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The Dark Side of the Generalized System of Preferences

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Abstract

The Generalized System of Preferences (GSP) was established to promote the exports of low-income countries to industrialized countries in order to support their economic growth and development. However, the design of these schemes is rather complex and the effects of GSP have been found to be controversial. While previous studies solely analyzed preferential agreements of individual granting countries separately, implying a one-sided perspective, we take a general view and investigate the overall and dynamic effects common to the various GSP schemes in order to provide generalized recommendations for economic policy. In our empirical analysis, based on an extensive dataset covering most of world trade, we find that GSP tends to foster developing countries' exports in the short-run, but hampers them in the long-run. Also, GSP granting countries are able to promote their own exports initially, while in the long-run their exports decrease. Economically advanced GSP recipients

are more likely to benefit from GSP than less advanced countries. Taken together, GSP does not seem to be a suitable instrument to promote sustainable economic growth and development of low-income countries.

JEL: C13, C23, F13, F55

Keywords: GATT, WTO, GSP, trade, gravity model, regression.

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1 Motivation

The Generalized System of Preferences (GSP) was established to promote exports of low-income countries to industrialized countries in order to facilitate their economic growth and development. Under GSP, developed countries offer reduced or zero tariff rates for selected products originating from developing countries. In addition, least developed countries receive further preferential treatment for a wide range of products.[1] During the 1970s, the first GSP schemes were granted to low-income countries. In the meantime, GSP programs are omnipresent with around 40 industrialized countries granting and over 200 states and territories receiving import privileges.[2] Recently, the WTO has re-emphasized that "Aid for Trade" and preferential treatment are the adequate concepts to prepare developing countries for after the crisis (Lamy, 2009).

The complexity of GSP rules and its implementation in practice has long been criticized as being potentially counterproductive (see e. g. Hoekman and Özden, 2005, Dowlah, 2008). More specifically, there exist a number of potential drawbacks which can endanger the trade increasing effects of GSP. First, to be eligible for GSP, companies have to comply with complex *rules of origin* (RoO) which induce costs for administrative procedures and specific technical requirements.[3] Since the various GSP granting countries demand different RoO, the corresponding costs for the exporters can be prohibitively high.[4] Secondly, GSP recipients' *preference*

[1] Note that we use the general term GSP to subsume various kinds of non-reciprocal preferential trading schemes.

[2] See UNCTAD (2008).

[3] See Brenton and Manchin (2007), UNCTAD (2003), Carrère and de Melo (2006), and Dowlah (2008).

[4] For instance, Anson et al. (2005) estimate the costs of compliance with RoO in the North American Free Trade Agreement (NAFTA) at 6%. UNCTAD (2003) argues that compliance costs

margins erode over time mainly due to the continuous multilateral trade liberalization under the GATT/WTO which reduces the competitive advantage vis-à-vis non-GSP countries.[5] The proliferation of regional trade agreements – as a competing form of preferential trade arrangement – can also lead to trade diversion away from GSP receiving countries and thus to declining preference margins. Thirdly, GSP donor countries typically implement various *side conditions* mainly related to human rights and labor conditions which are often more restrictive than internationally recognized core labor rights.[6] Panagariya (2003) as well as Grossman and Sykes (2005) conclude that by implementing such side conditions donor countries de facto introduce a substantial element of reciprocity into GSP. Fourthly, based on specified criteria, a country or specific products can be *excluded* (ex ante) or *graduated* (ex post) from GSP coverage, which might be relevant for goods in which GSP receiving countries have a comparative advantage, and are thus sensitive to the donor countries' import industry.[7] For instance, Panagariya (2003) and Grossman and Sykes (2005) point out that textiles and apparel as well as selected agricultural goods are completely excluded from GSP schemes of the European Union and the US. Fifthly, GSP receiving countries permanently face a considerable degree of *uncertainty* since GSP schemes can be changed or even terminated ad hoc by altering the requirements of the schemes. As GSP has no reciprocal binding, this can be done unilaterally by the granting countries.[8] Terminating a GSP scheme at short

may generally be higher in developing countries than in developed economies due to the lack of administrative and industrial capacities.

[5] See Baldwin and Murray (1977), Cooper (2006), Alexandraki and Lankes (2004), and Reynolds (2005).

[6] See Compa and Vogt (2005).

[7] See Panagariya (2002), Reynolds (2005), and Romalis (2003).

[8] See Keck and Low (2006), Özden and Reinhardt (2005), and Dowlah (2008).

notice could leave recipients with overcapacity and a production structure which might not reflect their particular comparative advantages under free trade.[9] Taken together, this might lead to the conclusion that GSP receiving countries might have difficulties to exploit economies of scale and lack the necessary investments in their competitive industries. As a consequence, these GSP restrictions can cause distortions in the economic structure and trading patterns of GSP receiving countries in the long-run.[10]

Additionally, GSP schemes are criticized for being not so much an instrument to promote the exports of developing countries but more the means to improve the trade position of industrialized countries (see e. g. Mattoo et al., 2003). An example for this so-called opportunistic behavior is the specific design of RoO criteria. As a commonly used condition, local content rules require a minimum value-added within the exporting country.[11] GSP schemes typically allow so-called partial cumulation of local content which means that intermediate input factors imported from the GSP granting country can also be included in the local value-added required by RoO. As a result, GSP receiving countries are likely to import intermediate inputs from the GSP granting country which thereby also benefits from GSP.[12]

While low-income countries are the main target of GSP schemes, higher-income countries might be better able to deal with the specific design of GSP. With a higher degree of industrialization, better infrastructure and more advanced administrative capacities, countries are better able to comply with RoO and specific side conditions.

[9] See Keck and Low (2006) and Panagariya (2003).

[10] See Hoekman and Özden (2005), Panagariya (2003), and Özden and Reinhardt (2005).

[11] See Panagariya (2003). He also notes that this is a rather strict criterion for very poor countries that lack administrative, production and resource capacities.

[12] See Bhattacharya and Rahman (2000) and Mattoo et al. (2003).

These countries might also be less dependent on GSP exports and less affected by the potential negative effects of GSP.

The impact of GSP has been investigated in several case studies,[13] and a number of papers based on a gravity framework which we also apply in this study. Gamberoni (2007) analyzes the impact of various preferential trading schemes offered by the European Union (EU). She finds that the traditional GSP as well as the regime to combat drug production seem to promote beneficiaries' export diversification while the preferences for African Caribbean & Pacific (ACP) countries tend to apply an anti-diversification effect. Regarding GSP for least developed countries, the recipients' export structure remains unaffected. Lederman and Özden (2007) investigate the impact of US preferential arrangements, such as the GSP, Caribbean Basin Initiative (CBI), Andean Trade Promotion Act (ATPA), and the African Growth and Opportunity Act (AGOA). The authors find that beneficiaries' exports profit substantially from preferential agreements, except GSP which tends to impede the exports of GSP receiving countries. Persson and Wilhelmsson (2007) estimate the effects of EU trade preferences. The results indicate that preferences for African Caribbean & Pacific (ACP) and Mediterranean countries generally increase developing countries' exports while the traditional GSP is found to be inefficient. Nilsson (2002) compares the effects of EU's trade preferences under the Lomé Convention and the GSP on the exports of developing countries. Generally, the results indicate significantly positive effects of both preferential trading schemes. Langhammer

[13] See Baldwin and Murray (1977), Grossman (1982), Pelzman (1983), Sapir and Lundberg (1984), Laird and Sapir (1987), Brown (1989), MacPhee and Rosenbaum (1989 a, 1989b), Whalley (1990), MacPhee and Oguledo (1991), Mattoo et al. (2003), Romalis (2003), Özden and Reinhardt (2005), Reynolds (2005), and Dowlah (2008).

