculated as $exp(\beta) - 1$ if the dependent variable is $lnExports$. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

statistically significant at the 1 percent level. In both standard difference-in-differences specifications the GSP expiration effect is only slightly underestimated, hence the rest of the paper proceeds with the triple-difference specification employing the full sample of countries and products (unless otherwise noted).

Turning to the impact of GSP expiration on the extensive margin (Column 4 in Table 2), the probability that a GSP eligible country exports a GSP eligible product to the US is decreased by 0.3 percentage points during the period of expiration. This may seem to be economically insignificant, however it is relatively sizeable compared to the average probability of exporting which was 7.9 and 12.7 percent in 2010 for GSP eligible countries and all countries worldwide, respectively.

Table 3: Robustness Checks: PPML; Control and Treatment Group; Redirected Trade

	Benchmark	PPML	Non-OECD control group	All GSP eligible countries	Placebo regression
	(1)	(2)	(3)	(4)	(5)
Marginal effect	-2.88%		-2.94%	-3.46%	1.11%
Expired × Country ×	-0.029***	-0.050**	-0.030***	-0.035***	0.011
Product	(0.009)	(0.024)	(0.009)	(0.010)	(0.009)
Observations	1,955,085	328,849	1,754,808	1,955,085	1,793,760

Notes: Column 1 replicates the benchmark estimates from Table 2. Column 2 reports the PPML estimates. Column 3 excludes OECD countries. Column 4 includes additional controls for GSP eligible countries that also qualify for other trade preference programs. Column 5 reports the estimates from a placebo regression using data for 2006-2008. All regressions include country-product, country-year and product-year interactive fixed effects. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

4.2 Robustness Checks

I conduct several robustness checks. In the first step, I test whether the robustness of the main results depends on the way the dependent variable is defined. Recall that in the intensive margin regressions the dependent variable was constructed by adding one dollar to all export values before taking the logarithms. Poisson pseudo-maximum likelihood (PPML) estimator proposed by Santos Silva and Tenreyro (2006) is considered more appropriate for dealing with the estimation challenges posed by the logarithmic transformation and zero trade flows and is being employed increasingly more often. The results from PPML are reported in Column 2 of Table 3, with the benchmark results from Table 2 reproduced in Column 1. The PPML estimate confirms that the GSP expiration is associated with a statistically significant drop in exports from GSP eligible countries to the US. The GSP expiration effect is slightly larger at -5 percent compared to the benchmark estimate.

Next, I examine the robustness of the results against alternatively defined control and treatment groups. I first restrict the sample to non-OECD countries to make the control group (non-GSP countries) more comparable to the treatment group (GSP countries). The results are reported in Column 3 of Table 3. The estimated impact of GSP expiration is

only slightly larger at -2.94 percent compared to the benchmark estimate of -2.88 percent.

I then explicitly control for a differential treatment of other GSP eligible countries that qualify for an alternative trade preference program in addition to GSP such as AGOA, CBERA and others. These countries were assumed GSP ineligible throughout the paper because their preferential market access terms remained effectively the same after the expiration of GSP. The specification now includes an additional interaction term for GSP eligible countries qualifying for alternative trade preference programs. The results reported in Column 4 of Table 3 suggest that the benchmark treatment group continues to experience a similar drop in exports (-3.46 percent) after controlling for other GSP eligible countries. Although not reported here, the coefficient estimate on the interaction term for countries eligible for alternative trade preference programs is also negative and statistically significant at the 5 percent level albeit smaller as expected (-2.1 percent drop in exports).

As discussed earlier in the paper, the episodes of GSP expiration were commonplace until 2002 when it was renewed for four years until December 31, 2006. By the end of 2006, there may have been expectations that the Congress would fail to renew the GSP on time letting it expire, analogous to what happenned at the end of 2010. This provides a good setting to run a placebo regression to examine whether the uncertainty of renewal at the end of 2006 had the same effect on exports to the US as the actual expiration at the end of 2010. Using data from 2006 to 2008, I estimate equation (1) assuming the year of expiration is 2007 which would have been the case if the Congress were not to renew GSP at the end of 2006. The results reported in Column 5 of Table 3 indicate that the possible GSP expiration at the end of 2006 did not have any noticable impact on the exports from developing countries to the US.

