Trade preference index*

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ABSTRACT

Building on the work by Anderson and Neary on theoretically grounded trade policy indexes, we define an aggregate measure, the Mercantilistic Trade Preference Index (MTPI), of the trade preferential margins. The MTPI is defined as the uniform preference margin that maintains the same volume of developing countries exports as the given set of preferential policies. We assess the impact of the preferences granted by the European Union computing the index for different commodity aggregates as well as for each exporters.

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1. Introduction

The acknowledgement that increased trade is essential for the world's poor countries to reap the potential benefits of globalization is a commonly shared view. Yet there is a lively political and theoretical debate on how best to accomplish this end. The prevailing approach, known as "special and differential treatment", grants developing countries preferential access to industrialized countries' markets without reciprocal liberalization in turn.

In 1968, arguments in favor of special and differential treatment for developing countries lead to the establishment of the first instrument for such non-reciprocal trade preferences, namely the Generalized System of Preferences (GSP). Even now, 40 years after General Agreement on Tariffs and Trade (GATT) members first authorized the GSP as a "temporary" measure, it remains highly popular among developing country beneficiaries and its principles are enshrined in the postures industrialized countries and international institutions adopt in dealing with developing countries.

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Countries have tariff schedules with thousands of tariff lines, featuring very high variation in tariff rates, and any preferential trade policy agreement does vary a lot across products and exporters. On the other hand, if we want to carry out sensible comparisons across products, countries and over time we need to construct measures that summarize the levels of trade preferences implied by the various schemes available for different commodities and/or countries. To assess the overall effect of an uneven reduction in a large number of tariffs, one faces the problem of finding the appropriate index.

Recent developments in the theory of index numbers have led to new indicators of the aggregate impact of trade policy, such as the Mercantilistic Trade Restrictiveness Index (MTRI). The MTRI, introduced by Anderson and Neary (2003), consists in estimating the uniform tariff that yields the same aggregate volume of imports as the original vector of (non-uniform) tariffs across a number of imports. In our case, the trade volume seems to be the most appropriate reference standard, since countries enjoying trade preferences are expected to export relatively more than countries still facing Most Favoured Nation (MFN) tariffs, either bound or applied.[1] Accordingly, we define a Mercantilistic Trade Preference Index (MTPI) based on the idea of finding a uniform preferential margin which yields the same export volume as the original differentiated preferential policy.

This paper focuses on the European Union (EU) tariff preferences. The EU, as a matter of fact, is not only one of the major trading partners for the developing countries, but it has also been engaged in a web of preferential trade relations with other countries or regional groupings which range from the regular GSP to specific provisions for the Least Developed Countries (LDCs), the Everything But Arms – EBA – initiative, the Africa-Caribbean-Pacific (ACP) agreement[2] and the Bilateral Euro-Mediterranean Association Agreements.[3] Our contribution is as follows:

- First, assuming a specific functional form for the import demand we construct an approximation of the MTPI that makes it possible to handle the present EU bilateral tariff structure including almost three hundred thousand tariff lines as the result of the number of products times the number of partners. Our results provide indicators of the degree of preference granted to 44 commodity sectors, which are consistent with a dataset widely used by trade practitioners, the GTAP dataset (Hertel, 1997).

[1] Bound tariffs are the maximum ceiling allowed by the World Trade Organization (WTO) commitments.

[2] The 78 ACP countries, mostly former colonies of EU Member States, and the EU preferential relations are governed today by the ACP-EU Partnership Agreement (EPA) aiming to conclude new WTO-compatible trading arrangements, progressively removing barriers to trade and enhancing cooperation in all areas related to trade. However, these preferential relations have always been part of a legally binding international treaty since the Yaoundé Convention signed in 1963, and in 2004 trade preferences applied to 99 per cent of industrial goods and most agricultural products.

[3] For a detailed analysis of these preferential schemes see Bureau *et al.* (2004) and Gallezot (2005).

- Second, we compare an index based on economic theory, such as the MTPI, to other a-theoretic, *ad hoc* indexes of tariff reductions, such as the simple as well as the trade-weighted average of preference margins. Our contention is that much of the empirical evidence based on these indexes is inherently flawed.
- Third, we compute a *potential-MTPI* assuming that all imports paid the preferential duty. This allows us to provide an assessment of the "dilution effect" that could result from administrative costs and rules of origin wiping out some of the competitive advantages granted by the margins.
- Finally, we compute the bilateral MTPIs for each exporter to the EU market as well as for exporting regions. This makes it possible to highlight some geographical patterns of the EU trade policies and to check if it is (at least) broadly consistent with the stated goals.

The reminder of the paper is organized as follows. The index and the model are presented in the following section. Section 3 describes the data, whereas section 4 presents the results, and section 5 concludes.

2. Mercantilistic trade preference index

Preferential margins vary a lot across products and countries, so we need an aggregation process to get an overall measure. A major challenge in trade policy analysis is to get the aggregation right. Several forms of aggregation have been used but most of them are without theoretical foundation and lead to biased results (Cipollina and Salvatici, 2008). *Ad hoc* or purely statistical measures provide an answer to the aggregation problem but reflect a lack of clarity about what is being measured. What is needed is a conceptual framework within which the *level* and the *effects* of preferential policy can be combined, and this is what new approaches with rigorous theoretical foundations for the aggregation problem have provided.