(1983) and Sapir (1981) assess the impact of the European Economic Community (EEC) GSP on the exports of selected recipients. While Langhammer (1983) finds a significantly negative effect of EEC's GSP, Sapir (1981) finds significantly positive effects of EEC's GSP in two of eight specifications with the remaining coefficients being insignificant.

All of these studies investigate only specific GSP schemes of selected countries and regions, typically the European Union or the US, implying several drawbacks: (i) they do not address the effect which is common to the various GSP schemes, (ii) they do not account for possible interrelations between GSP schemes, (iii) and they do not investigate the dynamic impact of GSP schemes. Overall, these studies report rather mixed and sometimes conflicting results regarding the efficiency of the various preferential trading schemes.

The purpose of this study is to provide a generalized perspective of GSP. (i) We investigate the common effect of GSP schemes based on a comprehensive data set which includes all preferential trading schemes notified to UNCTAD.[14] (ii) Thereby, we can account for the interrelation between the different preferential trading schemes. Additionally, (iii) we study the dynamic impact of GSP. Our analysis can be understood as evaluating a large field experiment: we examine the average performance of a large number of GSP schemes which have been "tested" in practice over the past four decades. In this line, we employ a large data set that covers most of world trade (bilateral trade between 184 countries) and encompasses six decades (1953-

[14]We incorporate traditional GSP, African, Caribbean & Pacific trade preferences, African Growth and Opportunity Act, Everything but Arms and preferential concessions for least developed countries, and subsume these various forms of preferential treatment under the general term GSP since all these different forms of preferential treatment have a typical common design – namely to grant non-reciprocal and preferential import concessions.

2006). We estimate a gravity model using Poisson maximum likelihood estimation controlling for the extensive and intensive margin of trade.

We organize our empirical analysis according to the hypotheses derived from the discussion of the literature and consider and test the following five hypotheses regarding the efficiency of the GSP.

Hypothesis 1. GSP fosters the exports of developing countries in the short-run.

Hypothesis 2. Exports of developing countries are negatively affected in the long-run due to the complexity of GSP designs and the implied disincentives for the GSP recipients' economic and trading structure.

Hypothesis 3. GSP schemes also enhance the exports of GSP granting countries in the short-run.

Hypothesis 4. Exports of GSP granting countries are negatively affected in the long-run due to the distortion of the economic structure of GSP recipients.

Hypothesis 5. GSP recipients with an advanced development stage benefit from GSP.

Overall, we find a negative effect of GSP on the exports of GSP receiving countries. More specifically, GSP fosters developing countries' exports in the short-run (H1), while the effect is significantly negative in the longer run possibly due to GSP related distortions in the economic structure of GSP recipients (H2). The exports of GSP granting countries are likely to increase in the short-run, indicating opportunistic behavior of industrialized countries (H3). However, exports of granting countries also decrease in the long-run, possibly due to the deterioration of the economic structure of GSP receiving countries (H4). GSP receiving countries

with an advanced development stage are more likely to benefit from GSP (H5). Our empirical results indicate that GSP type trade preferences are not an appropriate instrument to promote the economic development of low-income countries, but might cause negative distortions of their economic structure. Taken together, our results robustly show that the approach taken by UNCTAD (1999, 2003) to implement incremental improvements is not conclusive. By contrast, low-income countries should rather refrain from non-reciprocal preferential treatment and engage in reciprocal arrangements.

2 Empirical Model

We base our analysis on a standard gravity model of bilateral trade. The basic model associates trade flows with the distance of the trading partners and their income, represented by GDP. This standard model has been supplemented by additional independent variables such as cultural, geographic, and historical factors to control for other "natural" sources of trade. These determinants also include trade agreements like GATT/WTO or GSP.[15] In formal terms, the model is given by

$$\text{Log bilateral exports}_{ijt} = \tag{1}$$

$\alpha + \beta_1$ both partners inside the GATT/WTO$_{ijt} + \beta_2$ importer in GATT/WTO$_{ijt} + \beta_3$ exporter in GATT/WTO$_{ijt} + \beta_4$ GSP-recipient-exports$_{ijt} + \beta_5$ GSP-donor-exports$_{ijt} +$ β_6 both partners inside RTA$_{ijt} + \beta_7$ importer in RTA$_{ijt} + \beta_8$ exporter in RTA$_{ijt} + \beta_9$ log

[15] Regarding the theoretical foundation of the gravity model see among others Anderson (1979), Bergstrand (1985), Helpman and Krugman (1985), Deardorff (1998), and Anderson and van Wincoop (2003).

$\text{GDP}_{it} + \beta_{10} \log \text{GDP}_{jt} + \beta_{11} \log \text{GDPPC}_{it} + \beta_{12} \log \text{GDPPC}_{jt} + \beta_{13} \log \text{RER}_{ijt} + \beta_{14}$ currently colonized$_{ijt} + \gamma_1$ ever colony$_{ij} + \gamma_2$ common country$_{ij} + \gamma_3 \log$ distance$_{ij} + \gamma_4$ $\log$ area$_i + \gamma_5 \log$ area$_j + \gamma_6$ contiguity$_{ij} + \gamma_7$ landlocked$_{ij} + \gamma_8$ island$_{ij} + \gamma_9$ common language$_{ij}$ $+ \lambda_{ij} + \delta_t + \varepsilon_{ijt}$

where i and j denote the importing and exporting country, respectively, and t depicts time.

While the β-variables account for effects of trade policy and income, i. e. time-varying effects, the γ-variables represent deterministic country or country-pair characteristics which are time-invariant. The variable *both partners inside the GATT/-WTO* is a binary dummy variable that is defined as one if both trading partners participate in GATT/WTO in year t, and zero otherwise. Accordingly, *importer/exporter in GATT/WTO* equals to one if only the importing/exporting country is a GATT/WTO member. Note that *both partners inside the GATT/WTO* and *importer/exporter in GATT/WTO* are defined to be mutually exclusive. *GSP-recipient-exports* accounts for a bilateral relationship under the Generalized System of Preferences and is defined as one if the exporting country is granted the GSP scheme from the importing country. This variable focuses on the exports of GSP receiving countries. *GSP-donor-exports* equals to one if the exporting country grants the GSP scheme to the importing country, i. e. the variable focuses on the exports of GSP granting countries. *Both partners inside RTA* is a binary dummy variable that equals to one if both trading partners belong to the same regional trade agreement. The dummy *importer/exporter in RTA* is one for a pair of trading countries if only the importing/exporting country participates in a regional trade agreement. Note that *both partners inside RTA* and *importer/exporter in RTA* are defined to be

mutually exclusive. *Log GDP* represents the economic size of the trading partners measured as GDP in real terms, while *log GDPPC* denotes real GDP per capita which can be interpreted as the capital-labour ratio (see Egger, 2002). *Log RER* depicts the logarithm of the bilateral real exchange rate defined as the ratio between foreign to domestic currency. *Currently colonized* is defined as one if a country is currently colonized by its trading partner.

The *ever colony* dummy is one if a country has formerly been the colony of its trading partner, while *common country* refers to trading partners that have previously formed a nation but have now separated into different states, e. g. the former U.S.S.R or the Socialist Federal Republic of Yugoslavia. *Log distance* depicts the great circle distance between i and j, while *log area* is the geographical size of a country measured in square kilometers. *Contiguity* equals to one if the trading partners share a common border. *Landlocked* depicts the number of landlocked nations in a pair (0, 1, or 2), while *island* denotes the number of island states in a pair (0, 1, or 2). *Common language* represents a binary dummy variable that is one if both countries share the same official language. Finally, we include a common intercept a, country-pair-specific effects λ_{ij}, time effects δ_t, and a standard error term ε_{ijt}, which is normally distributed with zero mean and constant variance.