The next set of tests examines potential data aggregation concerns. Since the GSP eligibility is defined at the HS 8-digit level (the same level of aggregation at which tariff rates are set), the aggregation of data up to the HS 6-digit level may introduce a bias. To

Table 4: GSP Expiration Effect at the HS 6- and 8-digit levels

Dependent Variable	$lnExports$	$lnExports$	Export Dummy	Export Dummy
Level of Aggregation	HS 6-digit	HS 8-digit	HS 6-digit	HS 8-digit
Marginal effect	-2.88%	-2.22%	-0.29%	-0.18%
Expired × Country × Product	-0.029***	-0.022***	-0.003***	-0.002***
	(0.009)	(0.005)	(0.001)	(0.0006)
Observations	1,955,085	3,983,355	1,955,085	3,983,355

Notes: Columns 1 and 3 use the data aggregated to the HS 6-digit level and replicate the results from Table 2. Columns 2 and 4 use the data defined at the HS 8-digit level. All regressions include country-product, country-year and product-year interactive fixed effects. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

check for this possibility, I re-estimate the benchmark results in Table 2 at the HS 8-digit level. The results in Table 4 indicate that the drop in exports is only slightly smaller at the HS 8-digit level; GSP expiration is associated with 2.2 percent drop in exports, suggesting that the potential bias due to data aggregation is minimal and the rest of the analysis is carried out at the HS 6-digit level.

Finally, it is important to recognize that the estimates in Table 2 provide the lower bound of the GSP expiration effect because they employ a three-way balanced panel across all US trading partners, products and years to represent all potential trade flows. Consider a country like Afghanistan that only exports 50 product categories to the US, so its exports of the remaining product categories (over 3,000) are recorded as zeros. Thus, the estimates in Table 2 provide the effect of GSP expiration on all *potential* trade flows. One could argue, however, that to measure the true impact of GSP expiration the sample needs to be limited to products that Afghanistan is already producing and exporting. To account for this and to estimate the impact of GSP expiration on *actual* trade flows, I construct a two-way balanced panel by limiting the sample to products for which exports from a given country are positive in any of the three years of the sample period. This reduces the number of observations by about 80 percent.

As reported in Table 5, the effect of GSP expiration on observed export flows from developing countries is considerably larger (six times larger); the GSP expiration is associated

Table 5: Benchmark Results for the GSP Expiration Effect (two-way balanced panel)

Dependent Variable	$lnExports$	$lnExports$	$lnExports$
Sample	Full	Only GSP countries	Only GSP products
Method	Triple Diff	Diff-in-Diff	Diff-in-Diff
	(1)	(2)	(3)
Marginal effect	-18.9%	-18.2%	-12.3%
Expired × Country × Product	-0.209***	-0.201***	-0.131**
	(0.069)	(0.064)	(0.052)
Fixed Effects	Country-product, country-year, product-year	Country-product, country-year	Country-product, product-year
Observations	331,137	70,201	169,505
Number of fixed effects	120,531	110,994	119,916

Notes: Column 1 includes all three sets of interactive fixed effects: country-product, country-year and product-year. Column 2 includes country-product and country-year fixed effects, and Column 3 includes country-product and product-year fixed effects. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

with a statistically significant 19 percent drop in exports. Similar to the pattern observed in Table 2, the standard difference-in-differences estimates underestimate the impact of GSP expiration, more so when the sample is restricted to GSP eligible products. These estimates provide the upper bound of the GSP expiration effect and are more consistent with the estimation strategy used by Handley and Limão (2013). The rest of the paper reports lower bound estimates of GSP expiration effect employing a three-way balanced panel, with the upper bound estimates from a two-way balanced panel provided in the Appendix Tables A2-A6.

4.3 Heterogeneous Effects of GSP Expiration

The results in Table 2 measure the average effect across all GSP eligible countries. However, the effect might be different for least developed beneficiary countries (LDBCs) and developing beneficiary countries (DBCs). In addition to standard GSP eligible product categories, LDBCs qualify for duty-free treatment on additional product groups. Allowing for heterogeneous expiration effect for these two groups of countries simply requires replacing

Table 6: The GSP Expiration Effect for LDBCs and DBCs

Dependent Variable	$lnExports$		Export Dummy
	Point Estimate	Marginal Effect	
	(1)	(2)	(3)
Expired × DBC × DBC Product	-0.034***	-3.31%	-0.0034***
	(0.010)		(0.001)
Expired × LDBC × LDBC Product	-0.010	-0.99%	-0.0006
	(0.014)		(0.002)
Observations	1,955,085		1,955,085

Notes: Regressions include country-product, country-year and product-year interactive fixed effects. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

the $GSPproduct_p$ and $GSPcountry_c$ terms in equation (1) with respective terms for LDBCs and DBCs.