A *simple average* of the preference margins implies the same weight for each tariff line regardless of the importance of the product to which the preference is granted. This approach makes poor use of information, since some products are more important in world trade than others. Further, it is potentially subject to manipulation. In an extreme example, it would be possible to have zero preferences on a relatively small number of tariff lines regarding the most "sensitive" products and hundreds of tariff lines with large preferential margins: the simple average would be quite high, thus grossly overestimating the real degree of preference granted. LDC exports, for instance, are highly

concentrated in terms of products, and this export concentration has dramatic effects on the pattern of protection faced by LDCs: looking at the revenue from tariffs levied on WTO LDC exports in OECD Countries only 3 percent of the products account for 96 percent of this revenue (Berisha-Krasniqi et al., 2008).

Clearly, trade policies should be weighted by their relative importance in some sense. The simplest and most commonly-used method of doing so is to use actual trade volumes as weights, even if *trade-weighted averages* have major deficiencies in the case of tariffs. As the tariff on one good rises, its imports fall, so the highest tariffs gets lower weights. However, this is not the case for preferential margins, since higher margins are typically associated with higher trade values. Then, trade-weighted preferential margins may avoid the most obvious shortcoming associated with the use of trade weights:[4] the weights are not biased downwards by preferences and the index is always increasing in each individual preferential margin. But otherwise the case for using them is not compelling in the absence of an explicit theoretical basis. For instance, import volumes could be much larger than under an MFN regime because preferences are large or they are granted to high-elasticity goods.

A central theme of the economic approach to index numbers is that the choice between alternative index-number formulae should primarily be based not on informal issues of plausibility but on the extent to which they approximate some "true" or benchmark index, which answers some well-defined economic question (Diewert, 1976). According to Anderson and Neary (1996), a general definition of a policy index is as follows: depending on a pre-determined reference concept, any aggregate measure is a function mapping from a vector of independent variables – defined according to the policy coverage – into a scalar aggregate. The reference concept allows the computation of an index of restrictiveness which is 'equivalent' to the actual policies in terms of the chosen impact and drives the computation of the weights to be used in the aggregation process. Since foreign exporters are concerned with domestic market access, it makes sense to aggregate preferences in a way which holds the volume of imports as the reference standard. Accordingly, our policy index is based on the Mercantilistic trade restrictiveness index introduced by Anderson and Neary (2003).

Taking import flows as the standpoint, the appropriate way of answering the question "How do we measure trade preferences?" is computing the uniform preferential margin which, if applied to all

[4] It is worth recalling that trade weighted tariffs can be very misleading, if they are used in order to compute the preferential margins as the difference in aggregated rates, since trade-weighted tariffs can be inversely related with the extent of the actual margins.

goods and/or partners, would be equivalent to the actual preferential policies, in the sense of yielding the same volume of imports. The *Mercantilistic Trade Preference Index* (MTPI) is defined as the complement to one of the uniform percentage α to be applied to the maximum applied rates ($\tau^{\max}$) which yields the same volume (at world prices) of tariff-restricted imports as the initial vector of tariffs (*t*). The uniform preferential margin $(1-\alpha)$ generates a counterfactual preferential tariff vector ($\tau = \alpha\,\tau^{\max}$) that yields the same volume (at world prices) of tariff-restricted imports as the initial vector of (non-uniform) preferential margins ($\tau^{max} - t$). This can be expressed with import demand functions *M*, while holding constant the balance of trade function at level B^0:

$$\alpha : M[(1+\alpha\tau^{max})p^*, B^0] = M^0 \tag{1}$$

where p^* denotes the international price vector of the *K* goods $k = (1, \ldots, K)$ and M^0 is the value of aggregate imports (at world prices) in the reference period.

Define the scalar import demand summing over the *i* exporters:

$$M(p, p^*, B) \equiv \sum_i \sum_k p_{ik} I^m_{ik} \tag{2}$$

where I^m denotes the uncompensated (Marshallian) import demand function and *p* is the domestic price vector. Accordingly, the MTPI can be computed by solving the following equation for α:

$$\sum_i \sum_k p^*_{ik} I^m_{ik}[\pi^*(1+\alpha\tau^{\max})), B^0] = \sum_i \sum_k p^*_{ik} I^m_{ik}[\pi^*(1+a_k t^{\max}_k)), B^0] \tag{3}.$$

Indexes such as the MTPI have solid theoretical foundations, although the definition relies on several restrictive assumptions, including the existence of a competitive equilibrium, a single representative consumer, and fixed world prices (i.e., the small country assumption). The latter assumption is particularly questionable, since our empirical analysis deals with such a major trader as the EU. However, the small country assumption helps to guarantee the existence and uniqueness of the indexes, ruling out counterintuitive "second best" results, and it is consistent with a *coeteris paribus* approach (Bureau and Salvatici, 2004).[5]

Having defined the MTPI, for the empirical implementation we follow Bureau and Salvatici (2005) modeling demand through a constant elasticity of substitution (CES) functional form. This function imposes well-known restrictive assumptions on separability and does not properly account for

[5]Anderson and Neary (2003), argue (footnote 8) that "there is a rationale for a ceteris paribus trade restrictiveness index that fixes world prices even when these prices are in fact endogenous". Such a rationale may be represented by the fact that, by keeping world prices constant, we focus on the component of protection explained by national policies, and not by the degree of market power of the country.

the presence of prohibitive tariffs, since if there is no or little trade in the base period there is going to be no or little trade impact of reducing tariffs. In our case, this implies that the impact of the counterfactual uniform percentage reduction is going to be underestimated, and this will lead to an overestimation of the preferential indexes. In any case, it should be noticed that such an underestimation would be a consequence of the functional form actually used rather than a limitation of the index itself.

