Accounting for Underutilization of Trade Preference Programs: The U.S. Generalized System of Preferences*

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Abstract

The US Generalized System of Preferences (GSP) provides duty-free market access to developing countries. Yet despite these preferences, about 40 percent of imports qualifying for GSP enter the US without claiming the benefits. This paper documents country and product level variations in GSP utilization rates and explains their determinants with a special emphasis on the production structure of beneficiary countries as captured by local content and shaped by country remoteness, in addition to the preference margin and size of exports. I construct a panel dataset that combines a measure of GSP utilization at the country-product level with country-industry level production data for 68 GSP eligible countries exporting about 5,000 products to the US over 12 years (1997-2008). The findings suggest that a higher local content share and greater remoteness of beneficiary countries lead to higher utilization rates. In addition, the utilization rate rises with the preference margin, size of exports, and regional cumulation in general, and declines with degree of processing.

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1 Introduction

The US Generalized System of Preferences (GSP) is an important program for many developing countries as it enhances their access to the US market. Duty-free treatment is granted to imports from about 130 developing countries of more than 3,000 products, with an additional 1,400 reserved for least developed countries. About one third of all dutiable imports from developing countries qualify for the program. Yet the evidence suggests that developing countries do not take full advantage of the benefits accorded to them; GSP benefits are claimed for just 60 percent of eligible imports. Furthermore and as documented below, this underutilization varies greatly across countries and products (Figures 5.1 and 5.2).

What explains this pattern of utilization, and why do these countries pay duties on 40 percent of their exports to the US? There are a number of factors that may contribute to the underutilization of preferences. The existing literature focuses on the preference margin (the difference between the Most-Favored-Nation (MFN) and preferential tariff rates) and rules of origin as the prime suspects of underutilization. Preference margin captures the size of benefits accrued to exporters in the form of unpaid duties, while rules of origin (ROs) may generate some costs. Some studies use the variation in ROs across products to identify their impact on program utilization. For example, Carrere and de Melo (2006) examine the utilization of the North American Free Trade Agreement (NAFTA) by Mexican exporters as a function of the preference margin and degree of restrictiveness of ROs across products. The GSP ROs, however, are uniform across all countries and products; at least 35 percent of the final value must be originating from exporting country (local content requirement). So to identify the reasons for GSP underutilization, one needs to look closely at the country and product characteristics that would make ROs bind at the varying degree.

This paper proposes a novel explanation for the GSP underutilization in that the production structure of beneficiary countries may hamper the utilization of GSP, among other factors. If the beneficiary country-industry sources most of its inputs from a third country or pays lower wages, thus adding little value to the final product, the exported goods may not qualify to receive preferential treatment upon entry to the US for the simple reason that the local content requirement is not met. Similarly, more remote countries may find it relatively less costly to comply with ROs,

because they are more likely to rely on locally sourced inputs.

In addition, GSP utilization may be impeded by other features of the US trade policy toward developing countries. For instance, a small subset of GSP eligible countries also benefits from regional trade preference programs that have less restrictive ROs and do not cap the benefits. This implies that GSP utilization by countries qualifying for other programs is expected to be much lower.

Using a unique panel dataset that combines country-industry level production data with a country-product level GSP utilization rate over a period of 12 years (1997-2008), I find that a higher local content share and greater remoteness (both of which capture the differences in production structure of beneficiary countries) lead to higher utilization rates. In particular, an additional 12 percentage points of local content share (roughly one standard deviation increase) leads to a 5.5 percent increase in the utilization rate relative to the sample average of 73 percent. The effect becomes less pronounced when the share of value added in output as a measure of local content is used, but continues to be statistically significant. These results prove to be robust in a variety of different empirical specifications.

This paper makes two key contributions to the literature on preference utilization. First and foremost, it considers the production structure of beneficiary countries as an additional determinant of the US GSP utilization. This is a crucial consideration, as many developing countries, lacking a well-developed manufacturing sector, are likely to source their inputs from a third country and, as a result, are less likely to meet the RO requirement. Thus far the literature has exploited the differences in the ROs across products, but ignored the potential variation in their restrictiveness across beneficiary countries. Second, I extend the analysis to all US GSP eligible products, whereas the existing literature mainly focuses on the EU trade preference programs and other US preferential trade arrangements such as NAFTA, or investigates the utilization of a narrow set of products (textiles, apparel, or agriculture). This allows me to explicitly account for the effect of alternative regional trade arrangements and products' degree of processing, a novelty in the literature as far as I am aware.

The remainder of the paper proceeds as follows. Section 2 discusses the key features and requirements of the GSP program and how these requirements may cause underutilization of the preferences. A brief review of the related literature follows. Section 3 presents the estimation

strategy, and describes the data and construction of the variables used in the empirical analysis. Section 4 presents the results and robustness tests. Finally, Section 5 provides concluding remarks.

2 Background

2.1 US GSP Rules and US Trade Policy: Implications for Underutilization

The rules built into the GSP program, as well as features of US trade policy in general may shape the take up rates of GSP. What follows is a brief discussion of these rules and features and channels through which they may affect GSP utilization.

As with any other preference program, GSP requires that products comply with certain rules of origin, which specify the conditions a product must satisfy to be considered as originating from a given beneficiary country. The main justification for ROs is to prevent trade deflection, wherein products from ineligible countries destined to the US are redirected through a GSP beneficiary country to avoid duties. A secondary reason for ROs is to broaden and diversify the manufacturing base of beneficiary countries by encouraging firms to undertake more processing or source more of their intermediate inputs domestically.

The ROs in GSP are relatively simple. To qualify for duty-free treatment under the GSP program, the sum of the value of local inputs and direct processing costs must equal at least 35 percent of the appraised customs value of the final product at the time of entry to the US. This local content requirement (LCR) is somewhat relaxed by allowing member countries of certain regional associations meet it cumulatively - regional cumulation.[1] For example, a Peruvian producer would not qualify for GSP benefits if it exports goods with only 25 percent of their value sourced locally. But if an additional 15 percent of the value comes from Colombian inputs, then collectively this meets the local content 35 percent requirement. A successful implementation of cumulation ultimately depends on how much intra-regional trade occurs among the qualifying members. It may

[1]The following members of six regional associations qualified for cumulation in 2008: Bolivia, Colombia, Ecuador, Peru and Venezuela of the Andean Group; Cambodia, Indonesia, Philippines and Thailand within the Association of South East Asian Nations (ASEAN); Belize, Dominica Island, Grenada Island, Guyana, Jamaica, Montserrat Island, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago within the Caribbean Common Market (CARICOM); Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo of the West African Economic and Monetary Union (WAEMU); Botswana, Mauritius and Tanzania within the Southern African Development Community (SADC); and Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka within South Asian Association for Regional Cooperation (SAARC).

have no impact on GSP utilization if firms source most of their inputs from countries outside of an association.

The LCR forces firms to alter their behavior and make different choices regarding production, sourcing and investment. Some firms, however, may consider sourcing of inputs from foreign suppliers more important than preferential market access to the US, and thus will not claim GSP benefits. The existence of such firm heterogeneity would inevitably lead to partial utilization of the GSP program as observed in the data.

Compliance with the local content requirement is likely to vary not only by individual firm attributes, but also across industries and countries. For instance, firms exporting unprocessed primary products would satisfy the LCR with little difficulty, while firms in manufacturing, which combine various inputs, some of which may be imported, may not. Similarly, countries that are primarily agricultural or resource-based economies may lack upstream intermediates industries. These point to the importance of a country's production structure in determining the level of utilization of GSP benefits. Country's production structure is partly determined by its remoteness from potential trading partners; if a beneficiary country is centrally located with respect to its trading partners, it is likely to trade more with its neighbors and be more dependent on imported inputs, which may make the 35 percent LCR more likely to bind, *ceteris paribus*.