Table 6 reports the results of triple-difference specification allowing for heterogeneous country effects. The relative magnitude and significance of the effect for DBCs is similar to those reported in Table 2; the GSP expiration resulted in a statistically significant 3.3 percent drop in exports and 0.34 percentage points drop in the probability of exporting from GSP eligible developing countries. However, the effect on both exports and probability of exporting is insignificant for LDBCs. The imprecisely estimated coefficient on LDBCs could be explained by the small number of least developed countries exporting negligible number of products to the US in the sample. Most LDBCs, as defined for the purpose of GSP, qualify for AGOA which remained intact during the period of GSP expiration, and hence, could have claimed AGOA preferences instead of GSP.[14]

Next, I allow for heterogeneity in responses across different subcategories of products: agricultural, fuel and minerals, textiles and clothing, and manufacturing. To allow for heterogeneous effects for these subcategories, the $GSPproduct_p$ term in equation (1) is replaced with four terms - one for each of the product subcategories.

[14]Only 14 out of 42 LDBCs (such as Afghanistan, Bangladesh and Nepal) were affected by the GSP expiration.

Table 7: The GSP Expiration Effect for Different Product Categories

Dependent Variable	$lnExports$		Export Dummy
	Point Estimate	Marginal Effect	
	(1)	(2)	(3)
Expired × Country × Product Interaction			
Agriculture	-0.048***	-4.67%	-0.0039**
	(0.015)		(0.002)
Fuels and Minerals	-0.007	-0.71%	-0.0006
	(0.026)		(0.002)
Textiles and Clothing	-0.095*	-9.03%	-0.0125*
	(0.055)		(0.007)
Manufacturing	-0.027***	-2.63%	-0.0027**
	(0.009)		(0.001)
Observations	1,955,085		1,955,085

Notes: Regressions include country-product, country-year and product-year interactive fixed effects. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

As seen in Table 7, there are considerable differences in the effect of GSP expiration across different product subcategories. The fuel and minerals effect is insignificant, while the expiration effect is negative and significant for the remaining subcategories. The GSP expiration resulted in 2.63 percent drop in exports of manufacturing products, 4.67 percent in agricultural products, and 9.03 percent in textiles and clothing. Additionally, the extensive margin of trade in these product subcategories is also adversely affected due to GSP expiration; the probability of exporting textiles and apparel products decreases by 1.25 percentage points relative to the average probability of 2.6 percent for GSP countries (and 3.4 percent for all countries) exporting these products prior to expiration. Thus, the probability of exporting textiles and clothing is cut in half for GSP countries. A similar pattern is observed for agricultural products; the probability of exporting declines by 0.4 percentage points relative to the baseline of 0.8 percent for GSP countries (and 1.2 percent for all countries) prior to GSP expiration. On the other hand, the decline in the probability of exporting manufacturing products is relatively smaller – 0.3 percentage points relative to the baseline of 4.3 percent for GSP countries.

Table 8: The GSP Expiration Effect for Different Tariff Groups

Dependent Variable	$lnExports$		Export Dummy
	Point Estimate	Marginal Effect	
	(1)	(2)	(3)
Expired × Country × Product			
× Tariff Group Interaction			
0-3%	-0.024*	-2.34%	-0.0021
	(0.012)		(0.001)
3-6%	-0.029***	-2.83%	-0.003**
	(0.011)		(0.001)
6-10%	-0.037**	-3.66%	-0.0036**
	(0.017)		(0.002)
10-15%	-0.074**	-7.09%	-0.0072*
	(0.035)		(0.004)
15+ %	-0.115**	-10.86%	-0.0108**
	(0.048)		(0.005)
Observations	1,955,085		1,955,085

Notes: Regressions include country-product, country-year and product-year interactive fixed effects. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Next, I examine the effect of GSP expiration on exports of products facing different levels of tariff rates prior to the expiration. The GSP expiration effect is likely increasing in the tariff rates. In other words, the higher the tariff rate imposed on a product, the greater the loss of duty savings and the greater the decline in exports of such a product. To estimate the impact of tariff increases of different magnitudes, I interact the triple-interaction term in equation (1) with dummies for different tariff groups. The lowest tariff group dummy takes the value of 1 if the 2010 tariff rates were between 0% and 3% and 0 otherwise. The subsequent tariff groups use the following brackets: 3-6%, 6-10%, 10-15%, and higher than 15%.[15]

The results reported in Table 8 confirm the nonlinear effect of tariff increases on exports. As expected, the GSP expiration effect is greatest for high tariff brackets; the revocation of tariff exemptions of more than 15% as a result of GSP expiration induces about

[15]The average and median MFN tariff rate in 2010 across all dutiable products was 6.1 and 4.5 percent, respectively. Appendix Figure A1 shows the distribution of MFN tariff rates in 2010.