2.1 Econometric Issues

Since comprehensive trade data sets are typically characterized by numerous zero trade flows, we have to take them into account to avoid biased estimates.[16] As the traditional log-linearization of the gravity model does not account for zero trade

[16] The current dataset comprises about 46% zero values.

flows (i. e. $\ln(t_{ij})$=ln(0)=n.d.), we follow Verbeek (2008)[17] and apply the Poisson maximum likelihood (PML) estimator.[18] The (expected) trade flows can then be modeled using an exponential function:

$$E(y_{ijt} \mid x_{ijt}) = \exp(x'_{ijt}\beta), \tag{2}$$

where y_{ijt} represents bilateral trade flows and x_{ijt} denotes a vector of exogenous variables. The non-negativity of the exponential function ensures that the predicted values for y_{ijt} are also non-negative.[19] If the assumption of a Poisson distribution holds, estimates of β using PML are consistent, asymptotically efficient and normal. If the assumption of a Poisson distribution does not hold, the estimates of β are consistent and asymptotically normal as long as the exponential function in equation 2 is correctly specified. As this approach does not require a log-linearization of the variables, the problem of zero trade flows can be avoided.

2.2 Data

Since the direction of trade flows matters in the application of gravity models, we use unidirectional export flows instead of average trade.[20] Only this approach makes it possible to adequately control for asymmetric effects of reciprocal trade agreements,

[17] While Verbeek (2008) provides an overview of the Poisson Maximum Likelihood estimation, Cameron and Trivedi (1998) and Winkelmann (2008) discuss the econometric analysis of count data more comprehensively.

[18] Regarding the application of gravity models, several authors propose the estimation of the gravity model in its genuine multiplicative, non-linear form using Poisson maximum likelihood estimation (see Henderson and Millimet, 2008, Westerlund and Wilhelmsson, 2009, Siliverstovs and Schumacher, 2009, Santos Silva and Tenreyro, 2006, or Martínez-Zarzoso et al., 2006).

[19] According to Davidson and MacKinnon (2004), the index function $x'_{ijt}\beta$ need not be linear either.

[20] See e. g. Bergstrand, 1985, Anderson and van Wincoop, 2003, or Baldwin and Taglioni, 2006.

like GATT/WTO, or unilateral trade agreements, as the GSP.

We consider the GSP effects on aggregated exports, in contrast to studies such as Gamberoni (2007) and Lederman and Özden (2007). This point is of major concern since the literature suggests that GSP might not only affect GSP-covered products but also induce considerable externalities on non-covered exports.

Our sample covers 184 countries over the period from 1953 to 2006 with annual data.[21] Data on GDP, population, exchange rates and consumer price indexes are merged from several sources. Nominal GDP as well as nominal exports are denoted in current US-$ and have been deflated by the US consumer price index.[22]

3 General Effects

Table 5 shows the results of the core regressions together with various test statistics. Based on the econometric discussion above and several statistical tests, the fixed effects Poisson maximum likelihood (FE-PML) model emerges as our preferred estimation technique. In particular, it accounts for zero trade flows, in contrast to traditional approaches like the fixed or random effects model estimated with OLS. Additionally, the Hausman-test indicates that the fixed effects PML model should be preferred to the random effects PML estimation. In table 5 we have furthermore included the results of several other approaches used in the literature – the random effects Poisson maximum likelihood (RE-PML) model which is rejected by the Hausman-test, and the traditional log-linear regression models denoted as fixed effects (FE-OLS) and random effects (RE-OLS) regression, which both do not account

[21] The list of countries as well as data sources are reported in tables 1 and 2.

[22] The summary statistics of the variables as well as the correlation matrix of the independent parameters are shown in tables 3 and 4.

for zero trade flows.[23]

[Table 5 about here.]

The results of our preferred FE-PML regression indicate that the Generalized System of Preferences negatively affects the exports of GSP receiving countries (GSP-recipient-exports), whereas the exports of granting countries (GSP-donor-exports) are stimulated. While the coefficients are rather small (-0.04 and 0.01, respectively), they are significantly different from zero. These empirical results generally seem to support the hypothesis at the 1% significance level that developing countries' exports are hampered by GSP (H1). These findings obviously contradict the official goals of GSP programs, namely to accelerate developing countries' growth and to promote industrialization by increasing their exports (see UNCTAD, 2008). Regarding the exports of GSP granting countries, our estimation results support the theoretical literature in its conclusion that the design of GSP programs is on average not to the advantage of receiving countries but instead leaves enough space to serve the granting countries' (mercantilist) purposes. In particular, the results suggest an opportunistic behavior of industrialized countries which use GSP programs not to foster developing countries' exports but to promote their own exports (H3).[24]

In contrast, general trade liberalization in the GATT/WTO framework substantially promotes trade, a result in line with other studies on GATT/WTO (see e. g. Herz and Wagner, 2007, Tomz et al., 2007, or Liu, 2009). If both trading

[23] We account for possible problems of serial correlation in section 4.

[24] Since multilateral trade liberalization under GATT/WTO and the proliferation of regional trade agreements might limit the prospect of preferential tariff treatment, we tested whether the statistical impact of GSP schemes depends on other international trade agreements, such as GATT/WTO and regional trade agreements by omitting each of the variables from the regression. However, the results differ only marginally from the benchmark regression (see table 5) and do not change our basic findings.

partners are GATT/WTO members, bilateral trade flows increase by about 86% (exp(0.62)-1). Regarding the situation in which only one trading partner participates in GATT/WTO, trade diversion might occur. But even non-members profit from the multilateral trading system (see Importer in GATT/WTO and Exporter in GATT/WTO) suggesting a positive public goods effect of GATT/WTO (see Subramanian and Wei, 2007). Regional trade agreements have ambiguous effects, substantially creating trade among members, by about 40%, while simultaneously causing significant trade diversion vis-à-vis non-members, i. e. one-sided membership in regional trade agreements diverts 2% (11%) of imports (exports).

The remaining time-variant control variables are generally in line with expectations. The economic size of the trading partners substantially contributes to bilateral trade. Since both coefficients, i. e. importer's and exporter's GDP, are less than one, trade openness does not increase equally with economic size, implying that economically small countries are relatively more open to trade than large countries. Capital-intensive production, depicted by GDP per capita, also stimulates trade, as a high capital-labor ratio might reflect a more differentiated economic structure and better trading opportunities. As expected, a real devaluation of the importing country's currency has a positive impact on exports, while current colonial relationships increase contemporaneous trade by about 82%. The effects of the time-invariant determinants, which can be derived from the RE-PML estimation, also meet the expectations. For instance, greater distance is negatively associated with bilateral trade with the coefficient of less than one implying that trade costs increase less than proportionally in distance. Table 5 also provides further regression results (RE-PML, FE-OLS, and RE-OLS) that confirm the robustness of the GSP

effect regarding recipient countries' exports. In particular, the impact of GSP on recipients' exports is significantly negative across the various regressions, while the coefficients associated with the exports of GSP donor countries are either insignificant or significantly positive.