In addition to altering the production decisions of exporting firms, ROs increase their administrative costs, such as keeping track of inputs, properly documenting the contribution of each input to the value of the final product and retaining documentation proving the origin of goods for five years. Again, the higher the degree of processing, the higher the administrative costs of collecting and maintaining such documentation. Hence, for exporters of unprocessed primary products, such as crude oil, base metals, coffee and so forth, this is less burdensome than for exporters of processed products.

Lastly, an additional set of rules deals with the most competitive exporters and those who violate intellectual property rights and workers' rights. The preferential treatment of imports from such country-product pairs is suspended (Hakobyan, 2012). These country-product pairs become *de facto* ineligible for GSP benefits, and therefore are dropped from the current analysis.

Aside from GSP rules, certain features of US trade policy may induce underutilization of GSP benefits. For example, imports from a subset of GSP eligible countries also qualify for duty-free

or reduced tariff rate treatment under other trade arrangements such as African Growth and Opportunity Act (AGOA), Caribbean Basin Economic Recovery Act (CBERA) and Andean Trade Preference Act (ATPA). Likewise, a subset of products also qualifies for duty-free treatment under three product-specific free trade agreements (FTA): the Agreements on Trade in Civil Aircraft and Trade in Pharmaceutical Products, as well as Uruguay Round Concessions on Intermediate Chemicals for Dyes. Finally, Jordan still remains a GSP beneficiary even after the conclusion of a bilateral FTA with the US in 2001.

The regional preference programs and bilateral FTAs cover a much larger set of products and are considered less restrictive compared to the GSP. They allow for a donor content provision, whereby inputs sourced from the US can count up to 15 percent towards meeting the 35 percent LCR, and have no limit on the available benefits. Thus, regional programs and bilateral FTAs are generally more attractive for exporters, which results in lower GSP utilization rates for eligible countries.

2.2 Related Literature

The existing empirical literature examines the impact of trade preferences on export flows from beneficiary developing countries. The clear focus is to gauge how these preferences stimulate exports of beneficiary countries. Hoekman and Özden (2005), Agostino et al. (2007) and Cardamone (2007) provide extensive surveys. But surprisingly few papers have examined the *utilization* of these preferences. After all, if preferences are to stimulate exports, then beneficiary countries first need to claim duty-free exemptions.

In the relatively sparse literature on utilization of trade preference programs, existing research has focused primarily on EU preference programs.[2] While the US and EU GSP schemes have the same goal and share similar features in terms of country and product eligibility criteria, they differ from one another in many ways. The product coverage of EU GSP is much wider, but only half of eligible products enjoy duty-free market access, with the other half benefiting from reductions in MFN tariffs.[3] More importantly, the EU GSP rules of origin are product-specific, and include change in tariff classification, specific processing requirements and varying thresholds for

[2]See, for example, Manchin (2006); Candau et al. (2004); Francois et al. (2006).

[3]LDBCs are eligible for duty-free access for all their products, except arms and ammunition (so-called "Everything but Arms" initiative).

the maximum fraction of imported inputs.

The literature most relevant to this paper can be classified into three groups and is briefly summarized here. The first group makes extensive use of preference margins to assess the impact of ROs on utilization of various preferential trade arrangements. The earliest studies took a non-parametric revealed preference approach to estimate the upper and lower bounds on costs of compliance with ROs (including administrative costs). For products with utilization rates close to 100 percent, the preference margin gives the upper bound on costs, while for products with close to zero utilization, the preference margin provides the lower bound. A seminal paper by Herin (1986) was the first to use this approach and conclude that costs of compliance with ROs implemented by the European Economic Community towards exporters in European Free Trade Association countries were equivalent to an import tariff between 3 and 5 percent. These non-parametric cost estimates are simple averages that ignore variation in the restrictiveness of ROs across products and countries. Nevertheless, they continue to be reported along with more elaborate estimates.[4]

More recent studies use the variation in the types of ROs across products to estimate their impact on utilization rates. Carrere and de Melo (2006) carry out a double-censored Tobit estimation of the NAFTA's utilization by Mexican exporters as a function of the preference margin and dummy variables for three types of rules: change in tariff classification at the Harmonized System (HS) chapter level, regional value content and technical requirement. They find that the technical requirement is the most restrictive rule and is predicted to reduce the utilization rate by 21 percentage points. Change in tariff classification and regional value content requirement account for an additional 7 and 11 percentage point drop in utilization rates, respectively.[5]

The second group of studies seeks to explain the variation in utilization rates using the preference margin and standard gravity model variables (Francois et al., 2006; Manchin, 2006). This approach implicitly assumes that the gravity model could explain not only the volume of bilateral trade flows between countries, but also the utilization of preferences.

[4]For more recent estimates, see Anson et al. (2005); Cadot et al. (2006); Carrere and de Melo (2006).

[5]A more complex measure of restrictiveness of ROs was proposed by Estevadeordal (2000). A synthetic index of restrictiveness explicitly accounts for differences in the types of rules used across products, such as change at a section- (two-digit HS), heading- (four-digit HS), subheading- (six-digit HS) or item-level (higher than six-digit HS), regional value content and technical transformation requirements. For example, a change in tariff classification at the section level is more stringent than at the heading level. Based on this index, Cadot et al. (2006) found that the restrictiveness of ROs leads to 12-25 percent decline in utilization rates of the NAFTA and the EU Cotonou agreement for African, Caribbean and Pacific (ACP) countries. The main limitation of this index as pointed out by Inama (2009) is its abstract nature; it does not match the reality of how binding the ROs are for beneficiary countries with given industrial capacity.

Lastly, the third group of studies estimates a binary response model of preference utilization, where the dependent variable takes a value of one when preferences are utilized, even if partially, and zero otherwise. In a study conducted by OECD (2005), the estimates from bivariate probit model suggest that the preference margin contributes significantly to a higher utilization rate, and the degree of processing affects the utilization of preferences negatively. Using the same estimation strategy but also controlling for the size of exports as a proxy for fixed costs of compliance, Bureau et al. (2007) find that fixed costs hinder the utilization rate of small shipments.[6] In addition to limiting the analysis to agriculture and food industries, both studies allow the utilization to take only two values, hence ignoring the considerable variation in utilization rates, as demonstrated below in Figure 5.3.

3 Empirical Strategy

3.1 Measuring GSP utilization

The key variable of interest is the GSP utilization rate by country, product and year which is defined as the fraction of GSP eligible imports claiming the benefits upon entry to the US, calculated at the HS 8-digit level. More specifically, the GSP utilization rate of an eligible product j imported from a beneficiary country c in year t is:

$$u_{cjt} = \frac{X_{cjt}^{claim}}{X_{cjt}^{total}},$$

where X_{cjt}^{claim} and X_{cjt}^{total} are the value of imports that claim GSP and the value of total imports of product j from country c at time t, respectively.[7] Data on the customs value of imports for consumption entering the US under various preference programs are obtained from the USITC Trade Database. To pin down GSP eligible country-product-year triples, I merge the USITC Trade Database, the Tariff Database, which provides information on the product eligibility under various preference programs at the HS 8-digit level, and the GSP country eligibility dataset.[8]

[6] A more recent paper by Nilsson (2011) also controls for the size of exports to estimate their effect on the EU preference utilization and produces similar results.

[7] Preference trade data may bias GSP utilization rate upwards because they reflect the claimed preferential trade, but are not adjusted for subsequently denied claims.

[8] The GSP country eligibility dataset is available from the author upon request.

Figure 5.1 provides a snapshot of utilization across all countries in 2008. The darker the color, the greater is the fraction of imports claiming the GSP or the utilization rate. There is substantial variation in utilization at the country level, with only a handful of countries claiming GSP on close to 100 percent of their exports. Figure 5.2 captures the utilization pattern at the product level. Each dot represents an HS 8-digit product with the vertical axis measuring the fraction of imports claiming GSP benefits. More complex products such as equipment and machinery, classified under HS Chapter 85, exhibit greater variability in utilization rates.

