

Trade Preferences: Are they of any help? *

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April 15, 2010

Abstract

This article provides a very detailed analysis

JEL Classification: F13, F17

Keywords: Preferential Trade Agreements (PTAs), CGE model, Simulations

*The authors acknowledge financial support by the German Marshall Fund of the United States. The authors are solely responsible for the content of this paper.

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1 Introduction

Trade preferences are a key aspect of actual trade policies and trade patterns. If the literature has in general emphasized their limited importance (Brenton, 2003) and their pervert effects (Ozden & Reinhardt, 2005), other scholars provide a more favourable picture (Candau & Jean, 2005; Bureau et al., 2007).

The real value of existing preferences and the opportunity to enlarge preferential schemes is still a core issue for trade policy makers.

First, in a multilateral framework, the erosion of preferences related the completion of the Doha round has raised many concerns for African, Caribbean and Pacific countries that benefit from EU historical preferences schemes. The opposition between the G-90 and the Latin American on the issue of tropical products, such as banana, extended liberalization is a perfect illustration of the rift existing between developing countries on this issue and the difficulty to find a compromise. On one side, countries that already benefit from preferences in key markets want to delay and limit multilateral liberalization. On the other side, the non-preferred exporters suffer from unfair discrimination and want a quick and deep multilateral market opening. At the same time, the opportunity to generalize the EBA initiative to all OECD members and to some emerging countries has been discussed and is a key achievement of the Honk Kong Ministerial (WTO 2005). However, two questions have been raised: how to be sure that these new preferences will provide real benefits for LDCs and to which extent preference erosion may appear between LDCs (Laborde, 2008). The last issue is another source of potential conflict between African countries that benefit from the AGOA initiative in the textile and apparel sector and large and competitive exporter such as Bangladesh. Second, regarding unilateral policies, both the EU and the US have started to rethink their unilateral preferential schemes. In 2005 the EU has simplified its GSP schemes and is currently adapting its rules of origin system for helping developing countries to grasp the benefits of the preferences and succeeding their integration to the international division of the production process. In the US, based on the existing GSP scheme and the AGOA experience, discussions have started on The New Partnership for Trade and Development Act (McDermott, 2007) targeting LDC countries. Third, in order to avoid to loss benefits from existing discriminatory preferential market access, developing countries are forced to enter in bilateral negotiations with the EU and the US to replace WTO non-compatible program (Andean Trade Partnership Act, Cotonou-Lome preferences) by Free Trade Agreements (FTA), accepting at the same time to open their markets and to take additional commitments. More than never, it is important to measure effectively the value of existing preferences. Is it worthy to fight for them? to save them? and in the future to create new preferential access? Should developing countries focus on them? If actual schemes are weakly used, what

is the cost of the administration constraints and rules of origin related to them? Is the future of preferences only an EU problem or a transatlantic challenge that concerns both the EU and the US? The present study aims to answer these policy concerns by proposing innovating research solution. Indeed, global CGE assessment has followed a bi-polar approach. Before the integration of the MAcMapHS6 (Bouet, Decreux, Jean and Laborde, 2008) in the GTAP database (McDougall and Dimaranan, 2005), only MFN tariffs were considered with the few exceptions of regional agreements such as the EU, NAFTA and the ANZCERTA. Therefore, the role of preferences for developing countries was totally discarded and erosion of preferences a non problem by definition. Thanks to the information of the MAcMapHS6 database on preferences, the assessment of the multilateral liberalization has been improved, capturing the complexity of diverging interests among developing countries (Bouët et al., 2005). However, the MAcMapHS6 dataset assume that preferences are fully used: exporters always benefit from the lowest tariff for which they are eligible. A wide econometric literature has emphasized the fact that in reality the rate of utilization of preferences is in many cases low (Bre, 2003; ?)(Brenton and Mancin, 2003; Matoo, Roy and Subramanian, 2003). At the same time, exhaustive investigation conducted by other authors (Gallezot, 2003; Candau and Jean, 2005) have proven that considering the whole set of overlapping preferential scheme, the overall rate of utilization of preferences is pretty high and problems concentrated in a limited number of cases (sectors or/and countries). Our work is aimed to bridge the gap between both extreme approaches. By using a CGE and using disaggregated data and modeling at the HS6 level we assess the value of both EU and US non-reciprocal schemes by considering alternatively a perfect use of preferences and an incomplete one, based on current utilization rate. Our approach combines the advantages of the CGE framework in terms of theoretical robustness and capacity to provide global assessment and the importance to capture the absolute and relative value of preferential margins at the detailed level. Under alternative assumption of preferences use, we simulate three scenarios: the end of unilateral preferences by the EU (1), the end of unilateral preferences by the US (2) and the elimination of these schemes by both regions. In each case, countries that do not have Free Trade Agreements with these regions will face MFN rates in the simulations. The values of existing preferences are then measured in terms of exports and welfare for developing countries. The different assumption regarding the rate of utilization of preferences allow us to both provide important conclusions regarding other assessment of trade liberalization in the literature and to provide a valuation of the efficiency and mercantilist marginal cost associated with the rule of origin.

«< COMMENTS ON RESULTS TO BE INCLUDED»>

The paper is organized as follow: Section II provides a debate over the rationality and the economic effects of preferences Section III provides a de-

tailed description of unilateral EU and USA schemes, as well as quantitative indicators. A specific attention is devoted to LDCs. Section IV presents the model and the scenario design. Results are displayed in Section V and a sensitivity analysis is conducted in section VI. Section VII concludes.

2 The General System of Preferences: rationality and criticisms

The Generalized System of Preferences (GSP) was one of the few ideas which managed to take concrete shape as a result of the so called "international strategy for development" conceived in the early sixties (12 October 1970) by UNCTAD. It was created in a context where the majority of developing countries were increasingly aware of the massive inequalities between them and developed countries; therefore the GSP was founded to be the instrument to help bridging the gap between them. By granting a more favorable treatment only to developing countries, the GSP was contrary to the basic GATT principle of the most favorite nation, Article I:1 GATT, which requires extending any more favorable treatment granted to a Member to all other WTO Members. Since it was incompatible with the GATT Article I, it needed a waiver to be operational. The waiver granted in 1971, allowed developed countries to accord more favorable tariff treatment to the products of developing countries for a period of ten years. In 1979, during the negotiation of the Tokyo Round developing countries obtained a permanent deviation from the MFN with the adoption of the so called Enabling Clause, whose formal name is "Decision on Differential and More Favorable Treatment, Reciprocity and Fuller Participation of Developing Countries". Since then the "Decision" has been incorporated into the GATT 1994, the Agreement establishing the WTO.

However if from one side the Enabling Clause introduced a permanent waiver to the Article I, on the other side it did not introduce any legally binding obligation on developed countries whose decision about the introduction of preferential schemes were left completely to their decision. The result, after more than three decades is a set of different national schemes, generally frugal and paltry, whose economic effect are still questionable (see Hoekman & Ozden (2005) for a survey of the literature). Although no consensus emerges upon the likely effects of different preference schemes, at least a number of their features limit their reach. The insufficient product coverage, especially for products in which developing countries enjoy comparative advantages and the lack of security of access to those schemes are two important aspects that limit the value of these preferences (Inama, 2002).

Many factors introduce substantial uncertainties, and hence lower the incentive to invest in eligible sectors. GSP schemes are unilateral and then subject to withdrawal. There are many reasons for which countries may lose their preferential treatment.

All GSP schemes, in particular the USA preferential scheme,¹ condition their preferences to some degree. Some conditions are discretionary factors in determining beneficiary countries, whereas others trigger mandatory with-

1. See Ozden & Reinhardt (2005).

drawal or denial of GSP benefits.² For example, in 1992 the US suspended GSP benefits for products originated from India, due to perceived inadequacy of protection to intellectual property rights. India has been restored to US GSP program in 2004.

Another common characteristic among GSP schemes is the so-called "graduation" system, authorized by the Enabling Clause, which allows for a beneficiary country to be excluded, totally or for certain products, from the preferential treatment when it has achieved a certain degree of economic development.³ The logic behind is to avoid that more advanced developing countries, taking advantage of the preference system, may endanger the development of less developed countries making them lay behind. However the purposes of graduation do not appear to have been fully reached, in fact there is evidence of a high concentration of imports from a few GSP beneficiaries. The majority of developing countries benefiting from the schemes are mainly those which have large and diversified economies, including substantial manufacturing sectors.⁴ Moreover, the EU and USA GSP programs also contain safeguard clauses that authorize preferences to be suspended for certain products or states, if those imports cause real or potential injury to domestic producers. Scholars contend that the threat of removal or reduction of GSP benefits eviscerates the very purpose of the GSP: providing incentives for developing countries to invest in industrial capacity.⁵

An additional factor that severely constrains the effectiveness of preferences are the rules of origins (RoO) and the high administrative costs related to them (Estevadeordal, 2000; Estevadeordal & Suominen, 2004; Brenton,

2. Here we refer to "negative conditionality" which is primarily employed by the US. However it exists also the concept of "positive" conditionality, which provides additional reduction in GSP tariffs to countries that are already GSP beneficiary and that fulfill prescribed criteria. This is for example the case for the EU GSP+ scheme.

3. By 2002, thirty-six countries had been graduated from the US GSP, among which China. In the case of the EU GSP scheme only two countries -Myanmar and Belarus- remain temporarily withdrawn from GSP preferences on the basis of Council Regulations (EC) No 552/97 and No 1933/2006 respectively.