4 Dynamic Effects

The effects of a GSP agreement are likely to evolve over time as the affected companies and agents adjust their behavior. We investigate whether GSP has a significantly positive effect on the exports of developing countries in the short-run (H1) and whether exports of GSP receiving countries deteriorate over time (H2). In addition, we study the impact of GSP on the exports of GSP granting countries which is supposed to be positive in the short-run, due to the opportunistic behavior of industrialized countries (H3), but are also likely to be negative in the long-run, due to the distorting effects on GSP recipients' economic structure (H4).

In a first step, we examine the general effects of GSP in the long-run on the exports of both GSP receiving (H2) and granting countries (H4). Table 6 reports the results of sub-sample panel regressions which consider only observations of 5 and 10 year intervals, respectively. This approach reduces the problem of serial correlation and indicates the long-term effects of variation in the variables.

[Table 6 about here.]

Regarding the 5 year interval, the coefficients are generally similar to the results of the benchmark regression. However, the point estimates of GSP effects somehow

differ. While exports of GSP receiving countries (GSP-recipient-exports) are not affected, the exports of GSP donor countries (GSP-donor-exports) increase (H3).

The results based on the 10 year intervals differ significantly from the baseline regression. The point estimates of GSP indicate a substantial negative effect on GSP receiving as well as donor countries' exports. The negative impact of GSP on the exports of developing countries (GSP-recipient-exports) is distinctly stronger compared to the 5 year interval results, implying that exports are impeded by -22% (exp(-0.25)-1) in the long-run. The results indicate that the preferential tariff treatment negatively affects the economic structure of GSP receiving countries in the long-run.[25] The design of GSP schemes, which among other creates uncertainty and adverse incentives due to the possible ad hoc termination of GSP programs, negatively affects the competitive industries in a sustaining negative way which results in reduced export flows (H2). Also, the previously positive impact on exports of GSP granting countries (GSP-donor-exports) turns significantly negative, reducing exports by -26% (exp(-0.30)-1) in the long-term. The results suggest that the distortion of the economic structure of GSP receiving countries in the long-run also negatively affects the exports of GSP granting countries (H4). By contrast, the larger coefficients of the GATT/WTO dummies indicate that the trade increasing impact of GATT/WTO strengthens over time. The coefficients of other control variables are only marginally affected.

The estimations reported in table 7 examine the dynamic effects of GSP schemes in more detail. We introduce a dynamic GSP variable which complements the initial

[25] Gamberoni (2007) finds – in an empirical analysis – that EU unilateral trade preferences for African Caribbean and Pacific (ACP) countries tend to apply an anti-diversification effect on the recipients' export structure.

GSP variables and is defined by the number of years two countries have been in a GSP relationship (denoted as GSP-recipient-exports-dyn and GSP-donor-exports-dyn, respectively).

[Table 7 about here.]

The results indicate that the initial GSP effect is significantly positive for the exports of both receiving and granting countries, while the dynamic GSP effect is significantly negative. In particular, the exports of GSP recipients initially increase by 21% (H1), but this effect is reduced by -2% for each year the GSP program being implemented (H2). Taken together, the results indicate that the initial impact of GSP seems to be trade enhancing, while the long-run effect is trade impeding with the break even point being reached after around 10 years of GSP relationship. The exports of GSP granting countries also initially increase by 19% (H3), but this effect is reduced by -1% for each year of GSP (H4).

To further investigate the dynamic effects, table 8 reports the results of a regression which estimates the impact of GSP according to the minimum duration of GSP relation, i. e. we investigate the effects of GSP that last for at least 1 year, 10 years, 20 years, and 30 years.[26]

[Table 8 about here.]

The results indicate that GSP significantly promotes the exports of GSP receiving countries (GSP-recipient-exports) if the scheme exists for less than a decade

[26]Note that about 30% of preferential schemes lasted at least for 1 year and less than 10 years, 15% for 10 years and less than 20 years, 20% for 20 years and less than 30 years, and 30% for at least 30 years. Since the first GSP schemes were established in the 1970s, no such scheme lasted for more than 40 years.

(H1). This GSP effect turns significantly negative for relationships lasting up to two decades (H3). These findings are similar to the results reported in table 7 where we find an initially positive but diminishing GSP effect which reaches its break even point after approximately 10 years. For GSP membership of up to three decades, the effect of GSP on developing countries' exports is insignificant, while for more than 30 years exports are negatively affected by -37% (exp(-0.46)-1).[27] The exports of GSP granting countries to GSP recipients (GSP-donor-exports) significantly benefit at first (H3). The effect strengthens in the subsequent decade of the GSP relation, but decreases sharply if the scheme exists for more than 20 years. These findings are also similar to the results shown in table 7 where the exports of GSP granting countries are initially fostered but decreasing over time reaching their break even point after about 20 years. If the program lasts for more than 30 years, the impact on granting countries' exports even turns significantly negative (H4).

Taken together, the results indicate that four of our hypotheses seem to hold true. In particular, GSP schemes initially, i. e. in the short-run, seem to promote the exports of GSP receiving countries (H1), while over time the impact is substantially negative, possibly due to increasing distortions in the economic structure of GSP recipients caused by biased economic incentives (H2). Additionally, we find that the exports of GSP granting countries are also promoted initially which suggests that industrialized countries serve their mercantilist purposes by using GSP relations

[27]The causality on which our interpretation of the results is based on can also be reversed. Then, GSP recipients with good economic performance receive preferential tariff treatment only for a limited time period, while GSP recipients that perform badly receive extended preferential treatment. Even if we accepted this interpretation, there is still a large number of instances where GSP has not been effective, as about 70% of GSP recipients receive preferential treatment for more than 10 years. However, our initial interpretation of long-run deteriorations of the recipients' economic structure applies more to the conclusions of the previously discussed literature.

(H3). However, their exports dramatically deteriorate in the long-run possibly due to the increasing distortion of the GSP recipients' economic structure (H4).

5 GSP effects according to countries' income, geographic location and specific GSP schemes

This section analyzes whether the GSP effects differ with the income level of GSP recipients or their geographic location. In addition, we investigate the GSP effects of specific GSP granting countries.

Income Effects Goal of the GSP is to promote the exports of developing and in particular least developed countries. However, hypothesis 5 suggests that countries need a sufficient degree of infrastructure and economic diversity if they are to profit from GSP. Thus, we examine the impact of GSP on the exports of GSP receiving countries for various income levels (see table 9). Following the World Bank (2007) classification, we distinguish between low-income countries (LIC), lower-middle-income (LMIC), upper-middle-income (UMIC), and high-income countries (HIC).[28]

[Table 9 about here.]

[28]It seems to be counterintuitive that high income countries are also among GSP beneficiaries since, by definition, GSP programs are offered by industrialized countries that grant preferred import duties to selected products from developing and least developed countries. First, several countries classified as high income countries by the World Bank (2007) formerly were GSP beneficiaries. This applies to Greece, South Korea, Portugal, Puerto Rico, and Spain. Second, the scope of GSP to encourage exports from developing countries has been extended also to the exports of high income countries, such as Aruba, Bahamas, Bahrain, Bermuda, Brunei, Cyprus, French Polynesia, Greenland, Guam, Hong Kong, Israel, Kuwait, Macao, Malta, Netherlands Antilles, New Caledonia, Qatar, Slovenia, and United Arab Emirates.