Notwithstanding these shortcomings, the CES functional form has several empirical advantages that explain its use in modeling import demand (Winters, 1984). If the utility function is homogeneously separable, commodities may be consistently aggregated (Gorman, 1959). That is, one may form composite commodities which may be treated in the same manner as the primary commodities. Accordingly, we assume that the overall basket of goods can be partitioned into J aggregates denoted $j = 1, \ldots, J$, and the utility function of the representative consumer can be written as

$$U = \phi(u_1(x_1),.....,u_J(x_J)), \tag{4}$$

where ϕ is continuous, twice differentiable, and strictly quasi concave, and the u_j are continuous, twice differentiable functions, homogeneous of degree one (Lloyd, 1975).

In our application, we assume that u_j is a CES function in x_j. Since the import volume function is homogenous of degree zero in the prices of traded goods, an uniform price change may not affect import decisions.[6] Using the popular Armington (1969) assumption that imports are imperfect substitutes for domestic goods since they are differentiated according to their origin, we solve the problem by taking the domestic good as the *numéraire* (Bach and Martin, 2001). Accordingly, we partition the consumption vector x_j within the jth group into an aggregated domestic good denoted with a suffix d and $N_j - 1$ traded goods denoted by k:[7]

$$u_j = \left(\beta_{dj}(x_{dj})^{\rho_j} + \sum_k \beta_{kj}(x_{kj})^{\rho_j} \right)^{1/\rho_j} \qquad k = 1,.....,N_j - 1 \tag{5}.$$

[6]More generally, Neary (1998) shows how the failure to select a reference untaxed good leads to misleading results in the theory of trade policy.

[7]In order to avoid notational clutter, we do not use the index i to distinguish different exporters. In the actual calculations, though, we are going to use bilateral trade flows.

Denoting $\sigma_j = \frac{1}{1-\rho_j}$ (the elasticity of substitution within the *j* group), the expenditure devoted to each aggregate *j* is:

$$e_j(p,u) = \left(\beta_{dj}(p_{dj})^{1-\sigma_j} + \sum_k \beta_{kj}(p_{kj})^{1-\sigma_j} \right)^{1/(1-\sigma)j} u_j \quad (6).$$

The parameters β_{kj} can be calibrated to the initial values of the expenditure shares in the base data, when all domestic prices are set to 1. After deriving the indirect utility function by inverting equation (6), the Marshallian demand functions of each of the *k=1,.., N_j -1* imported goods can be found by Roy's identity:

$$x_{kj} = \beta_{kj} \frac{p_{kj}^{-\sigma_j}}{\left(\beta_{dj}(p_{dj})^{1-\sigma_j} + \sum_k \beta_{kj}(p_{kj})^{1-\sigma_j} \right)} e_j \quad (7).$$

Denoting P_j the price index that corresponds to the denominator of the right-hand side, the import volume function for the *j*th aggregate, valued at world prices, is:

$$\sum_k p_{kj}^* x_{kj} = \sum_k p_{kj}^* \beta_{kj} \left(\frac{1}{P_j p_{kj}^{\sigma_j}} \right) e_j \quad (8).$$

$$k = 1,....,N_j - 1$$

When the initial total expenditure e_j^0 (expenditures on both domestic and imports in *j*) is used in expression (8), we obtain the demand function at the initial level of imports.

The MTPI $(1-\alpha_j)$ for each sector *j* is found by setting the value of the import volume function with the uniform preferential margin equal to the initial value of imports (evaluated at world prices):

$$\sum_k p_{kj}^* \beta_{kj} \left(\frac{P_j^\tau}{p_{kj}^* (1+\alpha_j \tau_j^{\max})} \right)^{\sigma_j} e_j^0 = \sum_k p_{kj}^* I_{kj}^0 \quad (9)$$

where I_{kj}^0 are the volumes of imports in the initial period (i.e., 2004 in our application), and P_j^τ is the price index:

$$P_j^{\tau} = \left(\beta_{dj} (p_{dj})^{1-\sigma_j} + \sum_k \beta_{kj} (p_{kj}^{*} (1+\alpha_j \tau_j^{\max}))^{1-\sigma_j} \right)^{-\sigma_j} \qquad (10).$$

The uniform preferential margins for each aggregate commodity *j* are computed using the GAMS package (Brooke et al., 1998), solving for α_j in equations (9) and (10). The overall MTPI can be obtained by modifying equation (9) as follows:

$$\sum_j \sum_k p_{kj}^{*} \beta_{kj} \left(\frac{(\beta_{dj} (p_{dj})^{1-\sigma_j} + \sum_k \beta_{kj} (p_{kj}^{*} (1+\alpha\tau_{kj}^{\max}))^{1-\sigma_j})^{-\sigma_j}}{p_{kj}^{*} (1+\alpha\tau_{kj}^{\max})} \right)^{\sigma_j} e_j^0 = \sum_j \sum_k p_{kj}^{*} I_{kj}^0 \qquad (11),$$

i.e. summing up over all *J* sectors. The MTPI indexes are by themselves relevant for the analysis of trade policy. In addition, they can be used as inputs in any analysis with a commodity aggregation and an import demand structure consistent with our assumptions. However, it should be recalled that they are only an approximation of the 'true' (i.e., general equilibrium) MTPI indexes.