Table 1 and 2 present summary statistics for the top 20 countries and product groups (at the HS 2-digit level), respectively, receiving GSP benefits in 2008. GSP usage is highly concentrated among several countries in terms of both claimed benefits and number of products. Imports from the top three beneficiary countries – India, Thailand and Brazil – make up about half of total imports claiming GSP (Column 2 of Table 1). These countries also export the largest number of products (Column 1). However, this does not necessarily translate into a higher GSP utilization (Column 3). Within country distribution of utilization rates (across products) also varies greatly (Columns 5 and 6). For example, average and median utilization rates for Indian products are 77 and 94 percent, respectively. In contrast, the average utilization rate for Tunisia is 41 percent with the median product claiming no preferential treatment. The last column of Table 1 shows the share of GSP eligible imports in total dutiable imports from a given country, indicating the extent to which the export structure of a beneficiary country matches the GSP product eligibility. Many beneficiary countries, including Russia and Venezuela, have coverage below 10 percent, which means that more than 90 percent of dutiable exports from these countries do not qualify to receive GSP benefits.[9]

Table 2 demonstrates few other interesting patterns at the HS 2-digit product group level. The more differentiated the product group, the larger is the number of countries exporting a product within that group (Column 1). The *Electrical machinery and equipment* product group leads the list with 100 exporting countries. Products that underwent relatively less complex processing on average have higher utilization rates (Column 3), such as the ones grouped under *Iron and steal* (85%), and *Preparations of vegetables and fruit* (80%). In contrast, products that require more complex

[9]Petroleum products are the largest export items from Russia and Venezuela. Imports of such products receive duty-free treatment under the GSP only if they come from the least developed beneficiaries.

processing typically exhibit lower utilization rates, such as those within *Electrical machinery and equipment* (22%), *Vehicles other than railway rolling stock* (25%), and *Optical, photographic, medical apparatus* (26%). Product groups in which GSP beneficiary countries have comparative advantage, and thus are more specialized relative to the rest of the world, contain predominantly primary products (Column 5), including *Iron and steel* (50%), *Articles of stone, plaster or similar materials* (41%), and *Precious stones and metals, including jewelry* (37%). In contrast, GSP beneficiary countries account for a very small share of dutiable imports of products with higher level of processing, such as *Vehicles other than railway rolling stock* (1%), *Electrical machinery and equipment* (4%), and *Nuclear reactors* (4%).

3.2 Estimation

The decision to claim GSP is made at the firm level after weighing the benefits and costs of doing so, but we only observe country-product level utilization in the data. Thus, the empirical strategy hinges upon the systematic differences in country-product characteristics that might shape firms' costs of claiming GSP and influence the aggregate utilization rate at the country-product level.

The *benefit* of claiming GSP is captured by the duty savings measured as an ad-valorem MFN tariff rate, the so-called preference margin.[10] *Costs* of claiming GSP may be affected by country-product specific characteristics such as the local content of final products, as well as country specific characteristics such as remoteness of a beneficiary country, country's membership in a regional association that qualifies for regional cumulation under GSP, or country's eligibility for other trade preference programs. All these factors speak directly or indirectly to the production structure in developing countries. The greater the local content and the more remote the country is (capturing its reliance on locally sourced inputs), the more likely it is for its products to meet the 35 percent local content requirement and take full advantage of GSP benefits. Membership in regional association that allows its members to cumulatively meet the 35 percent requirement leads to higher GSP utilization. Lastly, the availability of an alternative program that grants duty-free access to the US market, including regional trade preference programs (AGOA, CBERA and ATPA), product-specific and bilateral FTAs, is likely to lead to lower GSP utilization.

The degree of processing, a product attribute, may also influence the cost of claiming GSP; the

[10] I estimate ad valorem equivalent tariff rates for products facing specific and compound tariff rates.

higher the degree of processing, the more binding the ROs, and the greater the need to implement complex accounting system to keep track of inputs to prove the origin. Finally, country-product specific characteristics that may influence fixed costs of claiming GSP include the size of exports, with greater exports implying lower per unit fixed costs (economies of scale). The size of exports may also be indicative of knowledge spillovers among firms producing the same product; after all, a firm may be more inclined to claim GSP if it is exposed to other firms' GSP-related activities.

To gauge the impact of various factors on GSP utilization, the baseline empirical specification is as follows:

$$\begin{aligned} u_{cjt} = \beta_0 + \beta_1 \tau_{jt} + \beta_2 Local_{cj} + \beta_3 Remote_{ct} + \beta_4 Primary_j + \beta_5 Exp_{cjt} + \\ + \beta_6 Cum_{ct} + \beta_7 Other_{cjt} + \beta_8 Last_{ct} + \gamma_c + \delta_{j'} + \eta_t + \epsilon_{cjt}, \end{aligned} \tag{3.1}$$

where u_{cjt} is the GSP utilization rate of product j imported from country c at time t; τ_{jt} is the ad valorem MFN tariff rate of product j at time t; $Local_{cj}$ is the local content of product j imported from country c; $Remote_{ct}$ is a measure of country c's location relative to its potential trading partners in year t;[11] $Primary_j$ is a dummy variable that takes the value of one if product j is classified as primary by the World Trade Organization (WTO); Exp_{cjt} is the total exports of product j from country c to the US at time t, regardless of the preference program used; Cum_{ct} is a dummy variable that takes the value of one if country c qualifies for regional cumulation within any of the six regional associations in year t; $Other_{cjt}$ is a dummy variable that takes the value of one if product j originating from country c is eligible for an alternative trade preference program in year t; $Last_{ct}$ is an indicator variable that takes the value of one if country c is in the last year of GSP eligibility;[12] γ_c, $\delta_{j'}$, and η_t are the fixed effects for country c, product group j' (defined at the HS 2-digit level), and year t, respectively.[13] The error term, ϵ_{cjt}, represents unobserved heterogeneity in each

[11] Following Wei (1996), remoteness of a beneficiary country c at time t is computed as a GDP weighted average distance,

$$Remote_{ct} = \sum_{b=1}^{C} Y_{bt} D_{cb},$$

where D_{cb} is the distance between the beneficiary country c and its potential trading partner b, and Y_{bt} is the country b's logged GDP at time t.

[12] A number of countries graduated from GSP over the sample period. The last year eligibility captures the effect of imminent graduation on firms' sourcing decisions. It is also plausible that firms in countries that became GSP eligible for the first time would need time to learn the GSP rules and make adjustments to comply with them. Thus, one should account for the first year eligibility as well. In my sample, however, only one country became eligible for GSP over the sample period, and therefore the effect of the first year eligibility cannot be identified.

[13] Ideally, one would like to capture unobserved characteristics of a product at the HS 8-digit level. However, several explanatory variables, including the preference margin and primary product indicator, are defined at this level and will

country-product-time triple and is assumed to be independent of the regressors.

Among otherwise identical country-product-time pairings, products with higher preference margin and lower degree of processing, country-products with higher local content and larger exports, more remote countries and those that qualify for regional cumulation are predicted to have higher GSP utilization rates. On the other hand, the utilization rate is expected to be lower if the country-product qualifies for an alternative preference program or the country is in its last year of GSP eligibility. Thus, all βs except β_7 and β_8 are expected to have a positive sign.