4. See for example WTO, The Generalised System of Preferences: A Preliminary Analysis of the GSP Schemes in the Quad, doc. WT/COMTD/W/93, 2001, Table 5: GSP Top 20 beneficiaries, pp. 21-24. It is shown that while China is the leading beneficiary in the schemes of the other Quad beneficiaries, it is on the contrary excluded from the US scheme. East Asian countries and India dominate the exports versus the US, while Angola and Democratic Republic of Congo are the only LDCs among the top 20 suppliers of the US.

5. See Garcia (2004), "GSP programs are subject to period renewal, and within each program the beneficiaries must continually re-qualify for the preferences. This creates problems for business and investment planners on both sides of the preferences."; and Ozden & Reinhardt (2005), they note that the "political process leading to GSP decisions" prevents developing countries from building their export sectors from fear that preferences will be removed. Inversely, whenever states- successfully exporting certain goods- are dropped entirely from preferential programs, they may be left with overcapacity and a production structure that does not necessarily reflect their comparative advantage.

2003; Brenton & Manchin, 2003). Sometimes their strictness determines exporters to forego the tariff preferences as it is more convenient than meeting the stringent obligations of the relevant regimes. Some economists (Francois et al., 2006; Manchin, 2006), have been assessed the relevance of the size of the preference margin in the determination of the choice from beneficiary countries (or to be accurate, exporting firms located in beneficiaries countries) of the opportunity of availing themselves of preferences. It has been estimated that in order to give incentive to traders to ask for preferences, the preference rate accorded must be 4-4.5⁶ percentage points lower than the duties faced by non beneficiary countries (the MFN rate). This would be the minimum preference margin that allows the benefits deriving from preferences to exceed the costs of obtaining them.

It is in the manufacturing sector, mainly the textile sectors, that the authors find RoO harder to overcome (Francois et al., 2006; ?) For instance, under the EU GSP scheme, including EBA, Candau & Jean (2005) find that the utilization rate for the textile and apparel sector is very low, particularly for South-Asian LDCs. In the agricultural sectors, instead, more and more market access is restricted for developing countries exports by non tariff barriers such as sanitary and phytosanitary requirements (Disdier et al., 2008).

Talking about RoO, it is important to say that it is not only a matter of underutilization, a cost associated to preferences still exist even when preferences are fully used. In many cases the requirements of rules of origin have remained unchanged since the 70s when trade preferences have been first introduced with the GSP. Those rules require a vertical model of multi-processing manufacturing stages to be conducted in the same country. However in the modern world economy, flexibility in the sourcing of inputs is a key element in international competitiveness. Strict RoO act to constrain the ability of firms to integrate into global and regional production networks and in effect to dampen the location of any value added activities. With regard to this subject, liberalization of restrictive rules of origin can produce significant results, as changes to AGOA GSP program demonstrate (Collier & Venables, 2007). Without neglecting those unsatisfactory aspects, as some studies have rightly pointed out, if the assessment of the utilization of preferential programs is made on a single program, it may conduct to incorrect results (Candau & Jean, 2005). In fact a beneficiary country may

6. The result of 4 percent preferential margin as a minimum threshold, below which is not worth using the preferences available has been obtained by the authors in a study which is limited to the preferential relations of non-LDCs ACP countries and the EU under the Cotonou agreement. Although this figure is was found looking at a specific group of developing countries, the authors sustain that it provides an approximation of trade costs implied by preferential schemes for other countries as well, as the requirements are similar. A similar analysis, confirming this main conclusion, has been conducted in other studies, see Manchin (2006).

have access to several preference schemes, and thus may chose to take advantage of those programs offering the best preference margins. Cumulatively the preferential programs granted by different developed countries may provide extensive preferential access, even when take up for one or the other program is modest (Bureau et al., 2007).⁷ The disappointing effects of preferences schemes can be understood more as an argument for their reform than as an argument for their elimination. Recent scholarship suggests a number of ways that preference programs can be refined to provide greater benefits to developing countries.⁸ Current debates highlight the need to reform special and differential treatment among GSP recipients, as they do not benefit equally from the same preference schemes. This is due, partially to different trade specialization, but mainly to domestic capacity constraints faced by many developing countries. Industrialized countries already deepen their trade preferences to LDCs' exports, in terms of product coverage and preferential margin, which is fully compatible with the WTO rules. For instance the Everything but Arms (EBA) Initiative of the EU, lunched in 2001, has entailed all products (except Sugar, Banana and Rice until 2009, and weapons) originated in LDCs to enter duty free and quota free in the EU.

If the Enabling Clause allows explicitly differential treatment between LDCs and other Developing Countries, discrimination across the latter category is legal only to some extent. After several WTO disputes, the Appellate Body, in the EU-India case concerning the EU conditions for granting tariff preferences to developing countries, has clarified the issue on the 7th of April 2004:

"162. In sum, we read paragraph 3(c) as authorizing preference-granting countries to "respond positively" to "needs" that are not necessarily common or shared by all developing countries. Responding to the "needs of developing countries" may thus entail treating different developing-country beneficiaries differently. "

WT/DS246/AB/R

More precisely Developed Countries can define differential GSP schemes across developing countries, if and only if developing countries with the same need benefit from the same schemes, and if the tariff preferences are aimed to address the "development, financial (or) trade needs" of those countries.

Following this decision the EU had to modify his GSP system, as the previous GSP Drugs and GSP Labour Rights did not meet these criteria.

7. Authors focus on agriculture and food products under the United States and the EU preferential agreements. The authors find that even though utilization of certain program is limited for certain products and certain countries, if all the preferential schemes are taken as a whole, the rate of utilization across eligible imports reaches 89% in the EU and 88% in the USA. For LDCs in particular the utilization rates usually are quite high but the trade flows concerned are relatively small.

8. see for instance Collier & Venables (2007) and Kleen & Page (2004).

In 2005 the European Union has reformed and simplified its GSP schemes to adopt three regimes: GSP, GSP+⁹ and EBA (see3). At the same time, this judgment has definitively outlawed the discriminatory asymmetric preferences of the EU with the 79 African, Caribbean and Pacific (ACP) countries: the Cotonou-Lomé preferences.¹⁰ In order to preserve the existing preferences, the two parties have recently initiated the Economic Partnership Agreements negotiations (Fontagné et al., 2008), based on reciprocal preferences in accordance with the Article XXIV of the GATT. The USA moved in the same direction with the Caribbean(Basin Economic Recovery Act) and South American (Andean Trade Preference Act) countries, following the expiry of their waivers:December 31, 2006 and September 30, 2008, respectively. Likewise they would find a similar solution with African countries (African Growth Opportunity Act) after 2015.(Grimmett, 2008).

If for the future it is important to better differentiate among developing countries, it seems clear that finding a way to define objective criteria to discriminate between them is a very politically sensitive matter.

3 The Current EU and USA Preferential Schemes

Nowadays South-North trade is governed by a number of preferential arrangements, either because of General System of Preferences schemes (GSP), or the proliferation of Regional Trade Agreements (RTAs)¹¹ - both Custom Unions and Free Trade Areas - between North-South countries. Principal donors remain the European Union and United States, even if the initiatives of preferential agreements providing better tariffs than the MFN have been mimicked by many other countries.¹²

Consequently the study focuses only on the GSP programmes of the European Union and the United States, as implemented in 2004. We conceive to be unilateral preferences other schemes than GSP, while we neglect the numerous RTAs negotiated with several developed and developing countries.¹³

In particular we considered:

9. Yet the legality of the EU's GSP+ arrangement is still questionable(Bartels, 2007).

10. A similar process takes place with the Euromed agreements.

11. The Article XXIV of the GATT covers the (RTAs) and defines their legality. The main differences with unilateral preferences are twofold: they are binding treaties negotiated by both parties, and they involve reciprocal concessions ("substantially all trade" must be liberalized), in many cases not limited to tariffs. Thus for developing countries RTAs means accrued, legal (WTO compatible) and binding preferences. These advantages are associated with increasing costs in terms of reciprocal market access concessions and additional commitments in areas such as services, foreign investments and intellectual property rights..

12. For instance, there are currently 13 national GSP schemes notified to the UNCTAD secretariat, see <http://www.unctad.org> .

13. An exhaustive list of RTAs is presented in table 9, in the appendix 8.2.

- for the US: the GSP (including the special provision for LDCs), the AGOA, the ATPA and the CBERA.
- for the EU: the standard GSP as well as two special GSP arrangements: the GSP Drug and Labour rights (merged in the GSPplus in 2006-) and the Everything But Arms (EBA) initiative, and the Cotonou-Lome preferences.

3.1 Comparison between the EU and USA GSP schemes

Before showing some quantitative indicators, we present the schemes referred above more in details, focusing on their differences and similarities.

Regarding tariffs, the US preferences are simplest than the EU ones since they eliminate all tariff protection. However in terms of Eligible Countries EC's and product coverage the European schemes seem to be more generous.

The US GSP standard program provides duty-free treatment for 4,650 articles, at an eight-digit tariff number level, (out of 10,000 tariff lines), from 131 designated beneficiary countries and territories. Certain articles are prohibited by law from receiving GSP treatment.¹⁴ Furthermore, the Trade Act, which enacts the US GSP, includes "competitive need limitations" (CNLs) that effectively serve as quotas, imposing ceilings for each product and country. Besides the USA favors 43 out of the 49 LDCs¹⁵, offering them duty-free access (GSP plus) for an additional 1700 articles, as well as the exemption from the competitive need limitations.