Finally, it is worth recalling that the same percentage margin (α) implies very different duty reductions according to the initial tariff levels. In order to express the margin in (absolute) percentage points terms, we will refer the percentage margin to the corresponding MTRI uniform tariffs (τ) computed as in Bureau and Salvatici (2005). For example, if τ = 40 and α=0.7, the MTPI corresponds to 17.1 (40/0.7 – 40) percentage points.

2.1 PREFERENTIAL AND POTENTIAL MTPI

In the policy literature dealing with preferential policies, four issues are most relevant (Hoekman and Ozden, 2005):

- preferential margins: the difference between MFN and preferential tariffs applied to each product;
- potential coverage: the ratio between the value of products covered by a preferential scheme and the value of dutiable imports originating in beneficiary countries;
- utilization: the ratio between the value of imports actually receiving preferential treatment and that of eligible imports in principle covered;
- utility: the ratio of the value of imports that get preferences to all dutiable imports from that exporter.

As far as the *preferential margin* is concerned, we compute the margin for each product on a bilateral basis as the difference between the maximum applied duty by the EU across all exporters and the actual duty faced by each exporter. This means that we do not care about the difference between multilateral, bound tariffs and bilateral, applied duties; rather we focus on the actual preferential margins with respect to possible competitors. Accordingly, we avoid an overestimation of the competitive advantage enjoyed by the exporting country, as it would be the case if the highest applied duties are lower than the maximum ceiling allowed by the WTO commitments.[8] On the other hand, the impact of prohibitive tariffs may be underestimated, since we consider actual rather than potential exporters.

Our import demand system is not limited to the preferential imports and the volume of imports (I_{kj}^{0}) referred to in the equation (9) includes both the preferential and MFN imports. However, it is still useful to compute an index limited to preferential imports (*preferential-MTPI*) that can be compared with the traditional trade-weighted preferential margins in order to have an idea of the relevance of the pure *aggregation bias*. For example, if we consider two sectors characterized by the same preferential margins and preferential trade volumes, the preferential-MTPI would be the same, but the relevance of the preferential policies may be quite different according to the share of preferential trade on the overall trade flows.

In this paper we do not deal with the *potential coverage* of each and every EU preferential schemes, rather we focus on the overall *utility* of the EU trade preferences is considered since the MTPI calculation takes into account the volume of trade that actually benefits from the preference. In this respect, the MTPI provides a much more satisfactory picture, since it would be equal to the preferential-MTPI if all trade was preferential, but it would decrease with the share of preferential imports with respect to total trade. In the example mentioned above, even if the preferential-MTPIs were equal by construction, the MTPI would rightly signal what is the sector were preferences are less relevant due to lower potential coverage or lack of utilization. It is also worth noting that the while the MFN duty-free sectors do not affect the preferential MTPI measure, they are included in the MTPI computation, contributing to lowering the assessment of the preference intensity and correctly signaling the lower degree of preference associated with a lower share of preferential imports.

Finally, in order to shed some light on the relevance of the utilization issue, we will also compute a *potential-MTPI* assuming that all imports paid the preferential duty. This represents a sort of

[8]For instance, according to our definition the simple average absolute preferential margin granted by the EU is equal to 2 percentage points, whereas when it is computed as the difference between the MFN and the applied tariffs the figure would be two times larger.

an upper-bound estimate of the possible value of the granted preference margins if they were fully utilized. As a matter of fact, preferences are often limited to certain quantities and are always granted with some "strings" attached in terms of implementations costs, such as the rules of origin. Comparing the potential with the actual MTPI we are able to assess to what extent exporters are actually constrained in using the preferences.

3. Data

We consider 10,174 products at the 8-digit level of EU Combined Nomenclature classification from 169 exporters to the EU (25 countries). The *ad valorem equivalent* were computed using the EC tariff schedule TARIC and applying a similar methodology to the one applied to build the MAcMapHS6 database (Boumelassa et al., 2009). As far as the TRQs are concerned, there are three possible market regimes: if the fill rate is less than 90%, the quota is not binding and the marginal tariff used is the in-quota tariff; in the range 90%-98%, the quota is binding and the marginal tariff is the simple average of the in-quota and out-of-quota tariffs; if fill rate is higher than 98%, the marginal tariffs are equal to the out-of-quota tariff (Boumelassa et al., 2009). It should be noted that our dataset includes the non-preferential TRQs introduced at the end of the Uruguay Round in order to comply with the minimum access requirements of the Agreement on Agriculture. However, the trade flows involved (691) amounts to a rather small share (0.4%) of total EU imports.