Several estimation issues merit mention. The utilization rate is bounded between 0 and 1 with a distribution over a range of values and mass points at the extreme values. A two-limit Tobit model is an obvious candidate.[14] An alternative estimation method is the fractional logit proposed by Papke and Wooldridge (1996) which models conditional mean as a logistic function ensuring that the predicted values fall between 0 and 1. I rely on Greene (2004b) and Papke and Wooldridge (2008) to address the incidental parameters problem in these nonlinear models.[15]

Second, previous research (Manchin, 2006) suggests that there is a threshold preference margin above which it ceases to explain the utilization of preferences. Intuitively, there may exist a tariff rate below which the cost of claiming GSP exceeds the benefit for all firms, yielding a utilization rate of zero. With the same reasoning there may exist a threshold tariff rate above which the cost of claiming GSP is outweighted by the benefit for all firms, yielding a utilization rate of one. For the remainder of the analysis, I adopt a linear spline specification with a single upper breakpoint at 6.4 percent, estimated endogenously following Hansen (1999).[16]

Third, the endogeneity of exports may be a concern if the analysis were conducted at the firm level because the decisions of how much to export and whether to claim GSP are made simultaneously. But I employ aggregate data, and I assume each industry is composed of many small

not be identified if HS 8-digit fixed effects are included. Therefore, unobserved product characteristics are controlled for at a higher level of aggregation. To address any remaining within product correlation, I cluster standard errors at the HS 8-digit level.

[14] See Ramalho et al. (2011) for a comprehensive summary of estimation methods applicable to fractional data.

[15] Using Monte Carlo experiments, Greene (2004b) shows that the maximum likelihood estimates for the Tobit model with fixed effects exhibit almost no bias even when roughly 40-50 percent of observations are censored. It follows that the incidental parameter problem in the Tobit model is minimal, and no special adjustment to the estimation strategy is required. Papke and Wooldridge (2008) argue that the incidental parameters problem is non-existent when the fixed effects are defined for certain groups the number of which is assumed fixed, but the number of observations per group is assumed to go to infinity, as is the case in my analysis.

[16] Since the number of potential threshold values of the preference margin is quite large, I evaluate the concentrated sum of squared errors function for a grid of values between 4 and 10 percent with an increment of 0.1. The value of preference margin that minimizes the concentrated sum of squared errors is estimated to be 6.4 percent.

exporters that have no significant impact on aggregate level of exports; at the aggregate level, exports capture the relative importance of the industry in a given country's exports. One way to address the potential simultaneity between exports and GSP utilization is to use exports to the rest of the world as an instrument for exports to the US. While exports to the rest of the world should not influence the utilization rate of GSP, they are positively correlated with exports to the US.

Lastly, there may be omitted variables that are not included in the main specification and therefore can bias the estimates. More specifically, US multinationals' activities in the GSP beneficiary countries is not controlled for. If most of the imports come from the foreign affiliates of US multinationals, who are presumably more knowledgeable about the GSP rules, then the utilization rate may largely be determined by their presence in a given country and industry. This is consistent with findings by Blanchard and Matschke (2012) that off-shoring multinational activity and preferential market access are positively and consistently correlated. I address this issue by controlling for the share of related party imports by country and industry.

3.3 Descriptive Statistics

The GSP utilization rate as defined in Subsection 3.1 is available for the universe of all country-product pairs over the sample period, and the statistics provided in Tables 1 and 2 use all available data. However, data on local content, a key variable of interest, is available for only a subset of countries. In particular, one measure of local content is the share of value added and domestic inputs in output obtained from the OECD Input-Output Database for 11 GSP beneficiary countries.[17] These countries account for about 42 percent of all GSP eligible imports and receive roughly 47 percent of GSP benefits. An alternative less accurate measure of local content, the share of value added in output, is available from the UNIDO industrial production database for a sample of 68 countries.[18] These countries account for about 70 percent of all GSP eligible imports and GSP benefits claimed. The descriptive statistics below is presented for both sets of countries.

The remoteness index is computed using data on real GDP and geographical distance between the "economic centers" of GSP beneficiary countries and potential trading partners obtained from

[17] These countries are Argentina, Brazil, Czech Republic, Hungary, Indonesia, India, Poland, Russia, Slovakia, Turkey and South Africa.

[18] The larger sample of countries also allows to capture the effect of two additional features of GSP (regional cumulation and last year eligibility) on utilization rate that otherwise cannot be identified in the smaller sample.

the World Development Indicators (WDI) and CEPII, respectively. The primary product indicator is constructed based on the WTO International Trade Statistics classification (WTO, 2011).

Table 3 reports descriptive statistics for each of the two sets of countries with observations categorized by zero, partial and full utilization. Focusing on Panel A of Table 3, about 16 percent of observations in this sample (15,353 observations) do not claim GSP exemptions, with the remainder about evenly split between those with partial and those with full utilization. Despite the pile-up at the extreme values, there is substantial variation in utilization rates between zero and one (see Figure 5.3), and any study that relies on binary variable for preference utilization is bound to ignore this variation.

The average preference margin is higher for country-products with full utilization (4.2 percent), compared to those with zero utilization (3.7 percent). The average local content share is 62 percent (sd = 14) for country-products with zero utilization and 69 percent (sd = 11) for those with full utilization. The average remoteness index is 4,646 with a standard deviation of 1,360. The least remote countries are located in Eastern Europe and have a remoteness index of about 3,000. The most remote country is Argentina with a remoteness index of about 6,700. Overall, manufactured goods represent a large proportion of observations (88 percent), reflecting on the core objective of the GSP to help build a manufacturing base in beneficiary countries. But a larger share of manufactured products (94 percent) is bound to have zero utilization rates. Country-products with full utilization on average have larger (log) exports compared to those with zero utilization; mean exports are largest for country-product pairs with partial utilization. About 20 percent of observations are eligible for an alternative trade preference program, whether regional or product-specific. A large share of observations (26 percent) with zero utilization is eligible for other preferential schemes, while just 17 percent with full utilization qualify for other preference programs.

None of the countries in Panel A of Table 3 qualify for regional cumulation or graduated from GSP over the sample period. Thus, I turn to Panel B to detect any pattern in utilization as a result of cumulation or last year of program eligibility. About 35 percent of observations in the large sample are eligible for regional cumulation under one of the six regional associations (19 percent under ASEAN, 9 percent under the Andean group, 6 percent under SAARC). In addition, country-products in their last year of eligibility are slightly less likely to utilize the GSP (1.2 percent of the

sample), compared to those that fully utilize (1.1 percent of the sample). More importantly, the remaining figures on value added share, the proxy for local content, and remoteness are not in harmony with those reported above.

4 Results

Estimates from three-way panel OLS, Tobit, and fractional logit are reported in Table 4 for the sample of 11 countries using data on the share of local content in output, and in Table 5 for the expanded sample of 68 countries using value added share in output. The regressions include year, country and HS 2-digit product fixed effects, and standard errors are clustered at the HS 8-digit product level.[19]

The coefficients across all columns of Table 4 have the expected sign and with few exceptions are statistically significant at the 1 percent level. In particular, the utilization rate increases with the preference margin, local content, remoteness of the country, log exports and if the product is defined as primary.[20] The estimate for other program availability also takes the predicted negative sign and is statistically significant at the 1 percent level.

How economically important are these estimates? An increase in the preference margin and local content share by one standard deviation implies a statistically significant increase in the utilization rate by 2 and 4 percentage points, respectively. One standard deviation increase in the mean remoteness and log exports is associated with 31 and 7 percentage point rise in the utilization rate, respectively. Lastly, utilization of primary products is expected to be higher by 2 percentage points, whereas the eligibility for other programs leads to a decrease in the utilization rate by 6 percentage points.

Using the larger sample of countries yields qualitatively similar results (Table 5). The coefficient estimates on local content are much smaller, indicating that local inputs rather than value added contribute more to the GSP utilization. This result is perhaps not surprising, since developing countries tend to have relatively low wages, and thus the contribution of employee compensation to the final output is relatively small. Contrary to the earlier results, the coefficient for

[19] Inclusion of HS 4-digit and 6-digit product fixed effects does not alter the magnitude and significance of the main explanatory variables.

[20] Only the estimate for the preference margin below the threshold value is reported. The estimate for the preference margin above the threshold is found to be statistically insignificant in all specifications.

primary products is negative, but insignificant in OLS and fractional logit estimations. Furthermore, the coefficient for the cumulation dummy is negative and statistically significant (at the 10 percent level) in Tobit and fractional logit estimation, contrary to the predictions.