11 percent drop in exports (statistically significant at the 5 percent level), more than triple of the average effect estimated earlier and 4-5 times greater than the effect for the two lowest tariff brackets. The results for the probability of exporting in Column 3 of Table 8 follow the same pattern. The revocation of the highest tariff exemptions is associated with the largest (1.1 percentage points) decline in the probability of exporting.

Finally, Hakobyan (2015) documents a widespread underutilization of GSP benefits; only about 60 percent of GSP eligible exports in fact claim the duty-free treatment at the border. Therefore, the GSP expiration is more likely to affect those exporters that claimed the benefits prior to the expiration. To estimate the nonlinear impact of utilization, I interact the triple-interaction term in equation (1) with three dummies for exports (a) that fully utilized GSP in 2010, (b) with partial average utilization, and (c) that didn't claim GSP in 2010. I expect the GSP expiration effect to be increasing in the pre-expiration average utilization (across HS 8-digit products). The results reported in Table 9 confirm that the GSP expiration effect is greatest for exports with full pre-expiration utilization; the revocation of tariff exemptions as a result of GSP expiration induces about 77.5 percent drop in exports (statistically significant at the 1 percent level). The results for the probability of exporting in Column 3 of Table 9 follow the same pattern. The revocation of the tariff exemptions for exports with full utilization is associated with the largest (16 percentage points) decline in the probability of exporting.

So far the results have suggested that the GSP expiration leads to a drop in exports from developing countries even though the collected duties are reimbursed after the reauthorization of GSP. One explanation for such findings is the presence of credit constraints, particularly in developing countries. Extensive evidence suggests that private firms in many developing countries face severe credit constraints. Using firm-level data in the manufacturing sector for six African countries, Bigsten et al. (2003) estimate the extent of credit constraints among firms of various sizes and find that small firms appear to be more credit constrained than large firms. Furthermore, Manova (2013) provides

Table 9: The GSP Expiration Effect for Different Utilization Rates

Dependent Variable	$lnExports$		Export Dummy
	Point Estimate	Marginal Effect	
	(1)	(2)	(3)
Expired × Country × Product × Utilization Dummy			
No utilization	0.0175*	1.77%	0.002**
	(0.00892)		(0.001)
Partial utilization	-0.366***	-30.6%	-0.034***
	(0.0460)		(0.004)
Full utilization	-1.493***	-77.5%	-0.159***
	(0.0886)		(0.009)
Observations	1,955,085		1,955,085

Notes: Regressions include country-product, country-year and product-year interactive fixed effects. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

evidence of channels through which credit constraints distort aggregate trade flows.

In the absence of firm-level data suited to explore whether credit constraints are responsible for the observed decline in exports due to GSP expiration, I interact the triple-interaction term in equation (1) with dummies for country-product pairs of different size in terms of the value of exports. Based on the values of exports in 2010, I create four dummies for each quartile and treat zero-valued observations as a separate category. As previous research has shown, credit constraints are more binding for small exporters, hence the decline in exports is expected to be largest for exporters in the first quartile.[16]

In addition to credit constraints, all exporters face uncertainty due to GSP expiration; exporters are uncertain about how long the expiration will last and whether the collected duties will be refunded after reauthorization. Growing literature on trade policy uncertainty finds that reduction in uncertainty leads to greater exports. In the context of GSP expiration, the uncertainty has grown, and as a result, we might observe drop in exports from countries even in the fourth quartile. Such finding could indirectly imply that both

[16]The term "exporter" is used to indicate country-product pairs of different size in terms of the value of exports.