Trade flows are from the Eurostat database Comext.[9] Information on the elasticities of substitution σ and the domestic expenditures is from the Version 7 of the GTAP dataset (Naranyanan and Walmsey, 2008). All data – i.e., tariffs, trade and domestic expenditures, elasticities – refer to 2004.

We aggregate the 283,187 EU bilateral tariff lines associated with positive trade flows up to the 44 commodity sectors included in the GTAP database. It is worth recalling that the number of origin-differentiated products in each commodity aggregate is very uneven (Table 1). There is little justification for putting much faith in the GTAP elasticities, given that by definition they are expected to be much smaller than what we expect at a disaggregated level. Even if providing new estimates is certainly beyond the scope of this work, we test the sensitivity of the results to different possible elasticities' values.

[9]The Comext database (http://fd.comext.eurostat.cec.eu.int/xtweb/) contains detailed foreign trade data distinguished by tariff regimes as reported by the EU member states.

The Eurostat COMEXT database contains trade data distinguished by tariff regimes as reported by the EU member states. Using the information about the preferential trade flows, the applied duty (*t*) used for the computation of the MTPI is equal to the "MFN (applied) tariff" if the preference is not used and to the "preferential (bilateral) tariff" otherwise. Accordingly, our MTPI calculation takes into account the volume of trade that actually benefits from the preference.

Figure 1 shows that more than 60% of tariff lines with positive trade flows enjoy preferential access, and 80% of them are actually used, while 22% of the tariff lines are MFN-duty free. Some GTAP sectors do not include any positive duties: since in these sectors all preferential margins are (obviously) equal to zero, they are not reported in the tables presenting the results.

In order to provide a rough picture of the EU tariff structure, in Table 1 we report the simple averages for the preferential and MFN applied duties. Industrial goods are characterized by rather low MFN tariffs due to the long liberalization process brought forward under the General Agreement on Tariffs and Trade. In relative terms, the largest differences between MFN and bilateral duties are registered by metal products, machinery and equipment, though in absolute terms the most preferred sector appear to be the wearing apparel. On the other hand, agricultural MFN tariffs are significantly higher since they have a much shorter negotiation history. As far as the primary sectors are concerned, the largest absolute differences are registered in the case of beverages, tobacco, and meat products; while in relative terms the most preferred sectors are livestock and fishing.

Looking at the trade data (Table 2), it appears that preferential flows represent 14% of total EU non-intra imports (most of them duty fee). However, if we exclude the large share of MFN duty free flows, where preferences are not possible, preferential trade represents almost the half. Preferential imports are more relevant for agrifood and textile products, and this is consistent with the EU tariff structure picture: the most protected sectors, as a matter of fact, are those where preferences are (at least in principle) more relevant.

4. Empirical results

4.1 SECTORS

We start comparing the results for the preferential-MTPI with those provided by the two most common preferential margins aggregators: the simple and trade-weighted averages (Table 3). As it was mentioned in the previous Section, such a comparison gives an idea of the relevance of the pure *aggregation bias* since it takes into account preferential trade only. As expected, the MTPI margins are

positively correlated with the averages, though the sector ranking is not exactly the same, especially when margins are large.

The trade-weighted average clearly outperforms the simple one in its ability to mimic the preferential-MTPI results. This is consistent with the results by Anderson and Neary (2003 and 2005) and Bach and Martin (2001), showing that the trade-weighted average tariff is a linear approximation to the tariff aggregator based on the expenditure function, while the simple mean is a pure statistical construct.

As it could be expected, the MTPI and the trade-weighted average are closer when the number of tariff lines involved is smaller or when there is little dispersion in the values of the margins as showed by the standard deviation values (Table 3). Consistently with the findings by Anderson and Neary (2003), the MTPI uniform percentage reductions (α) always exceed the trade-weighted ones. In terms of preferential margins, this means that the trade-weighted average always overpredicts the MTPI value, with differences ranging from 1 to 9 (in the case of processed rice) percentage points. The overall preferential-MTPI is rather large (76%), but it turns out to be much lower in the case of agriculture (64%) with respect to the other sectors (84%). This is quite an interesting result, since the agricultural products are often the most important exports for the developing countries and present much higher duties (see Table 1).

The MTPI margins for different sectors are presented in Table 4. As expected, they are significantly lower than the preferential-MTPI margins presented in Table 3. The overall MTPI margin granted by the EU is 28%, but there are large differences across sectors. The agricultural sector is far above the average with a margin equal to 38%, and the highest percentages are registered by wheat and sugar (65% and 63%, respectively). On the contrary, most industrial sectors present much lower figures (the overall margin is 25%), with a minimum equal to 9% in the case of electronic equipment. The comparison between agricultural and non-agricultural sectors in terms of the MTPI results provides a completely different picture with respect to the preferential-MTPI results, and makes clear the different meaning of the two indexes. If we only take into account preferential imports, non-agricultural preferences exceed the agricultural ones, but if we consider the relevance of these preferential trade flows with respect to the non-preferential ones we get the opposite result.