Summarizing the results thus far, the production structure in beneficiary countries as proxied by the local content or value added share and remoteness are statistically and economically significant predictors of utilization rate. Higher local content share and greater remoteness, which may make the rules of origin less binding, lead to higher utilization rates, whereas the eligibility for other trade preference programs leads to lower utilization rates. The findings on the effect of degree of processing and regional cumulation are inconclusive and will be explored further in subsections 4.1 and 4.2 below. The remaining results are in line with the findings in previous studies; the utilization rate is positively associated with the preference margin and exports.

4.1 Regional Cumulation

To gauge the impact of cumulation across different regional associations and understand what explains the contradictory results above, I decompose the cumulation dummy into cumulation indicators separately defined for ASEAN, WAEMU, SADC and SAARC. Identification for the cumulation variables comes from changes in association membership over time. WAEMU and SADC began to qualify for cumulation in 1998, SAARC in 2005, and within ASEAN Cambodia in 1999; the membership of the Andean Group and CARICOM did not change over the sample period. Table 6 reports average utilization rates for each of these regional associations, along with OLS estimates and marginal effects from Tobit and fractional logit estimation.[21] The standard set of regressors is included, but not reported.

Among regional associations, SAARC members have the highest utilization rates; even prior to qualifying for regional cumulation, the average utilization rates between 1997 and 2004 were more than 80 percent. ASEAN member countries follow next with 72 percent utilization rate. In contrast, regional associations in Africa - WAEMU and SADC - on average have much lower utilization rates at 50 and 46 percent, respectively.

Regression results further reveal that the negative coefficient on cumulation in the earlier results is driven by SAARC countries. OLS estimates show that countries eligible for cumulation

[21] All estimations use the larger sample of countries in order to identify the impact of regional cumulation.

within SADC and WAEMU are estimated to utilize GSP 18 and 9 percentage points more, respectively, than countries ineligible for cumulation. Conditional on other country and product characteristics, Cambodia's utilization rate was 27 percentage points higher after qualifying for regional cumulation within ASEAN. In contrast, the coefficient on cumulation within SAARC has a negative sign and is statistically significant at the 1 percent level. This suggests that cumulation within SAARC may not serve the purpose of relaxing ROs among member countries and making SAARC qualify for regional cumulation may have been unnecessary, given high utilization rates by its members prior to implementation of regional cumulation and the low volume of intra-regional trade due to the lack of political trust and inefficient cross-border connectivity (Evenett, ed, 2009).[22] Tobit and fractional logit estimations yield qualitatively similar results.

4.2 Degree of Processing

The way the *Primary product* indicator was defined earlier may explain the inconclusive findings on the effect of product processing level on the utilization rate. It is at best a challenge to capture the degree of processing of products with a binary variable. As an alternative, and in order to disentangle the differences in the degree of processing across various classes of products, a set of dummy variables for each class of products is defined following the WTO classification. I control separately for primary products (a base category), semi-manufactures (includes iron and steel, chemicals, other semi-manufactures), machinery and transport equipment, textiles, clothing, and other manufactures. Table 7 reports average utilization rates for each of these groups, along with OLS, Tobit and fractional logit estimates. As before, the standard set of regressors is included but not reported.

The average utilization rate is the highest across primary products at 74 percent and gradually declines as the degree of processing increases; the average utilization rate stands at 70 percent for semi-manufactures, down to 56 and 55 percent for clothing and machinery, respectively. The regression results mirror the descriptive statistics in that the utilization rate for machinery and clothing is predicted to be lower by 7-10 percentage points, relative to primary products. The results are almost identical when the model is estimated via OLS and fractional logit. The coefficient

[22] According to author's calculations based on data from the UN Comtrade, the intra-regional imports are less than 3 percent of total imports by SAARC countries.

estimates for semi-manufactures and other manufactures are positive, but statistically insignificant. Finally, the utilization rate for textiles is statistically significant at the 1 percent level across all specifications and is expected to be about 7-10 percentage points higher, relative to primary products.

The marginal effects from the Tobit estimation provide an even more striking portrayal of the effect of product processing level on utilization rates. Compared to primary products, all product groups except textiles are predicted to have lower utilization rates. The largest drop in the utilization rate is predicted for clothing (13 percentage points), followed by machinery (8 percentage points), semi-manufactures and other manufactures (2 percentage points). Exporters of textiles are expected to utilize the GSP 7 percentage points more than those of primary products. Taken together, these findings strongly suggest that rules of origin may be responsible for low utilization rates across products with greater degree of processing.

4.3 Additional Robustness Checks

As a further check on the robustness of the results, this subsection addresses several potential concerns related to the endogeneity of exports, errors in measuring the preference margin, and the omitted variable of US multinationals' activities.[23] The results presented here focus on 11 countries for which local content share data are available. The above estimates could potentially be biased if the level of exports and the utilization of GSP are determined simultaneously. To control for the endogeneity of exports to the US, I use exports to the rest of the world obtained from the UN Comtrade as an instrument.[24] Column 1 of Table 8 presents the IV estimates. The instrument performs well in terms of explaining the possibly endogenous variable "log exports to the US", as is apparent from the first-stage F-statistic of 199.2.[25] The results are broadly similar when log exports to the rest of the world are used as an instrument for log exports to the US. An IV estimation yields a point estimate of 0.015 on log exports, which is smaller than the comparable OLS estimate in Column 1 of Table 4 but nevertheless statistically significant. Thus, exports as a proxy for fixed costs of claiming the GSP have less dramatic, albeit significant impact on the

[23] For each specification I re-estimate the threshold value of preference margin and use it to specify the linear spline. The threshold preference margins are reported at the bottom of Table 8.

[24] The exports data are available only for a subset of country-year pairs, which reduces the sample to 89,593 observations.

[25] The first stage coefficient on the instrument, log exports to the rest of the world, is 0.24 ($p < 0.001$).

utilization of the program. The point estimate indicates that a doubling of exports to the US increases the utilization by 1.5 percentage points or by a 2.1 percent relative to the sample average.

In Column 2 of Table 8, the sample is restricted to products facing ad valorem tariff rates to address a potential concern over measurement errors in constructing the preference margin. Throughout the paper I use an estimated preference margin for products facing specific and compound tariff rates based on aggregate country-product level quantity information. In the absence of firm-level unit price data the constructed ad valorem equivalent rates for specific tariffs can be inaccurate and may bias the coefficient on the preference margin. It is also plausible that the exporters of products facing specific tariffs consider different costs and benefits when claiming the GSP program. From Column 2, the coefficient on the preference margin is considerably larger when the sample is restricted to products facing ad valorem tariffs only, suggesting that the inclusion of observations for which the tariff rates were estimated introduce a downward bias. The significance and magnitude of coefficients on the remaining regressors is hardly changed.

Finally, I examine whether GSP utilization may be affected by the presence of US multinationals producing in GSP beneficiary countries and exporting back to the US under the GSP. US foreign affiliates are likely to be more knowledgeable about GSP rules and may take advantage of duty-free treatment of their exports to the US.[26] To address the potential concern of omitting this variable, I control for the presence of US foreign affiliates in GSP eligible countries by including the share of related party imports in total imports by country and industry as an additional explanatory variable.[27] Perhaps surprisingly, as seen in Column 3 of Table 8, the relationship between the share of related imports and the utilization rate is negative and statistically significant at the 1% level. One possible explanation is the inability of US foreign affiliates to meet the LCR since they are more likely to source inputs from their parent or other affiliated companies in other countries and not locally. The coefficient estimates on the preference margin and exports are consistently robust to the inclusion of the share of related imports. The importance of remoteness as a determinant of the utilization rate disappears, but the coefficient on local content share is still statistically significant although smaller in magnitude.