Table 10: The GSP Expiration Effect for Exporters of Different Size

Dependent Variable	$lnExports$	
	Point Estimate	Marginal Effect
	(1)	(2)
Expired × Country × Product Interaction		
Zero-valued observations	0.063***	
	(0.009)	
First quartile	-2.178***	-88.7%
	(0.101)	
Second quartile	-1.541***	-78.6%
	(0.087)	
Third quartile	-0.642***	-47.4%
	(0.069)	
Fourth quartile	-0.389***	-32.2%
	(0.062)	
Observations	1,955,085	

Notes: Regressions include country-product, country-year and product-year interactive fixed effects. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

credit constraints and trade policy uncertainty are responsible for the observed decline in exports from developing countries.

The results reported in Table 10 suggest that the decline in exports can be attributed to both credit constraints and trade policy uncertainty. Small exporters (first quartile) experience 89 percent drop in their exports to the US due to GSP expiration. This effect is decreasing in the size of the exporter, with the largest exporters (fourth quartile) experiencing only 32 percent drop. Assuming that largest exporters are less credit constrained, this decline may be attributed to the uncertainty about the future of the program.

4.4 Indirect Effects of GSP Expiration

So far the results have suggested that the GSP expiration leads to a drop in exports from developing countries even though the collected duties are reimbursed after the reauthorization of GSP. Important questions of interest are whether the exports from de-

veloping countries destined for the US but now facing tariffs due to GSP expiration get redirected to other destination markets and whether GSP expiration in any way benefits US domestic manufacturers producing GSP eligible products.

First, I explore the possibility of trade diversion from the US to the rest of the world due to GSP expiration. In particular, I examine whether the GSP expiration had any noticeable impact on exports from US GSP eligible countries to the 27 countries of the EU, another top export destination for developing countries. Using trade data from Eurostat for years 2010-2012, equation (1) is re-estimated with the dependent variable defined as exports to the EU. If US GSP expiration results in a trade diversion from the US to the EU, then the coefficients of interest are expected to be positive.

The EU data at the HS 6-digit level are comparable to the US data, except for certain product categories that have been dropped from the analysis. For comparability, I report the US results estimated for this sample of country-product pairs in Column 1 of Table 11, followed by the EU results in Column 2. The US results are similar to the ones reported earlier, while the impact of GSP expiration on exports to the EU is not statistically different from zero, suggesting that the export responses reported earlier have not resulted in trade diversion to the EU. This can be explained by relatively short period (10 months) of expiration and the time in takes to access new markets or re-direct exports to an existing destination.

Next, I examine the possibility that US domestic producers fill in the void and increase their shipments in response to reduced exports from developing countries. I map the data on domestic shipments from the Annual Survey of Manufactures (ASM) from the Census Bureau which only cover manufacturing sector and are available at the NAICS 6-digit level to my main dataset at the HS 6-digit level. When there are multiple HS 6-digit products corresponding to a single NAICS 6-digit industry, I equally divide the value of shipments among HS 6-digit product categories. I re-estimate equation (1) using the log value of domestic shipments as a dependent variable.

Table 11: Indirect Effects of GSP Expiration: Redirected Trade; Domestic Shipments

Dependent Variable	$lnExportsUS$	$lnExportsEU$	$lnExportsUS$	$lnDomShip$
	Benchmark	Redirected trade	Benchmark	Domestic shipments
	(1)	(2)	(3)	(4)
Marginal effect	-2.54%	-1.13%	-2.99%	19.7%
Expired × Country × Product	-0.026***	-0.011	-0.0304***	0.180***
	(0.007)	(0.009)	(0.00756)	(0.005)
Observations	1,622,913	1,622,913	1,876,365	1,876,365

Notes: Columns 1 and 2 use country-product pairs for which EU trade data are available. Column 1 re-estimates the benchmark specification for this subset of country-product pairs. In Column 2 the dependent variable is log exports to the EU. Columns 3 and 4 use only manufacturing data. Column 3 re-estimates the benchmark specification for this subsample. In Column 4 the dependent variable is log domestic shipments. All regressions include country-product, country-year and product-year interactive fixed effects. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Two caveats are worth noting. First, the US domestic shipments include not only shipments for domestic consumption but also US exports, thus the results may overstate the effect of GSP expiration if the foreign demand for US made goods that happen to also be GSP eligible has increased during the GSP expiration. Second, the US domestic shipments cover only manufacturing sector, and in mapping into HS 6-digit product data it is difficult to distinguish actual zero valued shipments from those for which data are not available. The approach followed in this paper is to assume that the domestic shipments are in fact zero if no data are reported for industries that correspond to products falling within HS Chapters 25 through 97. The remaining industries for which data are not available are excluded from the analysis. For comparability, Table 11 first reports the results from the benchmark regression for this subsample (Column 3), followed by the results for US domestic shipments (Column 4). The results indicate that the GSP expiration is associated with greater domestic manufacturing shipments. In particular, domestic shipments increased by 19.7 percent, filling in the void created by declining exports from GSP eligible developing countries.