The two possible measures of the preferential margins (relative and absolute) are obviously related, so the sectors above the average in terms of the MTPI also present quite substantial absolute

margins, as in the case of processed rice (98), sugar (83), vegetables (61), beverages (58),[10] wheat and meat (both 45). Notwithstanding the large absolute margin (35 points), still the primary sectors remain by far the most protected one since the MTRI uniform tariff is almost twenty times larger than in the case of the non-agricultural sector.

Table 4 also reports the results for the potential-MTPI. Although this index is likely to underestimate the impact of the regulations that do not allow a full exploitation of the existing preferences, since trade volumes may have been even larger than the actual ones, the comparison with the MTPI margins highlight the sectors – cattles, meat and dairy products – where traders do not take full advantage of the right to sell into a partner market at a reduced duty because of restrictions on rules of origin or high administrative costs involved in securing preferential treatment. The other sectors presenting large differences are some traditional manufactures – such as textiles and apparels – or more advanced sectors such as chemical, rubber and plastic products: in these cases, explanations may be due to the rules of origin requirements.

According to the EU Commission (2008), the primary objective of the EU preferential policies is to contribute to the reduction of poverty and the promotion of sustainable development and good governance. Using results of MTPI by sectors and exporting countries we explore to what extent are the EU preferences related to some crucial economic variables, such as the share of labor in value added by sector and country, the shares of each sector in the exporting country GDP, and the total exports of each sector for each exporting country. All data for these variables refer to 2004 and are taken from the Version 7 GTAP dataset (Naranyanan and Walmsey, 2008). Table 5 presents the results of simple regressions of these variables on the corresponding MTPI values.

Model 1 in Table 5 show the partial correlation between MTPI values and labor shares in value added, respectively. There is a positive and statistically significant association, suggesting that the EU grants larger preferences to the labor-intensive sectors, and this is quite consistent with the stated goals of the preferential policies. Model 2 in Table 5 shows the partial correlation between MTPI values and sector shares in national GDPs. The rather large positive and statistically significant association implies that the EU tend to impose lower trade restrictions on the most important sectors of the exporting countries. This is confirmed by Model 3 showing the relationship between MTPI values and the sectoral export shares. Apparently, the EU preferential policy is more generous with the sectors where the exporting countries seem to have their comparative advantage, and this flies in the face of many

[10] The beverages and tobacco sector presents a very high MTRI uniform tariff (337%). This is due to the existence of some specific tariffs leading to an *ad valorem* equivalents exceeding 500%.

criticism raised against this type of policies (Panagariya, 2002; Mold, 2004; Brenton and Ikezuki, 2005; Borchert, 2009).

4.2 EXPORTING COUNTRIES

We computed the overall MTPI and potential-MTPI for each of the 169 countries exporting into the EU as well as for the 3 categories in which they were grouped: developed, developing and least developed countries (Table 6). For each countries we report the MTPI and the potential-MTPI.

Not surprisingly, the largest preference margins are granted to the LDCs. As far as the potential-MTPI is concerned, many values are close to 100% due to the implementation of the EBA. However, the actual MTPI is on average much lower (38%) and this confirms that the impact of the (apparently) most generous tariff preference can be greatly reduced by the existence of several costs and constraints, such as quotas, administrative burdens, in addition to the remaining constraints on sugar, rice, and bananas (Bureau *et al.*, 2004; Gallezot and Bureau, 2004; Anson *et al.*, 2005; Estevadeordal and Suominen, 2005; Iimi, 2007; Desta, 2008).

On the other hand, it may be less obvious that the developed countries group benefits from preferences slightly lower than the overall level and quite close to the level enjoyed by the developing countries group. As a matter of fact, in the developed countries group we find countries included in reciprocal preferential agreements, such as the free trade areas with countries as Norway, Iceland or Switzerland, as well as countries that were still completing the accession process in 2004, such Bulgaria and Romania. On the other hand, with the exception of Japan it appears that some preferences are also granted to some of the few countries that are supposed to face the MFN duties, such as Australia, Canada or Unites States. This is due to the fact that our sample does not include WTO members only: as a consequence, the MFN duties may turn out to be lower than the tariffs applied to countries that are not WTO member yet. In such a case, then, the MTPI quantifies the benefit of being member of the "multilateral club", but it should be noted that also a non-WTO member such as the Russian federation still benefits from some preferences.

In order to explore how EU trade preferences granted to each exporter are associated with the exporters income levels, we run a simple regression of MTPI on GDP per capita.[11] Figure 2 shows the partial correlation between MTPI and the GDP per capita. There is a negative and statistically significant (at 5% level) correlation suggesting that the EU tends to grant lower trade preference margins to richer countries. Such a negative relation is much less strong than could be expected

[11] Data on GDP per capita, PPP (constant 2000 US$) for year 2004 are taken from the World Development Indicators 2008 (WDI) by World Bank.

(European Commission, 2008), though it could be explained by the few developed countries – such as Norway, Switzerland and Iceland – presenting high MTPI values.