Regarding recipients' exports (GSP-recipient-exports), the results indicate a significantly trade impeding effect of GSP on the exports of low-, lower-middle-, and upper-middle-income countries. By contrast, the exports of high-income GSP recipients are enhanced by about 23% indicating that it is mainly the high-income countries that actually profit from GSP relationships, which is probably due to their degree of industrialization (H5). According to this, countries with a more advanced infrastructure and economic diversification might be better able to comply with RoO and less dependent on GSP exports which marginalized the implications of product graduation or the persistent uncertainty on their economic structure. However, this finding stays in sharp contrast to the genuine purpose of GSP to promote the exports of primarily less favored countries.[29]

Concerning the exports of GSP granting countries (GSP-donor-exports), the results indicate that exports to low-income countries are significantly reduced. GSP leaves exports to low-middle-income countries widely unaffected, exports to upper-middle-income countries suffer marginally. By contrast, the results indicate that exports of GSP granting countries to high-income countries benefit which might support the findings from above that a certain development stage of GSP recipients is necessary for trade to prosper.

[29] Using the recent classification from the World Bank (2007) to define income classes is somehow crucial. While we argue that an advanced development stage is a necessary precondition for the ability to benefit from GSP, the results could also be interpreted that various countries (formerly belonging to whatever income class) did benefit from GSP finally reaching high-income level, however, *independently* from their initial development stage.

Two arguments address this interpretation. Firstly, according to its genuine purpose, GSP should enhance the industrialization of developing countries implying that those are to graduate if this goal is achieved, in particular if a high-income level is reached. By contrast, GSP has been extended also to high-income economies, like Bahamas or Bahrain. Secondly, many high-income recipients have already been among the most advanced GSP recipients in the 1970s.

Regional Impact This section focuses on the impact of GSP with respect to recipients' geographical location (see table 10). In particular, we analyze whether there are especially favored or disadvantaged regions with regard to GSP receiving countries. Following the World Bank (2007), we distinguish between East-Asia & Pacific (EAP), Europe & Central Asia (ECA), Latin America & Caribbean region (LatCa), Middle East & North Africa (MENA), South Asia (SA), North America (NA) and Sub-Saharan Africa (SSA). Most GSP receiving countries are located in the Latin America & Caribbean and in the Sub-Saharan African region. The region with the smallest number of GSP receiving countries is North America, with Mexico being the only recipient.[30]

[Table 10 about here.]

The results (see table 10) indicate that there are GSP relations that are characterized by win-win situations. In particular, GSP recipients located in East-Asia & Pacific and Europe & Central Asia on average profit from GSP schemes due to higher exports (GSP-recipient-exports). Also, the exports of GSP granting countries are enhanced (GSP-donor-exports) which supports the hypothesis that GSP granting countries' exports are promoted due to GSP relationships. By contrast, there are also GSP relations which can be characterized as loss-loss situations. GSP receiving countries located in Latin America & Caribbean, Middle East & North Africa, and South Asia typically suffer from GSP, while the exports of GSP granting countries suffer as well which refers to the perception that the distorting effects on GSP receiving countries also result in the decline of GSP granting countries' ex-

[30] The control variables, although not reported due to a better readability of the results, are not significantly different from previous results.

ports. Interestingly, Mexico as the only North American recipient is not affected by GSP, which might possibly be due to strong economic ties with the US and Canada. Finally, GSP relations to Sub-Saharan African countries can be characterized as loss-win situations. In particular, the exports of Sub-Saharan African countries are impeded by GSP while donor countries' exports to Sub-Saharan African countries are enhanced by GSP. These effects characterize an unusual situation in which industrialized countries increase their exports through GSP relations, while the exports of GSP receiving countries even decrease. Taken together, our findings suggest that GSP de facto are in strong contrast to the official goal of promoting the exports of low-income countries as the regions where most of the poor GSP receiving countries are located, namely Latin America & Caribbean and in Sub-Saharan Africa, are associated with a significantly impeding effect on the GSP recipients' exports.

Specific GSP schemes In the next step, we investigate whether GSP differ with respect to the donor countries, i. e. we analyze the schemes of important GSP donor countries, such as EU, Norway, Japan, Australia, Switzerland, the US, Canada, New Zealand, Turkey, and the remaining countries (denoted as Remaining) (see table 11). Overall, the results for the different countries are mixed.[31]

[Table 11 about here.]

The programs of the EU and Norway stand out for their negative effect on trade in both directions, i. e. the schemes have a significantly negative impact on recipients' exports (GSP-recipient-exports) as well as on the exports of the granting

[31] The control variables, which are not reported due to a better readability of the results, are in line with previous results.

countries (GSP-donor-exports). Regarding the impact of EU schemes, our results are in line with Langhammer (1983) and Sapir (1981) who investigate the impact of GSP schemes of the European Economic Community, the predecessor of the EU. While Sapir (1981) finds generally insignificant results, Langhammer (1983) estimates a significantly negative impact of EEC's GSP schemes. By contrast, our results contradict the findings of Persson and Wilhelmsson (2007) and Nilsson (2002) who find a generally export enhancing effect of EU preferential trade programs. Japanese and Australian exports profit from GSP programs while exports of GSP recipients to these two countries suffer. These two donors are very successful in protecting their import competing industries while at the same time are very effective in promoting their own exports. Swiss GSP programs do generally not affect neither the exports of GSP receiving countries nor Swiss exports to these countries. US and Canadian GSP schemes promote recipients' exports, while their own exports are hampered. This finding is in line with Lederman and Özden (2007) who analyze the impact of US trade preferences finding that recipients' exports generally profit from preferential agreements although the effects of the programs decrease when the authors additionally control for geopolitical interests of the US. GSP schemes of New Zealand and Turkey substantially foster trade flows in both directions, while for the group of remaining countries we observe a positive effect for the exports of recipient countries.

Taken together, the results are rather mixed. In particular, we find GSP schemes that generally deter the exports of developing countries pointing out the limited impact of GSP, while there are also GSP schemes that promote the exports of GSP receiving countries. Likewise, there are GSP programs that foster the exports of

GSP granting countries suggesting an opportunistic behavior, while we also find GSP schemes that deter their exports.

6 Conclusion

Officially, the Generalized System of Preferences (GSP) was established to promote economic growth and development of low-income countries by fostering exports to industrialized countries. In contrast to this purpose, we find an overall negative effect of the GSP on the exports of alleged beneficiary countries. While the exports of developing countries are enhanced by GSP in the short-run, the medium- to long-run effect is clearly negative. Furthermore, we find that the exports of GSP granting countries generally increase under GSP in the short-run. This suggests an opportunistic behavior of industrialized countries which use GSP programs not so much as to foster developing countries' exports but to promote their own exports. However, the economic distortions in GSP receiving countries also have a negative effect on the exports of GSP granting countries in the long-run. Interestingly, more developed GSP recipients with a more advanced infrastructure and broader economic diversity can profit from preferential arrangements. The regional analysis indicates that exports of recipients located in East-Asia & Pacific as well as Europe & Central Asia typically gain from GSP while exports of recipients located in other regions deteriorate. Regarding the GSP schemes of the EU, Japan and the US, which account for over two thirds of the total value of GSP-covered imports, we find that EU and Japanese preferential treatment impede recipients' exports while US preferential programs foster recipients' exports, however, only marginally.

These results are in accordance with the view of non-reciprocal preferences as a "Faustian bargain" (World Bank, 1987). Following this political-economy interpretation, the design of GSP leads to distortions in the economic structure of developing countries. As a consequence, the official wording of GSP recipients as so-called "beneficiaries" does not seem to be appropriate and GSP generally does not offer the "most preferred" status to developing trading partners as has been pointed out by Hoekman and Özden (2005).

This leaves us with several suggestions. While the first one proposes to improve the design of GSP, we follow the second one which claims a complete abolition of GSP.