5 Conclusion

This paper examines the impact of GSP expiration in 2011 on exports from developing countries to the US. Using a balanced panel of all US trading partners and all dutiable products, I employ the triple-differences approach to control for country-product specific general levels of exports, and country- and product-specific trends in exports.

The findings suggest that the GSP expiration had a significant impact on exports, lowering them by an average of 3 percent across all GSP products, including a 5 percent drop in agricultural products and a larger 9 percent drop in textiles and clothing. In addition to lower levels of exports, I also find that the GSP expiration led to a narrower range of products being exported to the US. In particular, the probability of exporting textiles and clothing products decreases by 1.25 percentage points compared to the average probability of 2.6 percent for GSP countries exporting these products prior to the expiration. The GSP expiration had a disproportionate impact on products facing higher tariffs, with the highest tariff group (15% and above) experiencing 11 percent drop in exports. It has also been associated with a larger 77.5 percent drop in exports that fully utilized the GSP benefits prior to its expiration. Both small and large exporters experienced decline in exports, with small exporters being hit the hardest. The latter indicates that both credit constraints and the uncertainty about the GSP renewal or the duration of expiration could explain the observed decline in exports from developing countries. Although GSP expiration has not resulted in a diversion of the affected exports from the US to the EU market, I find a significant expansion of US domestic manufacturing shipments at the time of GSP expiration.

The findings in this paper suggest that even though the duties paid during the period of GSP expiration may ultimately be reimbursed to exporters after the GSP is renewed retroactively, the GSP preferences matter for exporters in accessing the US market and they are less likely to continue exporting in the absence of preferential treatment, even for a short period of time.

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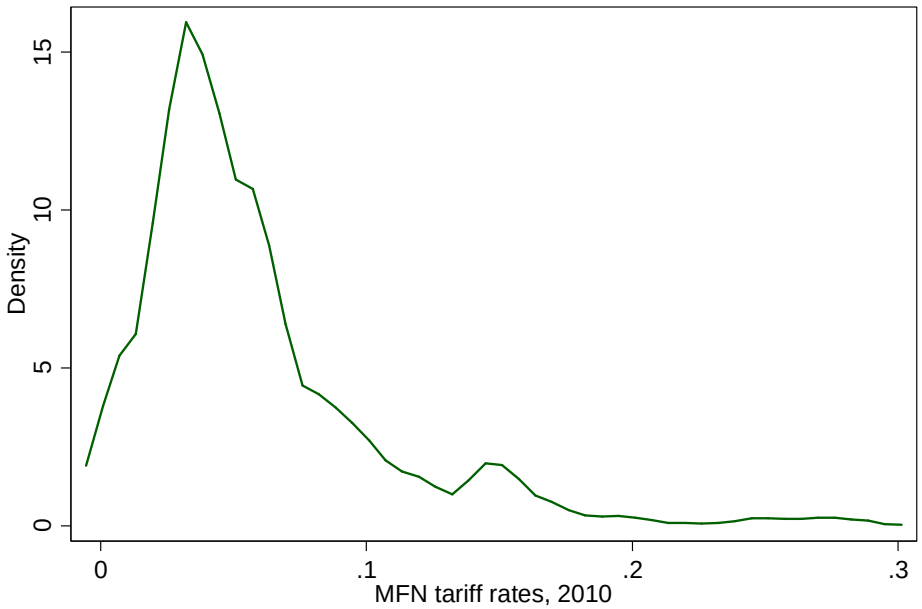
Appendix

Figure A1: MFN Tariff Rate Distribution in 2010



Notes: The figure depicts the kernel density of MFN tariff rates in 2010, omitting extreme values for 13 products with rates greater than 30 percent.