Finally, we compute the MTPI grouping the exporting countries according to the continent to which they belong rather than their development levels. Table 7 presents the results for six regions – Africa, Asia, Europe, North America, Pacific, and South America – also distinguishing between agricultural and non-agricultural sectors. The European countries, which are in most cases targeted by the so-called "neighborhood policy", enjoy the largest margins (69% overall). The second most preferred region is Africa (56% overall margin) that includes many members of the Generalized System of Preferences (and more recently of the Everything But Arms initiative) as well as of the Africa-Caribbean-Pacific (ACP) agreement. The third is South-America (45% overall), where the EU has been rather active in signing reciprocal agreements (Chile) or granting unilateral preferences to some Mercosur members (e.g., Argentina, Brazil).

The remaining three regions are characterized by much lower overall margins, ranging from 9% of North America, to 21% of the Pacific area. Even if the relatively low value for North America is certainly not surprising, since it includes countries such USA and Canada, it is worth noting that the benefits from the WTO membership appear to be more significant in the case of the agricultural products. In the case of the Pacific area, many (small) countries are members of the ACP agreements, but the largest economies (Australia, New Zealand) do not get much in terms of preferences.

More surprising may be considered the rather low level of the overall Asian preferences (17%), since this area includes some prominent developing economies, such as India and China. This is due to the fact that there is only one large LDC in Asia, and only recently the EU has undertaken bilateral negotiations with some countries of the region, such as India and ASEAN: as it is confirmed by the results presented in Table 6, in 2004 many of these countries were relatively worse off in terms of access to the EU market.

4.3 SENSITIVITY ANALYSIS

We turn to a sensitivity analysis of our simulation results, in order to check to what extent the assumed values of the substitution elasticities affect the MTPI computation. Even though the elasticities extracted from the GTAP dataset are widely used by applied analysts, their reliability is questionable. For instance, there are several reasons to believe that the GTAP elasticities are low, compared to what is consistent with recent econometric estimates of import elasticities (Erkel-Rousse and Mirza, 2002; Hummels, 1999).

In order to assess the sensitivity of the results to the choice of the parameters of the CES function, we computed the MTPIs making different assumptions about the values of the substitution elasticities (Table 8). The elasticities are assumed to range from one-third to three times the original values. Even though the ranking of different sectors does not change, the MTPIs are obviously quite sensitive to the degree of substitution across products and exporters, a finding consistent with the results obtained by Bureau and Salvatici (2005). An increase in the elasticity of substitution leads to lower values of the overall-MTPI index, which decreases from 34% to 24%, since lower margins are required in order to generate the same trade volumes if the products are more similar from the consumer point of view. Such a result is confirmed both for the agricultural and non-agricultural sectors.

5. Conclusions

Over the last decade, there has been a great deal of interest in how to measure the openness of developed countries' markets *vis-à-vis* developing countries exports. We provide a quantitative assessment of the EU preferential policies, taking into account the existence of different margins in a large number of tariff lines. We build on the work of Anderson and Neary developing an index, the MTPI, with a firm foundation in economic theory and that can be actually computed. The MTPI is defined as the complement to one of the uniform scaling factor applied to the maximum levied tariffs that would produce the same effect on imports volume as the importing country's preferential tariff structure. The computation is carried out using the same approach as Bureau and Salvatici (2005) that does not require a CGE model, but assumes a demand driven modelling with differentiated products by origin (Armington assumption) and a conventional CES functional form. We assess the EU trade policy computing the index at the sectoral level, for exporting country and for regional groupings.

There are two fundamental obstacles to constructing summary statistics of the overall level of trade preferences. Firstly, the level of preference in each tariff line must be appropriately weighted. This is the well-known *index number* problem solved by the computation of the preferential-MTPI. We show that MTPI uniform preferences and the trade-weighted margins tend to move closely together when the number of products is small, and when the dispersion of margins is low. However, the trade-weighted aggregator overestimates the true preferential margin.

Even if the preferential-MTPI provides a theoretically consistent aggregation of individual margins, it tends to overestimate the relevance of preferential policies since it does not take into account the relevance of preferential trade. This is the *coverage* problem solved by the computation of

the MTPI since the latter takes into account the ratio between products covered by preferential schemes and the dutiable imports originating in beneficiary countries. In this respect, we believe that it provides a much more realistic assessment of the policies under consideration. On the other hand, it should be acknowledged that since we assume a CES functional form, we cannot deal with zero trade flows due, for example, to prohibitive tariffs.

Finally, there is the issue of the extent to which beneficiaries are actually able to use preferences. This is the *utilization* problem that would require detailed information on the factors explaining the difference between imports that actually receive preferential treatment and those in principle covered. Since we know the ratio between preferential and MFN imports at the tariff line level, we use this information in order to compute the potential-MTPI. This index assumes that all imports entered under the preferential schemes, then providing an estimate of the compliance costs with rules of origin and other requirements.

In terms of the MTPI, the overall margin granted by the EU is around 28%. There are large differences across sectors, though. The agricultural sector is far above the average with a margin equal to 38%, with the highest percentages in the case of wheat and sugar (65 and 63%, respectively). On the contrary, most industrial sectors present much lower figures (the overall margin is 25%), with a minimum of 9% in the case of electronic equipment. EU preferences tend to favor labor intensive industries, but they do not seem to be affected by political economy biases. As a matter of fact, the more competitive are the preference receiving sectors, and the greater their capacity to sell into the world market is, the more resistance could have been expected from import-competing industries in the EU. On the contrary, our results show that the intensity of the EU preferences is positively and significantly related to the relevance and competitiveness of the exporting countries industries.