As a result of the general criticism of GSP, UNCTAD (1999, 2003) proposes a strategy of incremental improvements. In particular, it recommends that trade preferences should provide stability, i. e. be based on enforceable and durable GSP arrangements that cannot be cancelled ad hoc, cover all products from developing countries, and simplify rules of origin. This might mitigate some of the symptoms, the fundamental problems are likely to remain, however.

In contrast, the majority of authors (for example Özden and Reinhardt, 2005, Panagariya, 2002, 2003) urges to completely abolish non-reciprocal trade preferences. Our comprehensive study provides strong support for this position. Understanding GSP as a field experiment which we evaluate, we can obtain the average effects of GSP schemes. As GSP is found to deteriorate exports of developing countries in the medium- to long-run for a wide variety of countries and regions, it seems unlikely that incremental reforms as recommended by UNCTAD (1999, 2003) could improve the situation. Rather, non-reciprocal arrangements should be replaced by

reciprocal agreements following GATT/WTO rules. Our empirical results clearly indicate that the GATT/WTO approach is a much better way to promote exports of low-income countries. Under reciprocal concessions guided by the GATT/WTO, beneficiary countries can export their goods according to their comparative advantages which should help them to further diversify. Limao and Olarreaga (2006) suggest that trade can still be used as a development tool even under a Most Favored Nations (MFN)-based regime if the importing countries simply subsidize the developing countries' exports. Given the empirical results, the question remains: Why do developing countries participate in GSP if they are likely to lose? Is it the positive short-run effect that dominates the decision to join a GSP scheme? Or are political-economy determinants at work, i. e. specific interest groups that profit from the GSP arrangement, while the country as a whole loses?

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AFGHANISTAN	GAMBIA	NORWAY
ALBANIA	GEORGIA	OMAN
ALGERIA	GERMANY	PAKISTAN
ANGOLA	GHANA	PALAU
ANTIGUA AND BARBUDA	GREECE	PANAMA
ARGENTINA	GRENADA	PAPUA N.GUINEA
ARMENIA	GUATEMALA	PARAGUAY
ARUBA	GUINEA	PERU
AUSTRALIA	GUINEA-BISSAU	PHILIPPINES
AUSTRIA	GUYANA	POLAND
AZERBAIJAN	HAITI	PORTUGAL
BAHAMAS	HONDURAS	QATAR
BAHRAIN	HONG KONG	ROMANIA
BANGLADESH	HUNGARY	RUSSIA
BARBADOS	ICELAND	RWANDA
BELARUS	INDIA	SAMOA
BELGIUM	INDONESIA	SAO TOME & PRINCIPE
BELIZE	IRAN	SAUDI ARABIA
BENIN	IRAQ	SENEGAL
BERMUDA	IRELAND	SERBIA MONTENEGRO
BHUTAN	ISRAEL	SEYCHELLES
BOLIVIA	ITALY	SIERRA LEONE
BOSNIA HERZEGOVINA	JAMAICA	SINGAPORE
BOTSWANA	JAPAN	SLOVAK REPUBLIC
BRAZIL	JORDAN	SLOVENIA
BRUNEI	KAZAKHSTAN	SOLOMON ISLANDS
BULGARIA	KENYA	SOUTH AFRICA
BURKINA FASO	KIRIBATI	SPAIN
BURMA(Myanmar)	KOREA,SOUTH(R)	SRI LANKA
BURUNDI	KUWAIT	ST. KITTS&NEVIS
CAMBODIA	KYRQYZ REPUBLIC	ST.LUCIA
CAMEROON	LAO PEOPLE'S DEM. REP.	ST.VINCENT&GRE
CANADA	LATVIA	SUDAN
CAPE VERDE	LEBANON	SURINAME
CENTRAL AFRICAN REP.	LESOTHO	SWAZILAND
CHAD	LIBERIA	SWEDEN
CHILE	LIBYA	SWITZERLAND
CHINA	LITHUANIA	SYRIA
COLOMBIA	LUXEMBOURG	TAJIKISTAN
COMOROS	MACAO	TANZANIA
CONGO, DEM. REP. OF (ZAIRE)	MACEDONIA	THAILAND
CONGO, REP. OF	MADAGASCAR	TOGO
COSTA RICA	MALAWI	TONGA
COTE D'IVORIE (IVORY COAST)	MALAYSIA	TRINIDAD&TOBAGO
CROATIA	MALDIVES	TUNISIA
CYPRUS	MALI	TURKEY
CZECH REPUBLIC	MALTA	TURKMENISTAN
DENMARK	MAURITANIA	UGANDA
DJIBOUTI	MAURITIUS	UKRAINE
DOMINICA	MEXICO	UNITED ARAB EMIRATES
DOMINICAN REP.	MOLDVA	UNITED KINGDOM
ECUADOR	MONGOLIA	UNITED STATES
EGYPT	MOROCCO	URUGUAY
EL SALVADOR	MOZAMBIQUE	UZBEKISTAN
EQUATORIAL GUINEA	NAMIBIA	VANUATU
ERITREA	NEPAL	VENEZUELA
ESTONIA	NETHERLANDS	VIETNAM
ETHIOPIA	NEW CALEDONIA	YEMEN, REPUBLIC OF
FIJI	NEW ZEALAND	ZAMBIA
FINLAND	NICARAGUA	ZIMBABWE
FRANCE	NIGER	
GABON	NIGERIA	

Table 1: List of Countries.

Variable	**Source**
Bilateral exports	IMF (2007a, 2007b)
Nominal GDP (PPP)	IMF (2008), World Bank (2007), Heston et al. (2006)
Consumer price index (CPI, 2000=100)	IMF (2008), World Bank (2007)
Population	Maddison (2008), IMF (2008), Heston et al. (2006)
GATT/WTO-accession	WTO (2009a, 2009b), Tomz et al. (2007)
GSP programs	UNCTAD (1973-1986, 2001, 2005)
Regional trade agreements	WTO (2009c)
Colonial relationships, common country	CIA (2007)
Nominal exchange rate	IMF (2008)
Geographic distance, area, borders common language, landlocked, island	CEPII (2008)

Table 2: Data Sources.

	Restricted sample (exports>0) 418112 observations				Full sample (exports≥0) 776519 observations			
Variable	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Real exports					1,85	22,35	0	2628,72
Log real exports	15,45	3,40	0,66	26,29				
Both in GATT/WTO	0,64	0,48	0	1	0,56	0,50	0	1
Importer in GATT/WTO	0,16	0,37	0	1	0,19	0,39	0	1
Exporter in GATT/WTO	0,16	0,36	0	1	0,19	0,39	0	1
GSP-recipient-exports	0,16	0,36	0	1	0,10	0,30	0	1
GSP-donor-exports	0,16	0,37	0	1	0,10	0,30	0	1
Both in RTA	0,12	0,32	0	1	0,08	0,27	0	1
Importer in RTA	0,74	0,44	0	1	0,68	0,47	0	1
Exporter in RTA	0,75	0,44	0	1	0,68	0,47	0	1
Log real GDP_i	24,75	2,08	19,15	30,05	24,13	2,12	17,29	30,05
Log real GDP_j	24,97	1,99	18,81	30,05	24,21	2,08	18,81	30,05
Log real $GDPPC_i$	15,11	1,58	8,09	21,50	14,80	1,60	1,20	21,50
Log real $GDPPC_j$	15,10	1,56	8,09	21,50	14,81	1,60	1,20	21,50
Log RER_{ij}	0,01	3,73	-13,95	13,95	-0,05	3,82	-17,63	17,63
Currently colonized	0,00	0,04	0	1	0,00	0,03	0	1
Ever colony	0,02	0,14	0	1	0,01	0,11	0	1
Common country	0,01	0,08	0	1	0,00	0,06	0	1
Log distance	8,58	0,87	2,35	9,89	8,72	0,80	2,35	9,90
Log $area_i$	11,93	2,40	3,22	16,65	11,71	2,50	3,22	16,65
Log $area_j$	12,15	2,31	3,22	16,65	11,78	2,47	3,22	16,65
Contiguity	0,03	0,18	0	1	0,02	0,14	0	1
Landlocked	0,26	0,48	0	2	0,33	0,52	0	2
Island	0,34	0,54	0	2	0,41	0,57	0	2
Common language	0,18	0,39	0	1	0,18	0,38	0	1

Table 3: Summary statistics.