For the EU, the standard GSP scheme grants preferential treatment for around 7200 products (out of 11,000 tariff lines) from 178 beneficiary countries. Two categories of products have been distinguished. Products classified as sensitive, around 3900, benefit from a 3.5 percentage points reduction on the MFN ad valorem rates,¹⁶ and a 30% reduction on specific MFN duties.¹⁷ For the remaining 3300 non sensitive products, the EU allows duty free market access. Two special arrangements broaden the general EU GSP: the Everything but Arms (EBA) scheme and the GSP-plus scheme. The EBA scheme, adopted for the first time in 2001, is a special initiative according duty free and quota free market access to all goods (except arms) originating from LDCs countries, as defined by the United Nations.¹⁸ A transition

14. The list is available at <http://www.ustr.gov>. It includes most textile, watches, footwear, handbags, luggage, flat goods, work gloves and other leather apparel. In addition, any other articles deemed to be "sensitive" cannot be integrated in the list. Steel, glass and electronics items are explicitly cited.

15. LDCs are defined by the United Nations

16. The reduction for the textile is 20%.

17. Whenever there are mixed ad valorem and specific rates, only the ad valorem part is reduced.

18. For a country no longer classified by the UN as a least developed country is established a transitional period, to alleviate any adverse effects.

period for the full liberalization of sugar , banana and rice was also agreed. Till 2009 decreasing tariffs apply to the the three products.¹⁹

The second arrangement, the GSP-plus, extends the General EU GSP to more tariff lines. Ad valorem tariffs are equal to zero for the products covered, as well as specific duties unless combined with an ad valorem duty, in which case only the ad valorem duty is suspended.²⁰ These special preferences apply to countries already eligible for the GSP which have ratified specific international conventions²¹ and which have been classified as "vulnerable".²² The beneficiary countries are mostly located in Central and South America, except Georgia, Republic of Moldova and Mongolia.²³ The GSP-plus represents an example of positive conditionality, on whose basis beneficiary countries are awarded more favourable preferential treatment if they comply with certain "political" conditions. This system of positive conditionality has only lately attracted attention on the contrary of the negative conditionality which has been introduced a longer time ago in the GSP scheme, according to which trade preferences are denied or withdrawn if a country fail respecting some conditions, many of which are discretionary factors. For instance in the US GSP, which in this respect received the most ardent criticism²⁴, conditions fall essentially in three categories: political, human rights and other factors related to US economic interests.²⁵

Each preference-granting nation has criteria for graduation, which means the removal of GSP eligibility because a country is sufficiently developed or competitive so that it no longer requires GSP benefits, either as a whole or with respect to one or more products. Considering the US, GSP mandates the "graduation" of countries that have reached a certain level of development , being defined as "high income country" by the World Bank.²⁶ Moreover a country will lose its eligibility with respect to a product, the year following that in which "common need limitations" are exceeded. In

19. Duties on bananas would be reduced by 20% annually starting on 1 January 2002 and eliminated at the latest on 1 January 2006; duties on rice would be reduced by 20% on 1 September 2006, by 50% on 1 September 2007, by 80% on 1 September 2008 and eliminated at the latest by 1 September 2009; finally duties on sugar would be reduced by 20% on 1 July 2006, by 50% on 1 July 2007, by 80% on 1 July 2008 and eliminated at the latest by 1 July 2009.

20. See Article 8 of the regulation.

21. These conventions concern human rights, labor rights, commitments in favour of sustainable development and governance principles. The Article 9 of EU regulation provides for the full list of the conventions to be signed.

22. Par 3 of Article 9 gives a definition of a vulnerable country.

23. Bolivia, Sri Lanka, Colombia, Costa Rica, Ecuador, El Salvador, Georgia, Guatemala, Honduras, Mongolia, Nicaragua, Panama, Peru, Republic of Moldova and Venezuela.

24. See for instance Ozden & Reinhardt (2005).

25. See US Generalized system of preferences, Guidebook 2008, available at <http://www.ustr.gov>.

26. That means €11,116 per capita GNP in 2006. Hong Kong, Korea, Malaysia are only a few example of countries been graduated because of their income level.

the case of the EU, a new regulation has been adopted on 27 June 2005, which largely simplify the previous graduation system. The graduation of a product for a beneficiary country still applies after meeting some parameters for three consecutive years.²⁷ However the new scheme replaces the old criteria -share of preferential imports, development index and export specialization index- with a single straightforward criterion: the share of the Community market, expressed as a share of preferential imports. Products from beneficiary countries, non LDCs, which in a given sector account for more than 15% of the EU imports from GSP and GSP-plus countries, cease to benefit from preferential access. In the case of textiles the "graduation threshold" is set at 12,5%, as it is for clothing.²⁸

Another common feature of the EU and the US GSP programs is the existence of safeguard measures, to ensure that any significant increases in imports of a certain products do not adversely affect the receiving country's domestic market.

Finally, both the EU and the USA used to provide extra preferences to developing countries, including the use of Tariff Rate Quotas, through regional agreements: the Cotonou preferences for the EU and the Basin Economic Recovery Act (CBERA), the Andean Trade Preference Act (ATPA) and the African Growth Opportunity Act (AGOA) for the USA. As said in section 2 they are all transitory preferences, as they likely fail the non discrimination requirements to be WTO compatible. Nowadays AGOA is the only regional scheme fully operational, until September 30, 2015.

All preferential systems are also associated to a set of rules of origin. Aimed initially to avoid trade deflection, they have been often invoked as an explanation for the underutilization of preferences, promoting at the contrary the exports of inputs from preference granting countries.

3.2 Preferences and Market Access

3.2.1 Average protection faced by preferential schemes

When they export, producers and firms face an applied tariff, which can be equal or not to the MFN one. MFN tariff in a given country for a given product is normally the same for all the partners. When the applied tariff is lower, it is because the exporter benefits from a preferential tariff, which can be reciprocal - when the two countries belong to a FTA - or not. Unilateral preferences we study are non reciprocal tariff so each scheme we presented before provides applied tariffs lower than the MFN ones only for some specific products. But preferences will be useful for the beneficiary only if it covers

27. The three-year period is required in order to increase the predictability and fairness of graduation "by eliminating the effect of large and exceptional variations in the import statistics". See Article 3 of the Regulation No 980 of 27 June 2005.

28. Under the new regime, for instance, China is graduated for 80% of its exports, although it remains in the GSP.

products where he couldn't export initially due to high tariff or where he was already exporting.

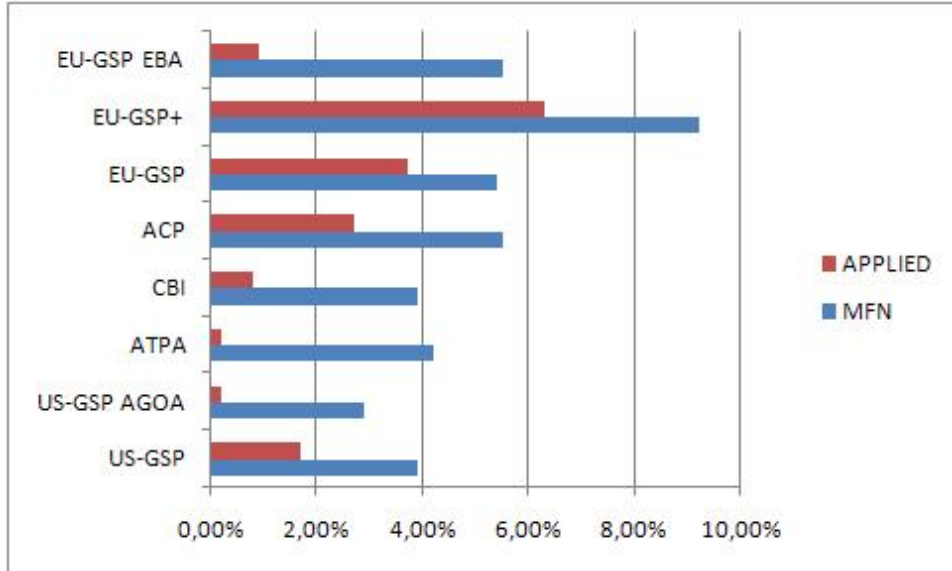
We assess the average protection rate faced by countries measuring the average ad valorem equivalent (AVE) rate that we defined as:

$$AVE_{r,s} = \frac{\sum_h t_{h,r,s} w_{h,r,s}^{RG}}{\sum_h w_{h,r,s}^{RG}} \quad (1)$$

with w^{RG} the weight corresponding to the reference group weight, and h is the HS6 product, r the exporter, s the importer, and t the ad valorem equivalent of the preferential applied tariff. The reference group methodology permits us to reduce the endogeneity bias encountered when trying to measure tariff protection, without neglecting the exportation structure of countries we consider (Bouët et al., 2004). We use the Macmap-HS6-v2 database, which provides MFN and applied ad valorem and specific duties for every triplet (h, r, s) . Finally, the way to compute the ad valorem equivalent of the specific component is non trivial and we discuss in *Appendix A* this issue.

By default, and following the MacMap-HS6 methodology, we suppose that the utilization rate is equal to 100% so the applied tariff calculated represents the lowest average tariff. We will propose in the following subsection an alternative to this assumption.

Figure 1



Source: Authors' calculation

We find that exporters using AGOA, ATPA, CBERA (and EBA face

very low tariff, less than 1% in average. But, as some authors have pointed it out, trade under preferential agreement entering the United States or the EU is very low in value. In 2002, imports under non reciprocal preferences accounted for about 18% (12164 M\$) of total imports of EU in agrofood sector, whereas it was only 6% (3541 M\$) for the US (Bureau et al., 2007). The same year, 85% of eligible products under AGOA entered duty free (dutiable otherwise) in the US, but accounted for only 137 M\$ - 0.23% from total US agro-food imports- (Bureau et al., 2007; ?).