[26] Blanchard and Matschke (2012) find that the US government is more likely to provide preferential market access to countries where it is engaged in extensive vertical multinational activities, measured by US foreign affiliate exports to the US.

[27] Related party imports are obtained from the US Census Bureau and only available for the period of 2002-2008 (http://sasweb.ssd.census.gov/relatedparty).

I conduct several other robustness checks that are not reported here but are readily available upon request. In particular, I restrict the sample to developing countries to minimize the volatility in imports from the least developed countries and the resulting noise in the estimates, exclude products that were subject to quotas over the sample period or qualified for product-specific free trade agreements, restrict the sample to non-oil imports, and lastly drop observations in 2008 to eliminate the possible effect of the Global Trade Collapse. In all instances, the findings remain robust and point to the importance of local content and remoteness in explaining the patterns of GSP utilization across countries and products, along with preference margin and the size of exports.

5 Conclusion

Why developing countries do not fully utilize the US GSP benefits? This paper documents the extent of this underutilization and examines several factors that explain the variation in the utilization of the US GSP program. Most importantly, it considers the production structure of beneficiary countries as an additional determinant of utilization often overlooked in the literature. Differences in the production structure of developing countries may partly explain differences in utilization rates across countries and products. This finding is illustrated employing a unique dataset that combines country-industry level production data from OECD and UNIDO with a detailed measure of the utilization rate from USITC.

The data highlight considerable heterogeneity in the utilization rate of preferences; roughly 20 percent of observations do not claim GSP benefits, with the remainder about evenly split between those claiming the full 100 percent of benefits and those claiming partial benefits. The results suggest that the production structure of beneficiary countries is a significant predictor of the utilization rate, as proxied by the local content or value added share and remoteness of the beneficiary country from its trading partners, even after controlling for well-known predictors of utilization such as the preference margin and size of exports. The utilization rate increases with the local content share and remoteness, and declines with the availability of other preference programs. Consistent with findings in the existing literature, higher preference margin and larger exports lead to higher utilization rates. The findings further suggest that the GSP utilization rate

decreases with the degree of processing and increases with the availability of regional cumulation within some regional associations.

In light of the findings on local content, the GSP may be more effective if it were to impose less stringent rules of origin. This does not necessarily imply reducing the 35% local content requirement, but rather offering donor content provision as other US trade preference programs do. Alternatively, the regional cumulation provision may be expanded to include a larger set of developing countries or perhaps even all of them.

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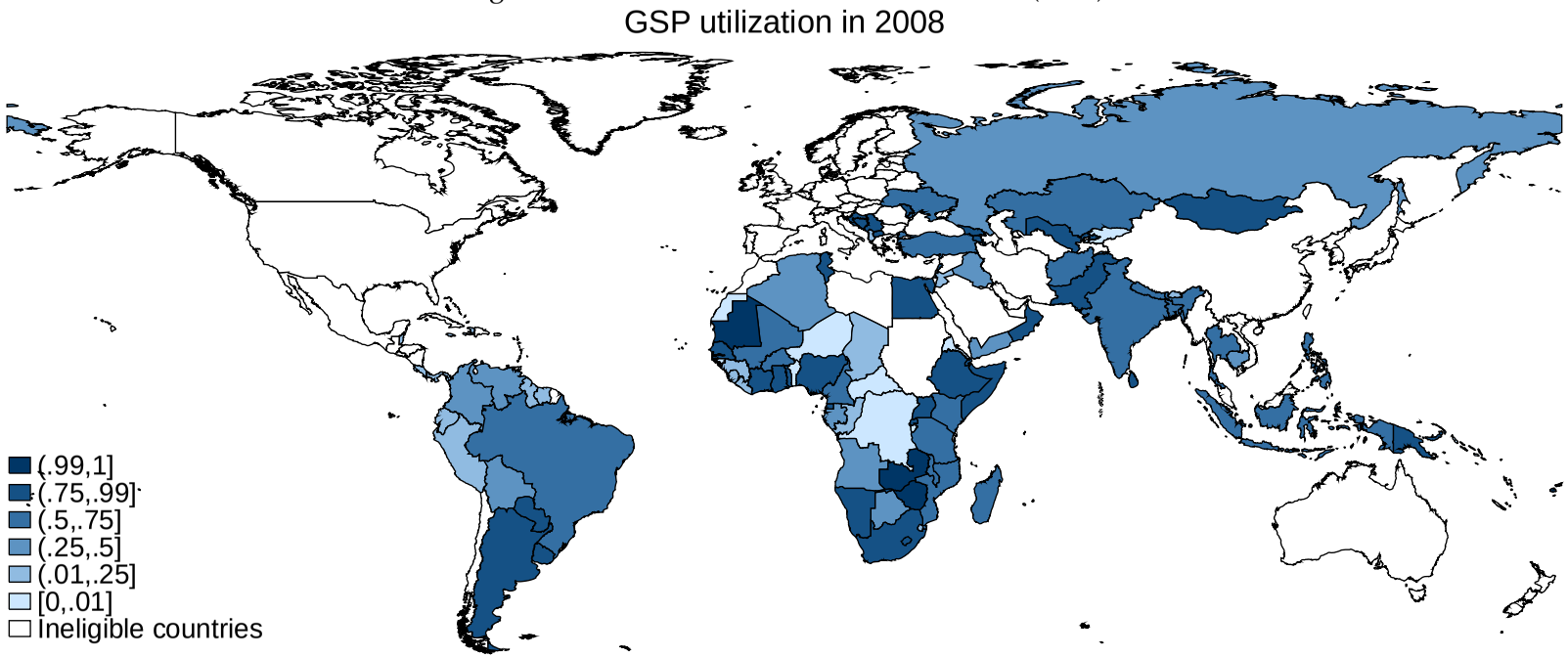
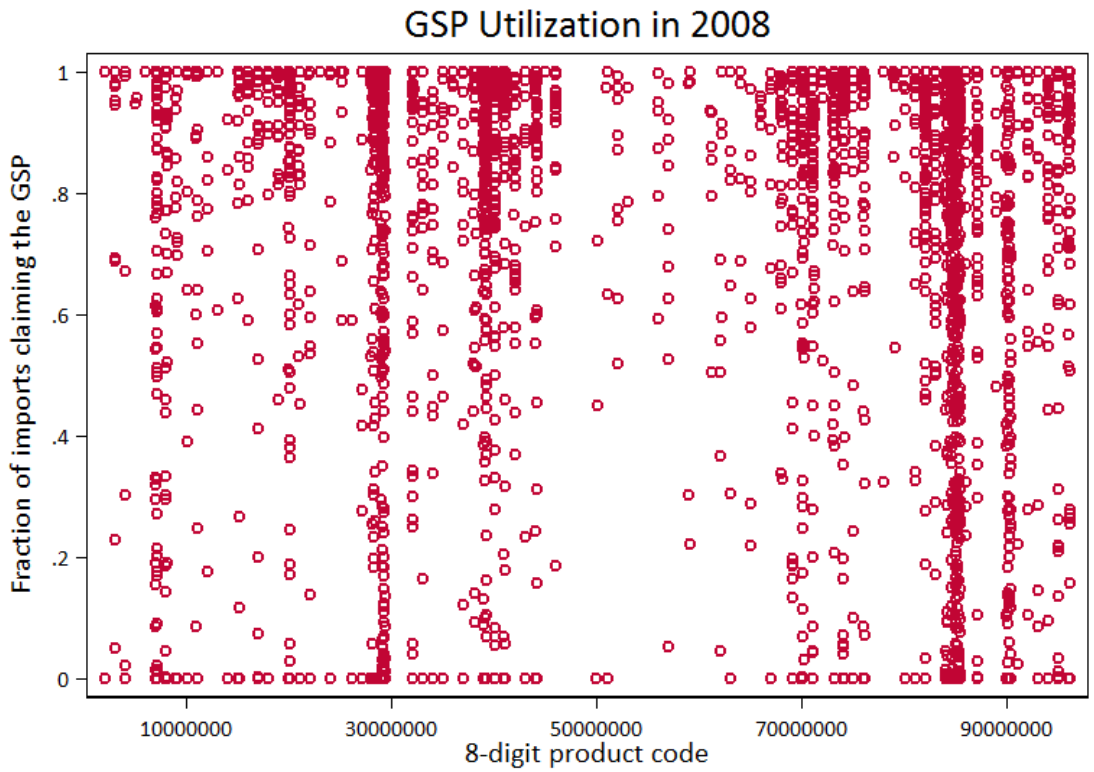
Figure 5.1: GSP Utilization Across Countries (2008)