	Both in GATT/WTO	Importer in GATT/WTO	Exporter in GATT/WTO	GSP-recipient-exports	GSP-donor-exports	Both in RTA	Importer in RTA	Exporter in RTA	Log real GDP_i	Log real GDP_j	Log real $GDPPC_i$	Log real $GDPPC_j$	Log RER_{ij}	Currently colonized	Ever colony	Common country	Log distance	Log $area_i$	Log $area_j$	Contiguity	Landlocked	Island	Common language
Both in GATT/WTO	1																						
Importer in GATT/WTO	-0.59	1																					
Exporter in GATT/WTO	-0.57	-0.18	1																				
GSP-recipient-exports	0.06	0.11	-0.16	1																			
GSP-donor-exports	0.07	-0.16	0.11	-0.19	1																		
Both in RTA	0.07	-0.05	-0.05	-0.11	-0.12	1																	
Importer in RTA	0.11	-0.01	-0.11	0.07	0.07	0.20	1																
Exporter in RTA	0.12	-0.12	-0.00	0.07	0.05	0.20	0.24	1															
Log real GDP_i	0.04	0.12	-0.16	0.37	-0.20	0.02	0.08	-0.00	1														
Log real GDP_j	0.05	-0.17	0.13	-0.23	0.34	-0.00	-0.02	0.08	-0.18	1													
Log real $GDPPC_i$	0.09	0.11	-0.19	0.46	-0.21	-0.06	-0.06	-0.02	0.40	-0.15	1												
Log real $GDPPC_j$	0.10	-0.20	0.12	-0.21	0.46	-0.06	-0.01	-0.06	-0.13	0.39	-0.07	1											
Log RER_{ij}	0.00	-0.08	0.08	-0.15	0.15	-0.00	0.02	-0.01	-0.11	0.11	-0.32	0.30	1										
Currently colonized	0.00	-0.00	-0.00	0.00	0.00	-0.01	-0.03	-0.03	0.00	-0.00	0.01	0.01	0.00	1									
Ever colony	0.03	-0.01	-0.01	0.04	0.04	-0.01	-0.01	-0.01	0.05	0.03	0.03	0.03	-0.00	0.18	1								
Common country	-0.08	-0.00	0.00	-0.02	-0.02	0.10	0.03	0.03	-0.02	-0.03	-0.05	-0.05	-0.00	-0.00	-0.01	1							
Log distance	0.04	0.00	-0.00	0.11	0.12	-0.33	-0.00	0.00	0.06	0.10	0.01	0.01	-0.00	0.01	-0.00	-0.12	1						
Log $area_i$	-0.05	0.02	0.03	0.08	-0.04	0.04	0.11	-0.03	0.56	-0.05	-0.16	-0.05	0.08	-0.02	0.01	0.00	0.06	1					
Log $area_j$	-0.04	0.02	0.02	-0.06	0.04	0.02	-0.04	0.10	-0.05	0.55	-0.06	-0.18	-0.05	-0.02	0.00	-0.00	0.10	0.00	1				
Contiguity	-0.01	-0.01	-0.01	-0.07	-0.07	0.24	0.00	0.00	0.00	-0.01	-0.05	-0.05	0.00	-0.00	0.02	0.08	-0.41	0.06	0.05	1			
Landlocked	-0.02	0.01	0.00	0.03	0.04	-0.00	0.03	0.03	-0.07	-0.09	-0.11	-0.09	0.00	-0.01	-0.03	0.08	-0.09	0.03	-0.00	0.07	1		
Island	0.10	-0.04	-0.04	-0.00	0.01	-0.06	-0.06	-0.05	-0.21	-0.16	0.07	0.06	-0.02	0.00	-0.01	-0.05	0.15	-0.27	-0.21	-0.09	-0.20	1	
Common language	0.04	-0.04	-0.03	-0.05	-0.05	0.14	-0.00	-0.00	-0.13	-0.13	-0.07	-0.06	0.00	0.06	0.22	-0.03	-0.16	-0.04	-0.04	0.15	0.00	0.10	1

Table 4: Correlation matrix.

Dependent Variable:	FE-PML		RE-PML		FE-OLS		RE-OLS	
Real exports$_{ij}$	Coef.	S. E.	Coef.	S. E.	Coef.	S. E.	Coef.	S. E.
Both in GATT/WTO	0.62***	0.02	0.55***	0.02	0.33***	0.02	0.28***	0.02
Importer in GATT/WTO	0.39***	0.02	0.34***	0.02	0.14***	0.02	0.08***	0.02
Exporter in GATT/WTO	0.27***	0.02	0.24***	0.02	0.02	0.02	0.02	0.02
GSP-recipient-exports	-0.04***	0.01	-0.01**	0.01	-0.13***	0.01	-0.02**	0.01
GSP-donor-exports	0.01**	0.01	0.00	0.01	0.01	0.01	0.12***	0.01
Both in RTA	0.34***	0.00	0.35***	0.00	0.43***	0.01	0.44***	0.01
Importer in RTA	-0.02***	0.00	-0.02***	0.00	-0.08***	0.01	-0.06***	0.01
Exporter in RTA	-0.12***	0.00	-0.13***	0.00	-0.09***	0.01	-0.07***	0.01
Log real GDP$_i$	0.60***	0.01	0.68***	0.00	0.49***	0.01	0.72***	0.01
Log real GDP$_j$	0.71***	0.01	0.76***	0.00	0.57***	0.01	0.85***	0.01
Log real GDPPC$_i$	0.24***	0.01	0.28***	0.00	0.08***	0.01	0.15***	0.00
Log real GDPPC$_j$	0.43***	0.01	0.38***	0.00	0.35***	0.01	0.27***	0.01
Log RER$_{ij}$	-0.11***	0.01	-0.03***	0.00	-0.18***	0.01	-0.03***	0.00
Currently colonized	0.60***	0.03	0.60***	0.03	0.45***	0.08	0.45***	0.08
Ever colony			1.00***	0.09			2.16***	0.11
Common country			2.03***	0.11			2.06***	0.11
Log distance			-0.77***	0.01			-1.09***	0.02
Log area$_i$			0.01	0.01			0.02***	0.01
Log area$_j$			0.01***	0.00			0.01	0.01
Contiguity			1.01***	0.07			0.84***	0.08
Landlocked			-0.71***	0.02			-0.54***	0.02
Island			-0.06***	0.02			-0.03	0.03
Common language			0.60***	0.03			0.59***	0.03
No. of observations	697223		776519		418112		418112	
No. of country-pairs	22731		26014		22740		22740	
R^2					0.4809		0.6375	
Wald-statistic	581830.46		621356.74				125083.47	
F-statistic					1027.00			
Log likelihood	-338633.31		-387180.82					
Hausman-test	1451.41				2055.20			

*** denotes significance on 1%-level, ** 5%-level, * 10%-level.

All estimations enclose year and country-pair dummies. Constants are not reported.