3.2.2 Beyond the average apparent rate of protection

The average AVE equivalent computed previously could be misleading in cross-country comparison. Indeed, the product mix matters and two countries facing the same preferential scheme will face different average rate of protection due to product specialisation. Precisely in 1, two countries with different export structure but belonging to the same preferential scheme will face the same $t_{h,r,s}$ but different $w_{h,r,s}^{RG}$. Therefore, it is crucial to disentangle the apparent preferential margins ($APM_{r,s} = AVE_{.,s} - AVE_{r,s}$) resulting from the composition effects to the preferential margins computed at the tariff line level by comparison between the MFN rate²⁹ and the preferential rate:

$$\begin{aligned} PM_{r,s} &= \frac{\sum_h (MFN_{h,r,s} - t_{h,r,s}) w_{h,r,s}}{\sum_h w_{h,r,s}} \\ &= \frac{\sum_h MFN_{h,r,s} w_{h,r,s} - \sum_h t_{h,r,s} w_{h,r,s}}{\sum_h w_{h,r,s}} \end{aligned} \quad (2)$$

The preferential margin informs us about the tariff reduction which has been provided to a country, but it doesn't give information about the considered preference relative to the other preferred exporters. Due to the multiplication of preferential schemes, this aspect is not trivial. Having a preferential access for a product where the MFN rate is 0 has no value but having a preferential access for a product where all other exporters have a preferential access do not imply positive discrimination neither. Moreover, in this latter case the issue of preference erosion will be less important. We introduce $EPM_{h,r,s}$, the effective preferential margin computed as the difference between the average duty faced by other exporting countries and the duty faced by the country r , when exporting to s :

$$EPM_{h,r,s} = \frac{\sum_{m \neq r} t_{h,m,s} w_{h,m,s}}{\sum_{m \neq r} w_{h,m,s}} - t_{h,r,s} \quad (3)$$

29. The procedure to compute the ad valorem equivalent of the MFN rate in this computation is detailed in Appendix A.

We now calculate the relative margin as

$$RM_{r,s} = \frac{\sum_h \delta t_{h,r,s} w_{h,r,s}}{\sum_h w_{h,r,s}}$$

This gives us a good indicator to know about the effective preferences given to countries.

Finally, even if the previous indicators have interesting descriptive properties, they are not a powerful measure of the effect of the preferences. In addition, we propose a Mercantilist Preferential Indicator, based on the approach of the Mercantilist Trade Restrictiveness Index of Anderson and Neary (1995). Based on the standard representation of international trade through the Armington assumption (1969), we can compute an homogeneous average preferential margin, expressed as percentage of the MFN rate, that will deliver the same market access than actual heterogeneous preferences. Compared to previous ones, this measure is theroretically founded and capture the role of relative preferences and initial market access shares.

TO BE INCLUDED

Table 1: Preferential Margins on the EU Market, for LDCs in 2004.
(Values of Exports in million of US\$)

Country	Pref. Margin	Rel. Margin	GSP	EBA	ACP	Ex- ports vs the EU	Share of Exp vs the EU on Total Exp
Somalia	16,8%	13,5%	X	X	X	4,7	3,9%
Lesotho	11,7%	5,8%	X	X	X	7,4	1,7%
Malawi	11,5%	5,4%	X	X	X	225,5	36,0%
Bangladesh	11,1%	6,3%	X	X		4789,9	54,1%
Haiti	10,2%	5,2%	X	X	X	17,4	4,8%
Cambodia	10,0%	5,6%	X	X		916,8	25,2%
Lao people's demo- cratic	9,7%	5,60%	X	X		182,8	55,1%
Nepal	9,5%	5,6%	X	X		125,7	16,5%
Madagascar	9,3%	4,3%	X	X	X	583,7	50,5%
Maldives	9,1%	4,8%	X	X		36,1	11,8%
Eritrea	7,0%	5,7%	X	X	X	10,5	43,9%
Mozambique	7,0%	3,8%	X	X	X	2085,6	79,2%
Senegal	7,0%	3,4%	X	X	X	451,9	36,0%
Cape verde	6,1%	3,7%	X	X	X	21,7	57,0%
Vanuatu	6,1%	4,1%	X	X	X	22,6	12,6%
Uganda	5,5%	3,0%	X	X	X	301	38,4%
Mauritania	5,1%	1,8%	X	X	X	413,8	52,7%
Solomon islands	5,0%	2,7%	X	X	X	12,5	9,2%
Bhutan	4,7%	3,5%	X	X		2,9	3,9%
Kiribati	4,7%	2,5%	X	X	X	2,2	7,9%
Samoa	4,7%	2,8%	X	X	X	13,5	12,5%
Benin	4,1%	3,2%	X	X	X	66,7	12,1%
Gambia	4,0%	2,1%	X	X	X	34,8	46,2%
Comoros	3,6%	0,9%	X	X	X	52,9	72,3%
Tanzania	3,5%	1,6%	X	X	X	866,7	46,4%
Ethiopia	3,2%	1,8%	X	X	X	263,6	39,5%
Sao tome and principe	3,2%	2,40%	X	X	X	15,5	53,0%
Burkina faso	2,9%	0,3%	X	X	X	95,8	16,7%
Djibouti	2,9%	2,0%	X	X	X	9,9	9,0%
Zambia	2,5%	1,1%	X	X	X	460,3	27,6%
Yemen	2,3%	1,5%	X	X		139,5	3,1%
Sierra leone	2,2%	1,3%	X	X	X	207,1	74,2%
Togo	2,1%	1,3%	X	X	X	195,9	16,9%
Guinea-bissau	1,9%	1,1%	X	X	X	11,3	6,8%

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Country	Pref. Margin	Rel. Margin	GSP	EBA	ACP	Ex- ports vs the EU	Share of Exp vs the EU on Total Exp
Sudan	1,8%	1,0%	X	X	X	292,7	5,0%
Niger	1,4%	1,1%	X	X	X	220	41,0%
Afghanistan	1,0%	0,7%	X	X		39,6	18,0%
Liberia	1,0%	0,6%	X	X	X	1045,5	74,5%
Guinea	0,9%	0,5%	X	X	X	489,3	43,4%
Burundi	0,7%	0,5%	X	X	X	26,8	26,8%
Chad	0,6%	0,3%	X	X	X	245,8	32,2%
Central african repub- lic	0,5%	0,40%	X	X	X	147,5	75,5%
Rwanda	0,5%	0,4%	X	X	X	36,9	13,5%
Congo (democratic rep,)	0,4%	0,20%	X	X	X	920,6	70,9%
Equatorial guinea	0,4%	0,1%	X	X	X	831,1	33,3%
Mali	0,4%	0,3%	X	X	X	260,9	24,5%
Angola	0,2%	0,1%	X	X	X	1442,7	17,1%
Myanmar	0,1%	-3,8%	X	X		478,8	21,9%

Source: Authors' calculations using MAcMap-HS6-v2.

Table 2: Preferential Margins on the US Market, for LDCs.
(Values of Exports in million of US\$)

Country	Pref. Margin	Rel. Margin	GSP	AGOA	Ex- ports vs the US	Share of Exp vs the US on Total Exp
Malawi	62,3%	9,0%	X	X	95,4	15,2%
Gambia	12,0%	3,1%	X	X	0,8	1,1%
Lesotho	11,7%	10,4%	X	X	406,8	94,9%
Burkina faso	10,5%	-5,3%	X		3,6	0,6%
Uganda	9,8%	1,6%	X	X	31,8	4,1%
Benin	6,8%	1,7%	X	X	2,3	0,4%
Madagascar	6,4%	4,3%	X	X	350,2	30,3%
Tanzania	6,2%	0,2%	X	X	30,7	1,6%
Cape verde	6,0%	5,5%	X	X	5,8	15,4%
Mali	4,5%	0,9%	X	X	9,2	0,9%
Zambia	4,1%	-1,1%	X	X	20,6	1,2%
Mozambique	3,2%	0,2%	X	X	13,7	0,5%
Samoa	3,0%	1,4%	X		18,4	17,1%
Senegal	2,5%	1,3%	X	X	13,1	1,0%
Togo	2,0%	0,4%	X		13,7	1,2%
Chad	1,9%	0,5%	X	X	294,0	38,5%
Eritrea	1,7%	0,5%	X		0,6	2,3%
Bhutan	1,6%	1,3%	X		1,3	1,8%
Djibouti	1,6%	1,2%	X	X	0,5	0,5%
Sierra leone	1,5%	1,1%	X	X	9,6	3,4%
Burundi	1,4%	0,7%	X		5,3	5,3%
Niger	1,3%	0,7%	X	X	38,5	7,2%
Central african repub- lic	1,2%	0,2%	X		9,0	4,6%
Ethiopia	1,2%	-2,2%	X	X	35,4	5,3%
Yemen	1,1%	0,8%	X		133,3	3,0%
Guinea-bissau	1,0%	0,2%	X	X	25,3	15,1%
Haiti	0,9%	-0,5%	X		320,7	88,1%
Sao tome and principe	0,8%	0,5%	X	X	0,7	2,4%
Vanuatu	0,6%	0,4%	X		3,2	1,8%
Somalia	0,6%	0,4%	X		1,0	0,8%
Equatorial guinea	0,5%	0,4%	X		782,9	31,4%
Angola	0,5%	0,4%	X	X	3635,6	43,0%
Rwanda	0,5%	0,3%	X	X	4,8	1,7%
Sudan	0,4%	-1,4%			2,4	0,0%

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Country	Pref. Margin	Rel. Margin	GSP	AGOA	Ex- ports vs the US	Share of Exp vs the US on Total Exp
Nepal	0,4%	-3,7%	X		184,5	24,2%
Congo (democratic rep.)	0,4%	0,0%	X	X	188,3	14,5%
Afghanistan	0,3%	0,2%	X		48,0	21,8%
Bangladesh	0,3%	-0,7%	X		2386,6	26,9%
Guinea	0,3%	0,2%	X	X	74,4	6,6%
Solomon islands	0,3%	-0,3%	X		3,1	2,2%
Myanmar	0,2%	-0,8%			383,9	17,5%
Comoros	0,2%	0,2%	X		8,6	11,7%
Mauritania	0,2%	0,0%	X		1,6	0,2%
Cambodia	0,1%	-0,6%	X		1689,9	46,4%
Kiribati	0,1%	0,1%	X		1,0	3,7%
Lao people's demo- cratic	0,0%	-1,0%			3,7	1,1%
Maldives	0,0%	-0,8%			82,1	26,8%
Liberia	0,0%	0,0%	X		61,5	4,4%

Source: Authors' calculations using MAcMap-HS6-v2.