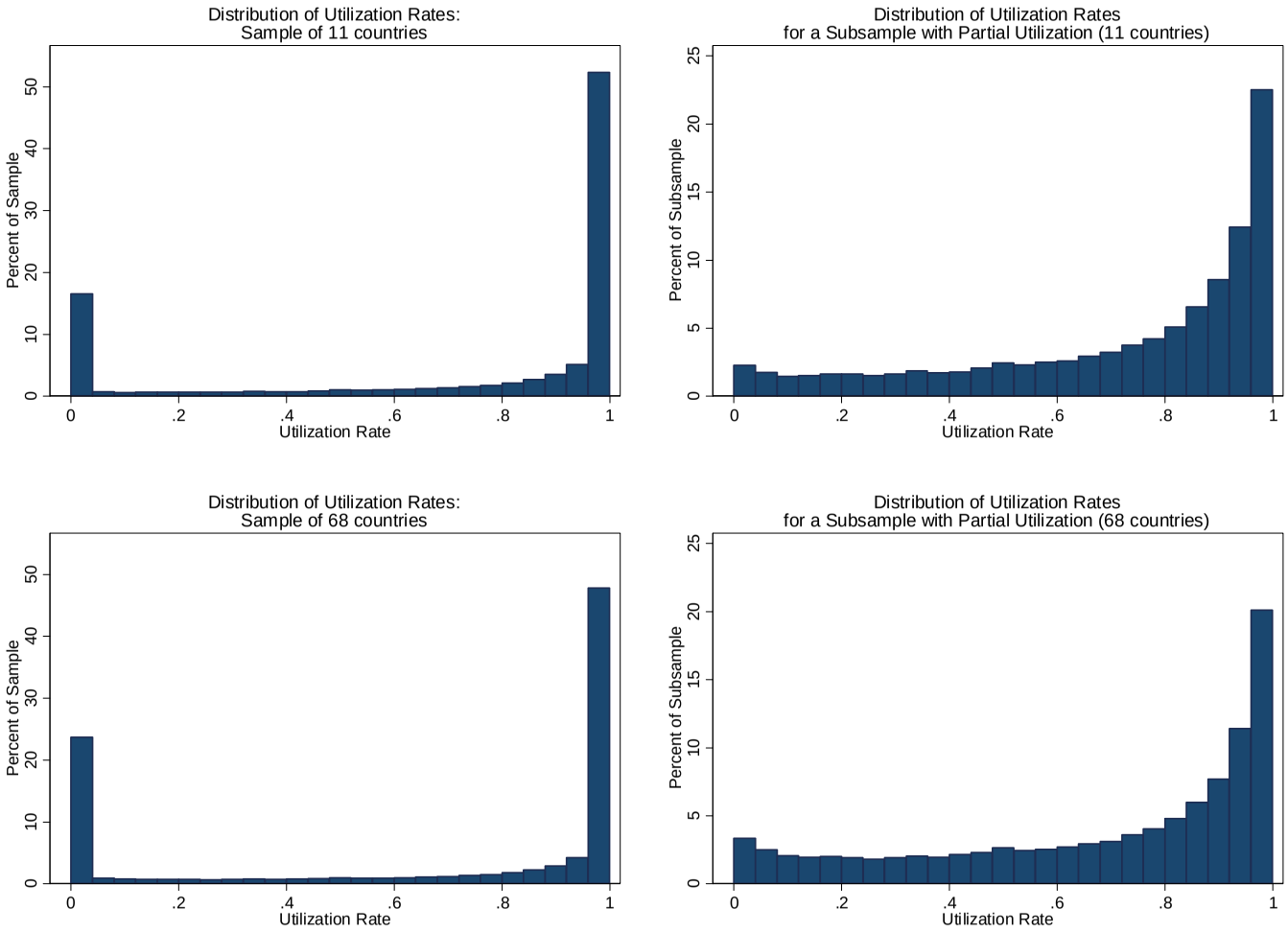
Notes: The map illustrates the worldwide GSP utilization rates in 2008, defined as the fraction of preferential imports from a given country actually claiming the GSP benefits. Darker color implies greater utilization of GSP. Countries in white are not eligible for the program.

Figure 5.2: GSP Utilization Across Products (2008)



Notes: Each dot represents an HS 8-digit product. The vertical axis measures the fraction of preferential imports of a given product from all eligible countries actually claiming GSP benefits.

Figure 5.3: Distribution of Utilization Rates



Notes: The charts to the left use all observations in the sample of 11 and 68 countries, respectively, over 1997-2008. The charts to the right exclude the observations with zero or full utilization.

Table 1: Top 20 GSP Beneficiaries (by share in imports claiming GSP)

Country	Number of GSP products	Share in imports claiming GSP (%)	Utilization of GSP (%)	Utilization Rate (%)		Coverage (%)
				Average	Median	
	(1)	(2)	(3)	(4)	(5)	(6)
India	2,034	19.0	59	77	94	51
Thailand	1,347	16.9	67	68	92	55
Brazil	1,539	13.2	51	74	98	62
Indonesia	917	10.3	74	68	95	37
South Africa	791	7.0	90	67	96	39
Argentina	778	6.7	87	73	100	50
Turkey	851	4.4	67	71	97	51
Philippines	860	4.4	57	67	94	47
Russia	549	2.8	45	57	80	10
Kazakhstan	30	1.5	61	49	49	49
Peru	503	1.3	19	45	42	42
Venezuela	276	1.2	47	67	100	7
Angola	11	1.1	69	25	0	100
Colombia	731	1.1	31	36	12	34
Pakistan	410	0.9	95	85	100	6
Equatorial Guinea	2	0.8	99	99		100
Sri Lanka	232	0.7	89	77	100	10
Tunisia	139	0.7	85	41	0	35
Georgia	65	0.7	98	34	0	79
Ukraine	227	0.5	70	57	88	37

Notes: The statistics reported here are based on the universe of eligible country-product pairs.

Table 2: Top 20 GSP Product Groups at the HS 2-Digit Level (by share in imports claiming GSP)

Product	Number of beneficiaries	Share in imports claiming GSP (%)	Utilization Rate (%)		Coverage (%)
			Average	Median	
	(1)	(2)	(3)	(4)	(5)
Electrical machinery and equipment	100	8.8	22	0	4
Iron and steel	13	7.7	85	99	50
Precious stones and metals; jewelry	72	7.6	63	83	37
Nuclear reactors	92	6.9	31	3	4
Plastics and articles thereof	91	6.4	36	24	5
Rubber and articles thereof	61	5.2	36	5	12
Vehicles other than railway rolling stock	58	4.8	25	0	1
Miscellaneous chemical products	18	4.7	68	88	22
Organic chemicals	34	4.5	41	23	8
Articles of iron or steel	52	3.8	49	47	9
Aluminum and articles thereof	40	3.7	49	42	14
Wood and articles of wood	73	2.9	63	84	16
Optical, photographic, medical apparatus	74	2.5	26	5	5
Inorganic chemicals	28	2.5	52	62	20
Articles of stone, plaster or similar materials	46	1.9	58	63	41
Preparations of vegetables, fruit, nuts	52	1.9	80	97	11
Copper and articles thereof	28	1.6	69	95	15
Sugars and sugar confectionery	43	1.4	69	97	19
Miscellaneous edible preparations	50	1.3	77	97	12
Mineral fuels	9	1.1	37	0	1

Notes: The statistics reported here are based on the universe of eligible country-product pairs.