Dependent variable is log real exports$_{ij}$ for FE-OLS and RE-OLS regressions.

Table 5: Core regressions.

Dependent Variable:	five-year intervals		ten-year intervals	
Real exports$_{ij}$	Coef.	S. E.	Coef.	S. E.
Both in GATT/WTO	0.65***	0.04	0.97***	0.06
Importer in GATT/WTO	0.42***	0.04	0.59***	0.06
Exporter in GATT/WTO	0.27***	0.04	0.58***	0.06
GSP-recipient-exports	-0.02	0.01	-0.25***	0.02
GSP-donor-exports	0.06***	0.01	-0.30***	0.03
Both in RTA	0.33***	0.01	0.37***	0.01
Importer in RTA	-0.04***	0.01	0.00	0.01
Exporter in RTA	-0.15***	0.01	-0.08***	0.01
Log real GDP$_i$	0.62***	0.01	0.75***	0.02
Log real GDP$_j$	0.72***	0.01	0.63***	0.02
Log real GDPPC$_i$	0.22***	0.01	0.10***	0.02
Log real GDPPC$_j$	0.37***	0.01	0.44***	0.02
Log RER$_{ij}$	-0.12***	0.01	-0.21***	0.02
Currently colonized	0.71***	0.05	0.77***	0.07
No. of observations	131818		60581	
No. of country-pairs	19992		16730	
Wald-statistic	136201.46		48994.18	
Log likelihood	64025.51		-24360.24	

*** denotes significance on 1%-level, ** 5%-level, * 10%-level.
All estimations enclose year and country-pair dummies.

Table 6: Sub-sample regressions on 5-year and 10-year intervals.

Dependent Variable:	FE-PML	
Real exports$_{ij}$	Coef.	S. E.
Both in GATT/WTO	0.60***	0.02
Importer in GATT/WTO	0.33***	0.02
Exporter in GATT/WTO	0.22***	0.02
GSP-recipient-exports	0.19***	0.01
GSP-donor-exports	0.17***	0.01
GSP-recipient-exports-dyn	-0.02***	0.00
GSP-donor-exports-dyn	-0.01***	0.00
Both in RTA	0.31***	0.00
Importer in RTA	-0.03***	0.00
Exporter in RTA	-0.13***	0.00
Log real GDP$_i$	0.60***	0.01
Log real GDP$_j$	0.77***	0.01
Log real GDPPC$_i$	0.23***	0.01
Log real GDPPC$_j$	0.36***	0.01
Log RER$_{ij}$	-0.09***	0.01
Currently colonized	0.59***	0.03
No. of observations	697223	
No. of country-pairs	22731	
Wald-statistic	585924.11	
Log likelihood	-336113.51	

*** denotes significance on 1%-level, ** 5%-level, * 10%-level.
The estimations enclose year and country-pair dummies.

Table 7: Number of years in GSP.

Dependent Variable:	FE-PML	
Real $exports_{ij}$	Coef.	S. E.
Both in GATT/WTO	0.59***	0.02
Importer in GATT/WTO	0.38***	0.02
Exporter in GATT/WTO	0.25***	0.02
GSP-recipient-exports (min 1 year)	0.29***	0.01
GSP-recipient-exports (min 10 years)	-0.24***	0.04
GSP-recipient-exports (min 20 years)	-0.01	0.01
GSP-recipient-exports (min 30 years)	-0.46***	0.01
GSP-donor-exports (min 1 year)	0.29***	0.01
GSP-donor-exports (min 10 years)	0.46***	0.05
GSP-donor-exports (min 20 years)	0.09***	0.01
GSP-donor-exports (min 30 years)	-0.45***	0.01
Both in RTA	0.32***	0.00
Importer in RTA	-0.02***	0.00
Exporter in RTA	-0.11***	0.00
Log real GDP_i	0.63***	0.01
Log real GDP_j	0.73***	0.01
Log real $GDPPC_i$	0.22***	0.01
Log real $GDPPC_j$	0.41***	0.01
Log RER_{ij}	-0.10***	0.01
Currently colonized	0.46***	0.03
No. of observations	697223	
No. of country-pairs	22731	
Wald-statistic	581804.92	
Log likelihood	-336057.80	

*** denotes significance on 1%-level, ** 5%-level, * 10%-level.
The estimation encloses year and country-pair dummies.

Table 8: GSP variable segmented in minimum years of membership.

Dependent Variable:	FE-PML	
Real exports$_{ij}$	Coef.	S. E.
Both in GATT/WTO	0.61***	0.02
Importer in GATT/WTO	0.38***	0.02
Exporter in GATT/WTO	0.26***	0.02
GSP-recipient-exports (recipient LIC)	-0.06***	0.02
GSP-recipient-exports (recipient LMIC)	-0.07***	0.01
GSP-recipient-exports (recipient UMIC)	-0.14***	0.01
GSP-recipient-exports (recipient HIC)	0.21***	0.01
GSP-donor-exports (recipient LIC)	-0.40***	0.02
GSP-donor-exports (recipient LMIC)	0.01	0.01
GSP-donor-exports (recipient UMIC)	-0.02**	0.01
GSP-donor-exports (recipient HIC)	0.18***	0.01
Both in RTA	0.33***	0.00
Importer in RTA	-0.02***	0.00
Exporter in RTA	-0.11***	0.00
Log real GDP$_i$	0.62***	0.01
Log real GDP$_j$	0.72***	0.01
Log real GDPPC$_i$	0.23***	0.01
Log real GDPPC$_j$	0.43***	0.01
Log RER$_{ij}$	-0.11***	0.01
Currently colonized	0.49***	0.03
No. of observations	697223	
No. of country-pairs	22731	
Wald-statistic	581194.42	
Log likelihood	-337977.55	

*** denotes significance on 1%-level, ** 5%-level, * 10%-level.
The estimation encloses year and country-pair dummies.

Table 9: GSP according to GSP beneficiary's income.

Beneficiary countries	GSP-recipient-exports		GSP-donor-exports	
located in:	Coef.	S. E.	Coef.	S. E.
East Asia & Pacific	0.22***	0.01	0.18***	0.01
Europe & Central Asia	0.40***	0.02	0.21***	0.02
Latin America & Caribbean	-0.28***	0.01	-0.26***	0.01
Middle East & Northern Africa	-0.43***	0.01	-0.06***	0.02
South Asia	-0.28***	0.03	-0.62***	0.02
North America	-0.05	0.48	-0.04	0.28
Sub-Saharan Africa	-0.08***	0.02	0.36***	0.03

*** denotes significance on 1%-level, ** 5%-level, * 10%-level.
Full-sample regression; control variables not reported.

Table 10: GSP according to beneficiaries' geographical location.

GSP granting countries	GSP-recipient-exports		GSP-donor-exports	
	Coef.	S. E.	Coef.	S. E.
EU	-0.12***	0.01	-0.04***	0.01
Norway	-0.50***	0.08	-0.34***	0.10
Japan	-0.07***	0.02	0.27***	0.02
Austalia	-0.13***	0.03	0.11***	0.03
Switzerland	-0.01	0.05	-0.02	0.03
US	0.02***	0.01	-0.04***	0.01
Canada	0.15***	0.03	-0.15***	0.04
New Zealand	0.22**	0.10	0.55***	0.09
Turkey	0.63***	0.06	0.35***	0.10
Remaining	0.26***	0.03	0.01	0.02

*** denotes significance on 1%-level, ** 5%-level, * 10%-level.
Full-sample regression; control variables not reported.

Table 11: GSP-schemes according to selected granting countries.