We report in table 2 and 3 the calculations of the preferential and relative margins for LDC, when exporting to the EU or US respectively, with corresponding trade flows. Although most of the LDC benefit from positive relative preferences, some countries are disadvantaged through the US scheme. Lao's, Myanmar, the Maldives, East Timor³⁰ and Sudan are excluded from the US GSP or AGOA for non-economic reasons. Only 0.5% from the Mozambique exports are going to the US, and nearly 50% is composed of sugar which is highly taxed. Bangladesh exports for 2200 M\$ in textiles or wearing apparel into the US, but doesn't qualify for AGOA which could permit him to export duty-free within the wearing apparel scheme. Nepal, Cambodia and Haiti face the same problem, which lead to a negative relative preference. Myanmar is the only country having a negative preference through the European Union, the GSP and EBA schemes being suspended for political reasons.

For instance, Malawi exported for 170 M\$ in other crops (such as tobacco) in the EU and 54 M\$ in the US and benefits from a preferential margin to the EU equal to 12.5% and 62% to the EU, which put it among the beneficiaries which benefit the most their preferences. On the opposite Nepal has one of the lowest relative margin when exporting to the US because it exports textile and apparel that are not covered by the US GSP scheme and. On the opposite, theBut it finds duty free market for these products in the EU with EBA, which explains his 2nd position in our EU ranking.

Relative margin is superior to the preferential margin when the exportation structure is in a good coherence with the granted preferences and/or when the considered country has a comparative advantage in a covered sector.

To go further in our analysis of Nepal, we would need to know the utilization rate of EBA which would tell us how much it enjoys the tariff reduction provided by the EU³¹. This case demonstrates that our results should be taken with care, and completed with the utilization rates of the different schemes and different products to distinguish between profitable preferences from those which are not.

3.2.3 The use of preferences

Focusing on specific preferential schemes, the litterature has strongly emphasized the low rate of utilisation of preferences. Cadot et al (2002) et

30. East Timor did not benefit from LDC treatment in 2004 for both the EU and the US. East Timor has joined the United Nation in 2002 but has been recognised by UNCTAD only in 2004. Changes in national trade policies have taken place afterwards.

31. If we look at the value of exports to the US and to the EU in 2004 for wearing apparel and textile, we find that Nepal has exported for 171 M\$ in US, and 92 M\$ in EU : it is not possible for us to know if Nepal would like to export more in EU because of better tariffs but facing lesser demand, or if the rules of origin made impossible to trade under EBA with EU, EU and US being then equal in tariff

Anson et al (2004) assess that the cost of compliance to the rules of origin in the NAFTA agreements for the Mexican textile and automobile companies is close to the preferential margins and therefore, the value of the agreement is very low. Brenton and Manchin (2003) focusing on the FTAs between the EU15 and CEECs reach similar conclusions and find a very poor utilisation of preferences. Similar results are found for non-reciprocal preferences. Brenton (2003) shows that the EU's EBA preferences are weakly used and Mattoo et al. (2003) draw the same conclusions for the US AGOA. Based on these conclusions, the preferences appear to have nearly no value and it will explain why beneficiary countries have not managed to seize the gains related to the apparent market access concessions.

However, Gallezot (2003), Gallezot and Aussilloux (2006) and Candau and Jean (2005) underline the fact that looking at only one preferential scheme is misleading. In particular in the case of EU preferences, overlapping schemes authorize countries to be eligible to different programs and even if the use of preferences is relatively limited for one specific scheme the overall picture is quite different: except for textile and clothing, the utilization of preferences is above 70% for developing countries export to the EU (Candau and Jean, 2005).

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4 The modelling framework

Based on previous remarks, we assess the value of existing unilateral preferences of the EU and the US using a CGE assessing alternatively full and imperfect utilization of preferences. Since preferential margins display a large heterogeneity across products, we decide to implement recent development in CGE modelling to simulate trade shocks at the tariff line level.

4.1 Characteristics of the model

The model we use is the multi-region, multi-sector general equilibrium model, nicknamed MIRAGE, developed by the CEPPI to assess the impact of trade policy analysis (see Decreux & Valin, 2007). MIRAGE has a sequential dynamic recursive set-up and imperfect competition modelling. However, being interested in detailed trade flow modelling, which is very demanding in computational power, we work only in comparative static and perfect competition. With respect to macroeconomic closure, the current balance is assumed to be exogenous and equal to its initial value in real terms, while real exchange rates are endogenous.

Each sector is modelled as a representative firm whose production function requires in fixed shares, value-added and intermediate consumptions. The value-added is a bundle of imperfectly substitutable primary factors (capital, skilled and unskilled labour, land and natural resources), which are in fixed supply. The structure of value added is intended to take into account the well-documented skill-capital relative complementarity. These two-factors are thus bundled separately, with a lower elasticity of substitution, while a higher substitutability is assumed between this bundle and other factors.

Capital stock is assumed to be perfectly mobile across sectors, which represents the long run adjusting possibilities of capital market. Skilled and unskilled labour are perfectly mobile across sectors, except for unskilled labour, which is imperfectly mobile between agricultural and other sectors. Land is assumed to be imperfectly mobile between agricultural sectors. Finally, natural resources are sector specific.

A representative consumer saves, in each region, a fixed part of his income. The rest is spent between sectors according to a LES-CES function. He distinguishes products according to their geographical sources (Armington hypothesis). The model uses GTAP Armington elasticities estimated in Hertel et al. (2007).

4.2 Modelling trade at a detailed level

We decided to rely on the same modelling presented by Gouel et al. (2008). That is a general equilibrium model at a detailed level, covering all the 5,113

HS6 products, not only agricultural ones. The demand side is a simple nested CES structure as proposed by Gohin & Laborde (2006). The consumer arbitrates between domestic consumption and imports at the GTAP level. He then chooses its level of imports of each product at the HS6 level. Finally, he selects the country source of his imports.

Detailed trade flows modelling is presented in table 3. Subscript i denotes the aggregated sector level; h the disaggregated sector; and r and s , respectively, the source and destination regions. Once the representative consumer has chosen its level of consumption of the aggregate product $C_{i,s}^a$, he decides the amount of domestic good and imports, $M_{i,s}^a$. Equation ?? represents this Armington assumption; imports of an aggregated product depend on its price, $P_{i,s}^M$, the price of domestic product, $P_{i,s}^D$ and the chosen level of consumption.

The consumer then determines the imports of detailed products, $M_{h,s}^d$, as a CES function of prices of detailed products from the same composite sector and the demand for imports of the composite sector (see equation ??). Consequently, we can define the composite import price as a CES price aggregate of detailed import prices (equation ??).

Equation ?? expresses the allocation of disaggregated imports between the various sources. This is arbitrated through a CES function, which depends on the detailed bilateral prices, $P_{h,r,s}^{MBil}$, and the detailed import.

The detailed bilateral import price is defined by equation ?? as the sum of the CIF price times the power of the *equivalent ad valorem* tariff (*ad valorem* duty plus the specific tariff converted in ad valorem).

Equation 4 is the market clearing condition for the composite good that ensures the aggregate output is sufficient to cover both domestic demand (aggregate) and exports of the disaggregated goods. We have implicitly made the hypothesis of infinite elasticity of transformation between sub-sectors.

Table 3: Detailed trade flows modelling

$$M_{i,s}^a = CES(P_{i,s}^D, P_{i,s}^M, C_{i,s}^a) \quad (4)$$

$$M_{h,s}^d = CES(P_{h,s}^{M^d}, M_{i,s}^a) \quad (5)$$

$$P_{i,s}^{M^d} = P^{CES}(P_{h,s}^{M^d}) \quad (6)$$

$$M_{h,r,s}^{Bil} = CES(P_{h,r,s}^{MBil}, M_{h,s}^d) \quad (7)$$

$$P_{h,r,s}^{MBil} = P_{h,r,s}^{CIF} (1 + \tau_{h,r,s}^{AVE}) \quad (8)$$

$$Y_{i,r}^a = D_{i,r}^a + \sum_{h \in i,s} M_{h,r,s}^{Bil} \quad (9)$$

For computational reasons we cannot use the modelling of TRQs pro-

posed by Gouel et al. (2008). Here a quota rent, whenever is generated, is calculated exogenously at a detail level. We assume that the sum of the quota rents are accrued to the importing country.

As emphasized by Gohin & Laborde (2006), the CES nesting is very weak to implement disaggregated modelling. This functional form present two main limits, in particular when initial level of protection are high:

1. At a detailed level, the zero trade flows are numerous. The CES will maintain this pattern and exclude any trade flows creation.
2. At the opposite, the presence of tariff peaks and significant initial trade flows drive an explosive behaviour when liberalization is implemented due to an increasing import demand elasticities.