Table A1: GSP Implementation and Expiration

Effective Date	Date Expired	Period of Expiration	No of Days Expired
Jan 2, 1975	Jan 2, 1985	...	
Oct 30, 1984	Jul 4, 1993	Jul 5, 1993 - Aug 10, 1993	36
Aug 10, 1993	Sep 30, 1994	Oct 1, 1994 - Dec 8, 1994	68
Dec 8, 1994	Jul 31, 1995	Aug 1, 1995 - Oct 1, 1996	427
Oct 1, 1996	May 31, 1997	Jun 1, 1997 - Aug 5, 1997	65
Aug 5, 1997	Jun 30, 1998	Jul 1, 1998 - Oct 21, 1998	112
Oct 21, 1998	Jun 30, 1999	Jul 1, 1999 - Dec 17, 1999	169
Dec 17, 1999	Sep 30, 2001	Oct 1, 2001 - Aug 6, 2002	309
Aug 6, 2002	Dec 31, 2006	...	
Dec 31, 2006	Dec 31, 2008	...	
Oct 16, 2008	Dec 31, 2009	...	
Dec 28, 2009	Dec 31, 2010	Jan 1, 2011 - Nov 5, 2011	308
Nov 5, 2011	Jul 31, 2013	Aug 1, 2013 - Jul 28, 2015	727

Table A2: The GSP Expiration Effect for LDBCs and DBCs (two-way balanced panel)

Dependent Variable	$lnExports$	
	Point Estimate	Marginal Effect
Expired × DBC × DBC Product	-0.213***	-19.2%
	(0.071)	
Expired × LDBC × LDBC Product	-0.161	-14.9%
	(0.233)	
Observations	331,137	

Notes: The sample is restricted to products that are observed being exported at least once during the sample period by each country. Regressions include country-product, country-year and product-year interactive fixed effects. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Table A3: The GSP Expiration Effect for Different Product Categories (two-way balanced panel)

Dependent Variable	$lnExports$	
	Point Estimate	Marginal Effect
Expired × Country × Product Interaction		
Agriculture	-0.406***	-33.4%
	(0.143)	
Fuels and Minerals	-0.338	-28.7%
	(0.309)	
Textiles and Clothing	-0.441*	-35.7%
	(0.260)	
Manufacturing	-0.171**	-15.7%
	(0.073)	
Observations	331,137	

Notes: The sample is restricted to products that are observed being exported at least once during the sample period by each country. Regressions include country-product, country-year and product-year interactive fixed effects. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Table A4: The GSP Expiration Effect for Different Tariff Groups (two-way balanced panel)

Dependent Variable	$lnExports$	
	Point Estimate	Marginal Effect
Expired × Country × Product		
× Tariff Group Interaction		
0-3%	-0.171*	-15.7%
	(0.091)	
3-6%	-0.203**	-18.4%
	(0.087)	
6-10%	-0.315**	-27.0%
	(0.143)	
10-15%	-0.502	-39.5%
	(0.314)	
15+ %	-1.771	-83.0%
	(1.466)	
Observations	331,137	

Notes: The sample is restricted to products that are observed being exported at least once during the sample period by each country. Regressions include country-product, country-year and product-year interactive fixed effects. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Table A5: The GSP Expiration Effect for Different Utilization Rates (two-way balanced panel)

Dependent Variable	$lnExports$		Export Dummy
	Point Estimate	Marginal Effect	
	(1)	(2)	(3)
Expired × Country × Product			
× Utilization Dummy			
No utilization	0.601***	82.4%	0.0655***
	(0.0968)		(0.0106)
Partial utilization	-0.481***	-38.2%	-0.0435***
	(0.0677)		(0.00714)
Full utilization	-1.637***	-80.5%	-0.173***
	(0.103)		(0.0108)
Observations	331,137		331,137

Notes: The sample is restricted to products that are observed being exported at least once during the sample period by each country. Regressions include country-product, country-year and product-year interactive fixed effects. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Table A6: The GSP Expiration Effect for Exporters of Different Size (two-way balanced panel)

Dependent Variable	$lnExports$	
	Point Estimate	Marginal Effect
	(1)	(2)
Expired × Country × Product Interaction		
Zero-valued observations	2.044***	
	(0.116)	
First quartile	-2.211***	-89.0%
	(0.116)	
Second quartile	-1.566***	-79.1%
	(0.101)	
Third quartile	-0.710***	-50.8%
	(0.0846)	
Fourth quartile	-0.432***	-35.1%
	(0.0784)	
Observations	331,137	

Notes: The sample is restricted to products that are observed being exported at least once during the sample period by each country. Regressions include country-product, country-year and product-year interactive fixed effects. Standard errors in parentheses are robust to arbitrary heteroskedasticity. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.