Table 3: Sample Summary Statistics by Level of Utilization

Panel A: Sample of 11 countries

	Full sample		Zero utilization		Partial utilization		Full utilization	
	Mean	St Dev	Mean	St Dev	Mean	St Dev	Mean	St Dev
Utilization rate	0.73	0.38	0	0	0.72	0.29	1	0
Preference margin (%)	4.00	3.03	3.66	2.45	3.90	2.77	4.22	3.41
Local content share	0.67	0.12	0.62	0.14	0.67	0.12	0.69	0.11
Remoteness	4646	1360	4323	1385	4669	1299	4741	1391
Primary products	0.12	0.33	0.06	0.25	0.08	0.28	0.18	0.38
Log exports	11.08	2.44	9.37	1.82	12.55	2.17	10.27	2.07
Other program eligibility	0.20	0.40	0.26	0.44	0.22	0.42	0.17	0.37
Number of observations	98,535 (100%)		15,353 (16%)		40,834 (41%)		42,348 (43%)	

Panel B: Sample of 68 countries

	Full sample		Zero utilization		Partial utilization		Full utilization	
	Mean	St Dev	Mean	St Dev	Mean	St Dev	Mean	St Dev
Utilization rate	0.66	0.42	0	0	0.68	0.31	1	0
Preference margin (%)	4.10	3.41	3.81	3.80	4.04	2.87	4.32	3.61
Value added share	0.34	0.12	0.36	0.13	0.34	0.12	0.34	0.12
Remoteness	4878	1341	4934	1383	4943	1268	4786	1376
Primary products	0.15	0.36	0.11	0.32	0.13	0.33	0.20	0.40
Log exports	10.80	2.43	9.36	1.82	12.47	2.19	10.05	2.03
Cumulation	0.35	0.48	0.37	0.48	0.41	0.49	0.29	0.45
Other program eligibility	0.31	0.46	0.51	0.50	0.30	0.46	0.21	0.41
Last year eligibility	0.01	0.10	0.01	0.11	0.01	0.09	0.01	0.10
Number of observations	195,582 (100%)		43,889 (22%)		72,777 (37%)		78,916 (40%)	

Table 4: Utilization Rate Regressions: Share of local content in output

	OLS	Tobit	Fractional Logit	Expected sign
	(1)	(2)	(3)	
Preference margin	1.03***	1.05***	1.13***	+
	(0.154)	(0.084)	(0.172)	
Local content share	0.29***	0.23***	0.23***	+
	(0.029)	(0.017)	(0.027)	
Remoteness	0.0002***	0.0002***	0.0003***	+
	(2.40e-05)	(2.12e-05)	(2.60e-05)	
Primary products	0.02*	0.06***	0.03*	+
	(0.0112)	(0.0089)	(0.0148)	
Log exports	0.03***	0.004***	0.03***	+
	(0.0008)	(0.0005)	(0.0009)	
Other program	-0.06***	-0.05***	-0.06***	-
	(0.007)	(0.003)	(0.007)	

Notes: N = 98,535. The sample of 11 countries for which data on the local content share in output are available is used. The regressions include country, product group (at the HS 2-digit level) and year fixed effects. Robust standard errors in parentheses are clustered at the HS 8-digit level. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Table 5: Utilization Rate Regressions: Value added share in output

	OLS	Tobit	Fractional Logit	Expected sign
	(1)	(2)	(3)	
Preference margin	0.78***	0.93***	0.94***	+
	(0.120)	(0.064)	(0.147)	
Value added share	0.045**	0.035***	0.047**	+
	(0.018)	(0.012)	(0.021)	
Remoteness	0.0002***	0.0002***	0.0003***	+
	(1.84e-05)	(1.64e-05)	(2.20e-05)	
Primary products	-0.006	0.022***	-0.012	+
	(0.011)	(0.008)	(0.015)	
Log exports	0.025***	0.005***	0.029***	+
	(0.0007)	(0.0004)	(0.0009)	
Cumulation	-0.006	-0.009*	-0.012*	+
	(0.005)	(0.005)	(0.007)	
Other program	-0.07***	-0.06***	-0.07***	-
	(0.007)	(0.003)	(0.007)	
Last year eligibility	-0.02**	-0.014	-0.017	-
	(0.009)	(0.011)	(0.011)	

Notes: N = 195,582. The sample of 68 countries for which data on the value added share in output are available is used. The regressions include country, product group (at the HS 2-digit level) and year fixed effects. Robust standard errors in parentheses are clustered at the HS 8-digit level. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Table 6: Regional Cumulation

	Utilization Rate			Regression Results		
	Mean	St Dev	N of Obs	OLS	Tobit	F.Logit
No Cumulation	0.63	0.43	146,177			
Cumulation: SAARC	0.78	0.33	10,924	-0.01***	-0.02***	-0.02***
				(0.005)	(0.005)	(0.007)
Cumulation: ASEAN	0.72	0.39	36,857	0.27***	0.26***	0.22***
				(0.065)	(0.055)	(0.049)
Cumulation: WAEMU	0.50	0.49	634	0.09**	0.10**	0.08**
				(0.045)	(0.042)	(0.037)
Cumulation: SADC	0.46	0.48	990	0.18***	0.19***	0.15***
				(0.032)	(0.033)	(0.022)

Notes: N=195,582. The sample of 68 country is used. The regressions include all the main regressors from Table 5, as well as country, product group (at the HS 2-digit level) and year fixed effects. Robust standard errors in parentheses are clustered at the HS 8-digit level. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Table 7: Degree of processing

	Utilization Rate			Regression Results		
	Mean	St Dev	N of Obs	OLS	Tobit	F.Logit
Primary products	0.74	0.40	30,145			
Semi-manufactures	0.70	0.41	62,059	0.006	-0.023***	0.010
				(0.011)	(0.008)	(0.015)
Manufactures: Other	0.66	0.42	50,182	0.006	-0.023***	0.012
				(0.012)	(0.008)	(0.016)
Manufactures: Textiles	0.64	0.42	3,230	0.069**	0.068***	0.097***
				(0.031)	(0.026)	(0.032)
Manufactures: Clothing	0.56	0.42	3,595	-0.097**	-0.130***	-0.107**
				(0.041)	(0.015)	(0.051)
Manufactures: Machinery	0.55	0.44	46,371	-0.073***	-0.082***	-0.071**
				(0.025)	(0.012)	(0.0288)

Notes: N=195,582. The sample of 68 country is used. The regressions include all the main regressors from Table 5, as well as country, product group (at the HS 2-digit level) and year fixed effects. Robust standard errors in parentheses are clustered at the HS 8-digit level. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Table 8: Robustness Checks

	IV	Ad valorem tariffs: OLS	Related party :OLS
	(1)	(2)	(3)
Preference margin	1.04***	1.12***	1.17***
	(0.160)	(0.201)	(0.232)
Local content share	0.30***	0.31***	0.16***
	(0.031)	(0.030)	(0.035)
Remoteness	0.0002***	0.0002***	6.30e-05
	(2.45e-05)	(2.49e-05)	(4.58e-05)
Primary products	0.03**	0.02	0.03**
	(0.016)	(0.012)	(0.014)
Log exports	0.015***	0.029***	0.027***
	(0.003)	(0.001)	(0.001)
Other program	-0.05***	-0.06***	-0.08***
	(0.008)	(0.007)	(0.011)
Related imports share			-0.11***
			(0.009)
Threshold pref. margin (%)	6.4	5.6	5.6
Number of Observations	89,593	91,917	53,632

Notes: The sample of 11 countries is used. The regressions include country, product group (at the HS 2-digit level) and year fixed effects. Robust standard errors in parentheses are clustered at the HS 8-digit level. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.