However, both limits do not affect our analysis since we do not implement a tariff liberalization starting from high or prohibitive tariffs but the contrary. We start from a situation where trade matrix is filled and where we implement tariff increase. Still, some limits of the CES remains and the problem of initial zero is replaced by the impossibility to reach final zero. We may slightly underestimate the cost of loosing preferences but as illustrated by Gohin & Laborde (2006), the problem of the CES in this situation (rising trade costs) is much limited.

4.3 The data

For the data, we made use of a large set of sources. The main source remains the GTAP database (version 7 prerelease 4). It provides social accounting matrixes necessary to calibrate the MIRAGE model for the year 2004. Bilateral trade at the HS6 level is based on BACI database (Gaulier et al., 2008).³² GTAP trade data are, however, reconciled by Mark Gehlhar using methods different from those used with BACI, which implies that the data cannot perfectly match. Consequently, we rescale BACI's trade flows to fit with GTAP's ones. For this particular study, we represent trade flows at the HS6 level for all imports from the EU and the USA, that is 5113 tariff lines.

The detailed trade flows modelling relies on two parameters. For the substitutability between products at the HS6 level, we take 1.2, an elasticity superior to the one used at the GTAP level, because we expect products to be slightly more substitutable at this level inside a GTAP sector.³³ This is a very rough assumption but econometrics litterature do not provide robust estimates on this issue for a large set of sectors. GTAP dataset includes estimates of elasticities of substitution between sources of importation at

32. BACI is CEPII's database for international trade flows at the product-level. It provides reconciled values, quantities and unit values based on United Nations COMTRADE

33. Grant et al. (2007) use an unitary elasticity to model the demand across HS6 lines of dairy products.

the sector level. We think the more detailed the sector, the bigger the substitution between sources. Consequently, we augment GTAP estimates for elasticities of substitution between sources by 20% and use them at the HS6 level.

Trade protection policy are taken from the Market Access Maps (MAcMap-HS6) dataset version 2 . It contains, among other things, bilateral applied protection, including preferential provisions (e.g. GSP, FTAs) for 166 countries with more than 208 partners for the year 2004. Specific and compound tariffs and TRQ data (in and out of quota tariffs, quota levels, quota primes and imports under TRQs) are also provided at the HS6 level. Considering TRQs, multilateral and preferential, are concerted in bilateral TRQs by HS6 product. Multilateral TRQs opened to all WTO members are allocated among them according to their bilateral trade.

For the European and the US protection, we keep protection at the HS6 level. For all the (Boumellassa, Laborde and Mitaritonna, 2009) other importers we applied AVE tariffs aggregated at the GTAP level, using the reference group weighting scheme developed for MAcMap (Bouët et al., 2004). Moreover quota rents, whenever existing, are summed up at the GTAP level.

For the other forms of trade distortive policies contained in the model, export subsidies and domestic support, they come from the GTAP database³⁴

However GTAP 7 pre-release 4 still requires some adjustments concerning export subsidies. For the EU27 we rely on updated information on European export subsidies from EAGGF (European Commission, 2005). The social accounting matrix balancing is done by increasing the bilateral exports at market prices, which we compensate by diminishing domestic demand in order to keep production constant.

Without further detailed informations about export subsidies and transport demand per unit, we assume they are identical to those of the aggregated sectors. We take the GTAP value for both parameters. Hence, CIF price is defined at the GTAP level and not at the HS6 level.

4.4 Countries and sectors aggregation

As said, for the study the Mirage model is calibrated on the GTAP database (version 7 prerelease 4) which provides input-output data for 106 regions and 57 sectors. For this study we have defined a specific aggregation between regions (20) and sectors (22), to keep the model's size at a computationally reasonable level.

4.4.1 Countries

For the regional aggregation we try to put together countries that face similar tariffs when exporting versus the EU or the USA. A particular em-

34. GTAP domestic support data are based on OECD PSE 2005.

phasis is given to developing countries, 17 out of 20 are in fact developing or LDCs countries. Unfortunately the 50 LDCs countries, as defined by the UN,³⁵ are not yet disaggregated in the GTAP database; they are often included in larger sub regions many of which are made-up of both LDCs or Developing Countries. Consequently we decided to follow the World Bank classifications and we divided the 20 regions in three sub-groups: High-Income countries, Middle-Income countries and Low-income countries.³⁶ Obviously, whenever possible we keep a part LDCs countries within the Low-Income category. Finally as for H-I countries, they have been put all together, except Hong Kong which is in the China group, and the EU-27 and the USA.

The aggregation code and the mapping between GTAP regions and our groups is provided in table 4.

4.4.2 Sectors

To choose the sectoral aggregation, we take into consideration sectors where non reciprocal preferences are relevant, notably in agriculture and in a small number of industries.³⁷

The retained sectoral aggregation is presented in table 5.

It leads us to a relatively few categories of products both for the US and the EU.

35. See the UN classification on the web site <http://www.un.org/special-rep/ohrrls/ldc/list.htm>.

36. The World Bank income group limits are \$905 or less 2006 GNI per capita for low-income, \$906–\$11,115 for middle-income, and \$11,116 or more for high-income.

37. For the latter they are essentially textiles and clothes.

Table 4: Regional aggregation

New Regions	Original GTAP regions
H.I.	
1. EU27	European Union
2. USA	United States of America
3. Rest of developed	Australia, Canada, Japan, Korea, New Zealand, Switzerland, Rest of EFTA, Rest of North America, Taiwan, Singapore
M.I.	
4. Caribbean	Caribbean (XCB)
5. China - HK	China, Hong Kong
6. Developing Pacific	Developing Pacific (XOC)
7. India	India
8. Mercosur	Argentina, Brazil, Paraguay, Uruguay, Venezuela
9. North Africa	Egypt, Morocco, Tunisia, Rest of North Africa
10. Rest C. and S. America	Bolivia, Chile, Colombia, Ecuador, Mexico, Nicaragua, Peru, Rest of Central America, Rest of South America
11. Rest Dving Asia	Armenia, Azerbaijan, Indonesia, Iran, Kazakhstan, Kyrgyzstan, Malaysia, Pakistan, Philippines, Rest of East Asia, Sri Lanka, Rest of Western Asia, Thailand, Vietnam
12. Rest Europe	Albania, Croazia, Rest of Europe, Turkey
13. Russia and Former Soviet Union	Belarus, Georgia, Russian Federation, Rest of Eastern Europe, Rest of Former Soviet Union, Ukraine
14. South Africa	South Africa
L.I.	
15. Centr. Africa	Central Africa (Cent. Afric. Rep. , Congo, Cameroon, Gabon, Eq. Guinea, Sao tome, Chad)
16. East. Africa	Mauritius, Rest of Eastern Africa (Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Comoros, Reunion, Rwanda, Seychelles, Sudan, Somalia, Mayotte), Zimbabwe
17. LDC Asia	Bangladesh, Rest of South Asia (Brunei , Cambodia, Laos, Myanmar, Timor Leste)
18. Rest LDC Africa	Madagascar, Malawi, Mozambique, Senegal, South Central Africa (Angola, Congo DR) , Tanzania, Uganda, Zambia
19. SADC	Botswana, Rest of South African Customs Union (Lesotho, Namibia, Swaziland)
20. West. Africa	Nigeria, Rest of Western Africa (Burkina faso, Benin, Côte d'ivoire, Cape verde, Ghana, Gambia, Guinea, Guinea-bissau, Liberia, Mali, Mauritania, Niger, Saint Helena, Sierra leone, Togo)

Table 5: Sectoral aggregation

New Sectors	Original GTAP Sectors
Agriculture and Agro-Food	
1. Food products nec	Food products nec
2. Meat and meat products	Cattle.sheep.goats.horses, Meat of cattle.sheep.goats.horses, Meat products nec
3. Milk	Raw milk, Dairy products
4. Other Crops	Crops nec
5. Paddy rice	Paddy rice
6. Plant based fibers	Plant based fibers
7. Processed rice	Processed rice
8. Rest of Agric.	Wheat, Cereals grains nec, Vegetables and fruits nuts, Oil seeds, Animal products nec, Wool. silk-worm cocoons, Beverages and Tobacco products
9. Sugar	Sugar, Sugar cane, Sugar Beet
10. Vegetable oils and fats	Vegetable oils and fats
Primary	
11. Fishing	Fishing
12. Forestry	Forestry
13. Petrol, Oil and Minerals	Coal, Oil, Gas, Minerals nec, Petroleum. coal products, Mineral products nec, Ferrous metals, Metals nec
Industrial sectors	
14. Electronic equ.	Electronic equipment
15. Leather pdcts.	Leather products
16. Manuf. nec	Manufactures nec
17. Rest of Manuf.	Paper products. publishing , Chemical.rubber.plastic prods, Metal products, Motor vehicles and parts, Transport equipment nec, Machinery and equipment nec
18. Textiles	Textiles
19. Wearing app.	Wearing apparel
20. Wood pdcts.	Wood products
Services and Transport	
21. Services	Electricity, Gas manufacture. distribution, Water, Construction, Trade, Communication, Financial services nec, Insurance, Business services nec, Recreation and other services, PubAdmin/Defence/Health/Educat, Dwellings
22. Transport	Transport nec, Sea transport, Air transport

4.5 Scenarios

In order to assess the impact on any possible scenario we need to reproduce the relevant reference situation, which takes into account the main policy changes occurred after the base year 2004. We thus considered the implementation of a few key events:

- The wave of the EU enlargement in 2007 (from EU25 to EU27).
- Regarding the EU preferential schemes, we considered the completion of the EBA initiative for the three remaining protected products: bananas, rice and sugar. Duties on bananas were eliminated in 2006, while duty and quota free access will be granted for sugar in July 2009 and for rice in September 2009.
- The main changes in the US GSP/AGOA schemes after 2004³⁸ :
 1. Ivory Coast has been excluded from AGOA at the end of 2004, "*largely for reasons related to a lack of progress on key political and economic reforms*", while remaining eligible for the US GSP scheme.
 2. Burundi, which was eligible for the US-GSP, qualified for AGOA on 1st January of 2006.
 3. Liberia, Burkina Faso and Togo qualified for AGOA and for the special wearing apparel scheme, on December 29 and August 4, 2006 and April 21, 2008 respectively.
 4. Nigeria and Gambia were already part of AGOA but were granted with special tariff for wearing apparel, on July 14, 2004 and on April 28, 2008 respectively.

The results for all the simulations will be presented as a deviation from this reference scenario. To try to shed some light on the economic importance of the unilateral trade preferences granted by the EU and the USA we suppress all unilateral preferential protections replacing them with the MFN tariffs.

Three scenarios have been simulated :

- S1: Firstly, we remove only the EU unilateral preferences, including those granted to ACP countries³⁹.
- S2: Secondly, we withdraw all the USA unilateral preferences schemes.
- S3: Finally, both the EU and USA schemes are canceled.

38. See USTR (2007), Langton (2008) and <http://www.agoa.info/>

39. At the same time, we do not implement EPA agreements.

5 Simulation results

5.1 The welfare effect of eliminating the EU and USA unilateral preferences

We present here the results of the CGE assessment of removing trade preferences. As explained in part 4.5, we ran 3 simulations considering different schemes to be removed and two kinds of economic environments: one where we supposed that every preferential schemes is 100% used and the other where we introduced the utilization rate of preference schemes.

5.1.1 Welfare results

The main result we find is that every country benefiting from a preferential scheme is most of the time affected negatively, in terms of welfare expressed as national consumption. This trendline is particularly true for the different areas including LDC's countries.

Table 6 shows the percentage change in welfare when different scenarios are considered. Least developed countries suffer from an average decrease in welfare of 0.41% when both the American and European schemes are removed (third scenario, *S3*). Looking at the results relative to the first and the second scenario show that these losses are mainly due to the preferences granted by the European Union. EU unilateral preferences being 10 times more valuable (0.38% of welfare) for the Low Income Countries than the US ones. Indeed we find that a raise in American tariffs to their MFN level would affect marginally low incomes countries, except for the SADC region which suffers from a change of -0.18% in welfare⁴⁰. When both unilateral schemes are removed, the welfare loss range from -0.12% for Central Africa to -1.03% for the Asian LDCs.

For the Middle Income Countries, the cost of loosing preferential access is lower (-0.05% for all schemes), but the role of EU preferences prevail (4 times the US value). Within this group North Africa is the most affected country (-0.23% loss), followed by the Developing Pacific and Caribbean groups. However, this average figure hides important regional differences. Indeed, for MERCOSUR, India (reintegrated in US GSP in 2004), South Africa (thanks to AGOA) and Carribean Countries, benefiting from the Carribean Basin Initiative in the US, the stakes are more significant in the US case (up to 0.05% for the CBI countries), even if they remain inferior to the EU ones (a little more than half the value of EU preferences). This reflects the role of the US market for other American regions (proximity). At the opposite, among developing countries, China will win marginally at the removal of US preferences (+0.01%), this is due to the role of such preferences in the US on the textile and wearing sectors, in particular in the AGOA initiative.

40. We focus on this particluar point below

Finally, the High Income Countries are almost not affected by the simulated changes even if granting preferences to the EU has a cost (0.01% of welfare) due to trade diversion. When both the US and the EU remove their preferences, global trade is less distorted and we see welfare gains (up to 0.02% of welfare for the EU) for all developed countries. This effect being driven by increase of market shares of developed exporters in both the US and the EU market.

5.1.2 The cost of frictions affecting full use of preferences

Considering the utilization rate of preferences should provide less negative results : if the preferential schemes are under used - some products exported can't benefit from the tariff reduction even if the country is eligible to a preference -, the loss resulting of the removal should less affect the benefiting countries. It's what we notice in the results presented in table 6 where utilization rates have been taken into account (such scenarios are notified with an asterisk *).

The global decrease in welfare for benefiting countries is still there but the Asian LDCs which were encountering the most significant loss in the first series of simulation (-1,03%) have now a -0.36% welfare change. The loss for the Low and Middle Income Countries have been cut by a factor two (-0.18%) due the imperfect use of preferences.

On the policy side, the comparison between the two cases provides some useful information about the potential use that could be done of a full utilization of the preferential schemes granted. For instance when the difference between the two welfare changes referring to one scenario is around zero, it means that the region considered makes a full use of the unilateral preferences, contrary to a relative high value indicating that the utilization rate is pretty low and that the preferential rules and/or tariff lines targeted for this group should be examine deeper.

For the EU scheme, we see that the Asian LDCs are the countries which could make the most significant gain if full use of the EU scheme could be done; detailed results show that the Wearing Apparel sector mainly drives this fact. Indeed, we the double transformation rule in the rules of origin in the EU, it is well known that many developing countries that face constraints on their fabrics production face severe challenge to use the EU preferences. The situation is very different for the US where initially the value of preferences are smaller but well used. Results for SADC countries are quite similar in the two cases: the only Low Income country benefiting from the American trade preferences is also making a full use of these tariff reductions, mainly in the Textile and Wearing Apparel sectors thanks to the relaxed rules of origin in AGOA.

For Middle Income Countries, we see that Caribbean countries and even

more MERCOSUR are the main affected by under utilization of preferences on the US market when India is not. These two regions, with Pacific developing countries, are also the more affected in relative terms by the utilization rate in the EU. but on this market, all Middle Income strongly affected. On the methodological side, we demonstrate that assuming full use of preferences can strongly overestimate their values and therefore, the potential role of preference erosion, in particular on the EU market. However, compared to existing literature, using a HS6 modeling strategy still lead to large value.

5.2 Changes in international trade for benefiting countries

Table 6: Welfare Changes
(Equivalent variation in percentage change)

Countries
1. High Income
EU27
USA
Rest of developed
2. Middle Income
Caribbean
China - HK
Developing Pacific
India
Mercosur
North Africa
Rest of C. and S. America
Rest of Developing Asia
Rest of Europe
Russia and F. Soviet Union
South Africa
3. Low Income
Centr. Africa
East. Africa
LDC Asia
Rest LDC Africa
SADC
West. Africa

Source: Authors' MIRAGE model simulation results.

Note: S1: Removal of EU unilateral preferences, S2: Removal of US unilateral preferences, S3: Removal of both preferences. An * indicates scenario with observed use of preferences.

6 Sensitivity analysis

In this section, we test the sensitivity of our results to some key parameters. The scenario that we use as a reference is the complete elimination of unilateral preferences from both the EU and the USA, that is S3.

1. *Substitution elasticity in imports between sub-sector products, σ_i* : from its original value, 1.2, we test by cutting by half and doubling its values, namely an elasticity of either 0.6 or 2.4.
2. *Between exporters substitution elasticity, σ_r* : the original values are 20% above GTAP import-import elasticity of substitution. Because we expect the substitution to rise with the disaggregation, we do not test a too low value for it. The two alternatives are -25% and $+100\%$.

6.1 Sensitivity of detailed trade flows

6.2 Sensitivity of welfare evaluation

7 Conclusion

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8 appendix

8.1 Preferences granted by the EU and the US to Developing countries

Table 7: Preferential Margins on the EU Market, for Developing Countries.

Country	Pref. Margin	Rel. Margin	GSP	GSP- PLUS	ACP
Saint lucia	16,8%	13,0%	X		X
Seychelles	15,2%	7,8%	X		X
Belize	13,7%	6,7%	X		X
Micronesia, fed. st.	10,9%	6,6%	X		X
Palau	10,7%	6,5%	X		X
Honduras	9,3%	4,2%	X	X	
Macedonia	8,6%	5,1%	X		
Dominican republic	8,4%	4,0%	X		X
El salvador	8,4%	4,3%	X	X	
Nicaragua	8,2%	1,5%	X	X	
Swaziland	8,1%	3,4%	X		X
Mauritius	8,0%	1,6%	X		X
Guatemala	7,7%	3,2%	X	X	
Dominica	7,6%	5,5%	X		X
Fiji	7,5%	1,6%	X		X
Jordan	7,2%	3,8%	X		
Kenya	7,2%	3,7%	X		X
Turkey	7,0%	4,1%	X		
Tunisia	6,6%	3,6%	X		
Morocco	6,5%	3,4%	X		
Tonga	6,5%	2,2%	X		X
Jamaica	6,4%	3,1%	X		X
Croatia	6,2%	4,4%	X		
Palestinian territory	5,8%	2,4%	X		
Pakistan	5,7%	2,5%	X		
Albania	5,6%	2,8%	X		
Romania	5,6%	3,3%	X		
Zimbabwe	5,6%	2,9%	X		X
Saint vincent and the gr	5,6%	4,1%	X		X
Ecuador	5,4%	1,6%	X	X	
Bulgaria	5,3%	2,9%	X		
Côte d’ivoire	5,2%	3,0%	X		X
Bosnia and herzegovina	4,7%	3,2%	X		
Cameroon	4,5%	3,3%	X		X

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Country	Pref. Margin	Rel. Margin	GSP	GSP- PLUS	ACP
Namibia	4,4%	2,4%	X		X
Panama	4,3%	1,2%	X	X	
Suriname	4,2%	2,5%	X		X
Egypt	4,0%	2,2%	X		
Mexico	3,8%	2,4%	X		
Ghana	3,5%	1,8%	X		X
Lebanon	3,4%	2,0%	X		
Barbados	3,3%	0,7%	X		X
Saint kitts and nevis	3,3%	0,9%	X		X
Costa rica	2,9%	-0,1%	X	X	
Bahrain	2,8%	0,4%	X		
Viet nam	2,7%	0,4%	X		
Cuba	2,7%	-0,4%	X		X
Peru	2,6%	1,3%	X	X	
Belarus	2,6%	1,2%	X		
Guyana	2,5%	-1,3%	X		X
Argentina	2,5%	0,6%	X		
Grenada	2,5%	1,6%	X		X
Antigua and barbuda	2,4%	1,5%	X		X
Trinidad and tobago	2,3%	1,0%	X		X
Georgia	2,1%	0,8%	X	X	
Bolivia	2,1%	1,2%	X	X	
Colombia	2,1%	0,5%	X	X	
Israel	1,8%	0,9%	X		
Brunei darussalam	1,7%	1,0%	X		
India	1,7%	0,0%	X		
South africa	1,7%	0,7%	X		X
Papua new guinea	1,5%	0,9%	X		X
Ukraine	1,5%	0,4%	X		
Chile	1,5%	0,4%	X		
Turkmenistan	1,5%	0,3%	X		
Thailand	1,5%	-0,4%	X		
Brazil	1,5%	-0,4%	X		
Uruguay	1,4%	-8,1%	X		
Syrian arab republic	1,4%	0,7%	X		
Indonesia	1,4%	0,2%	X		
Paraguay	1,2%	-1,4%	X		
Mongolia	1,1%	-1,2%	X	X	
Philippines	0,9%	0,1%	X		
Congo	0,9%	0,4%	X		X
Oman	0,8%	0,2%	X		

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Country	Pref. Margin	Rel. Margin	GSP	GSP- PLUS	ACP
Algeria	0,8%	0,4%	X		
Azerbaijan	0,8%	0,4%	X		
Venezuela	0,7%	0,4%	X	X	
Kyrgyzstan	0,7%	0,3%	X		
Sri lanka	0,7%	-2,5%	X	X	
Armenia	0,7%	0,2%	X		
Qatar	0,7%	0,3%	X		
Malaysia	0,6%	0,0%	X		
Kazakstan	0,5%	0,1%	X		
Uzbekistan	0,5%	-0,1%	X		
China	0,5%	-0,7%	X		
Botswana	0,4%	0,1%	X		X
Iran	0,4%	0,1%	X		
Moldova	0,4%	-1,9%	X	X	
Gabon	0,3%	0,2%	X		X
Tajikistan	0,3%	-0,7%	X		
Kuwait	0,3%	-0,3%	X		
Saudi arabia	0,3%	-0,2%	X		
Nigeria	0,3%	0,2%	X		X
Russian federation	0,2%	-0,3%	X		
Iraq	0,1%	0,0%	X		
Libya	0,0%	-0,3%	X		
Korea, dem. people's rep	0,0%	-1,4%	X		
Western sahara	0,0%	-6,6%	X		

Source: Authors' calculations using MAcMap-HS6-v2.

Table 8: Preferential Margins on the US Market, for Developing Countries.

Country	Pref. Margin	Rel. Margin	GSP	AGOA	US- ATPA	US-CBI
Mauritius	31,0%	10,4%	X	X		
Swaziland	28,0%	8,1%	X	X		
Guyana	26,5%	4,8%	X			X
Belize	20,2%	4,2%	X			X
Zimbabwe	18,7%	0,6%	X			
Barbados	18,0%	3,6%				X
Saint kitts and nevis	17,7%	4,0%	X			X
Guatemala	9,8%	1,8%				
Jamaica	9,8%	2,4%	X			X
Nicaragua	9,4%	1,8%				
Paraguay	7,9%	1,2%	X			
Uzbekistan	5,8%	0,7%	X			
Seychelles	5,6%	3,5%	X	X		
Cuba	5,3%	1,3%				
El salvador	4,8%	0,9%				
Kenya	4,6%	1,8%	X	X		
Tajikistan	4,5%	0,2%				
Jordan	4,4%	3,2%	X			
Dominican republic	4,2%	1,4%	X			
Mexico	3,4%	2,3%				
Peru	3,4%	2,3%	X		X	
Argentina	3,3%	0,5%	X			
Bolivia	3,0%	1,8%	X		X	
Macedonia	3,0%	0,0%				
Brazil	2,8%	0,4%	X			
Lebanon	2,8%	1,1%	X			
Uruguay	2,7%	-0,5%	X			
Croatia	2,7%	0,7%	X			
Namibia	2,3%	1,2%	X	X		
Colombia	2,2%	1,3%	X		X	
Tonga	2,2%	0,4%	X			
Ecuador	2,1%	1,0%	X		X	
South africa	2,0%	1,1%	X	X		
Panama	1,9%	0,7%	X			X
Honduras	1,9%	0,1%				
Ghana	1,8%	0,8%	X	X		
Congo	1,8%	0,7%	X	X		
Costa rica	1,8%	0,9%	X			X
Kyrgyzstan	1,8%	0,8%	X			

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Country	Pref. Margin	Rel. Margin	GSP	AGOA	US- ATPA	US-CBI
Trinidad and tobago	1,7%	0,8%	X			X
Israel	1,7%	1,3%				
Côte d'ivoire	1,7%	0,7%	X	X		
Thailand	1,7%	0,6%	X			
Dominica	1,6%	1,2%	X			X
Bahrain	1,5%	0,7%				
Sri lanka	1,5%	-0,2%	X			
Albania	1,5%	0,1%	X			
Bulgaria	1,4%	0,4%				
Egypt	1,3%	0,2%	X			
Saint vincent and the gr	1,3%	0,9%	X			X
Saint lucia	1,2%	0,8%	X			X
India	1,2%	0,5%	X			
Turkey	1,2%	0,0%				
Chile	1,1%	0,6%				
Romania	1,1%	0,4%				
Georgia	1,0%	0,5%	X			
Cameroon	0,9%	0,4%	X	X		
Grenada	0,8%	0,6%	X			X
Turkmenistan	0,8%	-0,2%				
Papua new guinea	0,8%	0,2%	X			
Mongolia	0,8%	0,0%	X			
Indonesia	0,8%	0,3%	X			
Pakistan	0,8%	0,0%	X			
Tunisia	0,7%	0,0%	X			
Philippines	0,7%	0,3%	X			
Botswana	0,7%	0,4%	X	X		
Morocco	0,7%	0,0%				
Moldova, rep.of	0,6%	-0,1%	X			
Armenia	0,6%	0,3%	X			
Suriname	0,6%	0,3%	X			
Fiji	0,6%	-18,5%	X			
Kazakstan	0,6%	0,1%	X			
Bosnia and herzegovina	0,6%	0,2%	X			
Antigua and barbuda	0,5%	0,4%				X
Nigeria	0,5%	0,4%	X	X		
Russian federation	0,4%	0,2%	X			
Gabon	0,4%	0,3%	X	X		
Oman	0,4%	0,0%	X			
Venezuela	0,3%	0,1%	X			

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Country	Pref. Margin	Rel. Margin	GSP	AGOA	US- ATPA	US-CBI
Saudi arabia	0,2%	-0,2%				
Ukraine	0,1%	-0,3%	X			
China	0,1%	-0,3%				
Azerbaijan	0,1%	-0,1%				
Syrian arab republic	0,1%	-0,5%				
Belarus	0,1%	-0,4%				
Malaysia	0,1%	-0,2%				
Vietnam	0,1%	-0,4%				
Palau	0,0%	-0,6%				
Iran	0,0%	-0,1%				
Palestinian territory	0,0%	-1,0%	X			
Kuwait	0,0%	-0,2%				
Northern mariana is- lands	0,0%	-0,9%				
Iraq	0,0%	-0,1%	X			
Qatar	0,0%	-0,1%	X			
Brunei darussalam	0,0%	-0,2%				
Algeria	0,0%	-0,1%	X			
Western sahara	0,0%	0,0%	X			
Libyan arab jamahiriya	0,0%	-0,1%				

Source: Authors' calculations using MAcMap-HS6-v2.

8.2 The EU and USA RTAs

Table 9: List of Regional Agreements for the EU and the US in 2008

	European Union	USA
Custom Unions	Andorra (1991), Turkey (1995), San Marino (1991)	
Free Trade Areas	Switzerland (1973), FYMOR (2004), Croatia (2005), Albania (2006), Montenegro (2008), Bosnia and Herzegovina (2008), Algeria (2005), Egypt (2004), Israel (2000), Jordan (2002), Lebanon (2003), Morocco (2000), Palestinian Authority (1997), Syria (1977), Tunisia (1998), Chile (2003), Mexico (2000), South Africa (2000), Iceland (1972), Liechtenstein (1972), Norway (1973), Burundi, Kenya, Rwanda, Tanzania, Uganda (2008), Comoros, Madagascar, Mauritius, Seychelles, Zimbabwe (2008), Papua New Guinea, Fiji (2008), Botswana, Lesotho, Namibia, Mozambique, Swaziland (2008), Cote d'Ivoire, Ghana (2008)	Israel, Canada, Mexico, Jordan, Chile, Singapore, Australia, Morocco, Bahrain, Peru, Oman
Under negotiations or under discussion	ASEAN, Canada, China, Gulf Cooperation Council, India, Iraq, South Korea, Mercosur, Moldova, Serbia, Ukraine	Colombia, Panama, South Korea, Malaysia, Thailand, United Arab Emirates, South African Custom Unions

Note Year of Entry into Force in brackets.
Source DG Trade, EC.