Looking at the exporting countries and regions, it emerges that in addition to the special and differential treatment for the developing countries, the complex web of reciprocal agreements set up by the EU grants significant margins of preference to several developed countries as well as non-WTO-members. In addition to the large preferences granted to the European neighbor countries, the largest preferences are enjoyed by the African and South-American countries, while Asian countries seem to be less favored on average. Even if our results confirm the expectation that the poorest countries benefits from larger duty reductions, such a negative relationship is not very strong and if we exclude the LDCs the preference margins enjoyed by the developing countries are roughly comparable to those of the developed ones.

The comparison between potential and actual MTPIs show that the EU preferences are significantly less generous that they would appear simply looking at the intensity of the tariff reductions. We don't know if the potential exports are reduced by design, incidentally, or by domestic supply constraints, but our results clearly show that the LDCs are the most affected.

Theoretically consistent preferential policies aggregation is possible if we are willing to impose some structure on the importing country behavior, and if we accept that results are inherently sensitive to assumptions regarding the elasticity of substitution, on which there is still too little reliable information available. Notwithstanding these limitations, the MTPI, provides a rigorous assessment of the EU trade policy in terms of impact on imports. We show that the European policies are certainly effective in this respect, though with large differences across sectors and countries. It is worth recalling, though, that the impacts of preferential policies are inherently multidimensional, and the eventual absence of an impact on exports does not necessarily imply that preferences are irrelevant, since they may still provide significant resource transfers through the generations of rents. On the other hand, the evidence of a positive impact in terms of trade flows, does not necessarily imply that they are good for development. In order to make such a claim, as a matter of fact, we need to investigate whether they help create industries that are would survive the removal of preferences, either as the result of unilateral actions or MFN liberalization.

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TABLES

Table 1: EU tariff structure.

GTAP sector (ordered from the most to the least protected)	*Number of tariff lines*	*MFN duties (simple mean, %)*	*Bilateral duties (simple mean, %)*
All products	283187	**7**	**3**
Agricultural sector	37210	**24**	**16**
Beverages and tobacco products	2866	144	117
Processed rice	250	62	43
Sugar	273	51	35
Paddy rice	159	43	30
Bovine meat prods	364	43	17
Dairy products	566	43	24
Bovine cattle, sheep and goats, horses	162	20	4
Meat products n.e.c.	643	17	10
Food products n.e.c.	17566	17	9
Cereal grains n.e.c.	237	16	9
Wheat	59	15	8
Animal products n.e.c.	1456	10	6
Fishing	1571	10	3
Vegetable oils and fats	1317	9	5
Vegetables, fruit, nuts	4704	8	3
Crops n.e.c.	3939	6	2
Forestry	1076	1	0
Non-agricultural sector	245051	**4**	**1**
Wearing apparel	23707	11	4
Textiles	27887	8	3
Leather products	9092	7	2
Motor vehicules and parts	4879	6	2
Chemical, rubber, plastic products	33189	4	1
Mineral products n.e.c.	10247	4	1
Metals n.e.c.	5386	4	1
Metal products	16088	3	1
Transport equipment n.e.c.	3985	3	1
Electronic equipment	11711	3	1
Manufactures n.e.c.	11776	3	1
Wood products	8143	2	1
Petroleum, coal products	1295	2	0
Machinery and equipment n.e.c.	62382	2	0
Ferrous metals	6724	1	0
Minerals n.e.c.	2285	0	0
Paper products, publishing	6275	0	0
Others	926	0	0

Table 2: EU Imports (year 2004)

Sample of positive trade *(ordered by the highest to the lowest % of total trade)*	***Total Imports (Ml €)***	***MFN duty free (%)***	***MFN duties (%)***	***Preferential duties (%)***	***Preferential duty free (%)***
All products	869,193	56.8	29.3	2.3	11.6
Agricultural sector	63,160	33.4	39.8	9.6	17.2
Food products n.e.c.	18,344	7.2	39.5	19.1	34.2
Vegetables, fruit, nuts	11,266	36.4	40.2	10.1	13.4
Crops n.e.c.	8,062	68.6	15.7	2.0	13.8
Vegetable oils and fats	7,420	68.5	22.5	5.2	3.8
Beverages and tobacco products	4,031	24.9	59.4	10.4	5.4
Bovine meat prods	2,176	1.9	93.4	3.3	1.3
Fishing	2,074	7.9	58.3	7.0	26.8
Forestry	1,958	87.8	6.9	1.4	3.9
Animal products n.e.c.	1,680	80.5	16.6	0.0	2.9
Meat products n.e.c.	1,488	19.0	76.2	0.9	3.8
Sugar	1,339	0.0	57.2	0.0	42.8
Wheat	1,002	0.0	99.8	0.0	0.2
Cereal grains n.e.c.	787	13.8	85.0	0.3	0.9
Dairy products	701	0.0	59.5	29.4	11.1
Bovine cattle, sheep and goats, horses	480	72.8	14.4	2.6	10.2
Paddy rice	234	0.0	98.3	1.6	0.1
Processed rice	119	0.0	99.5	0.0	0.5
Non-agricultural sector	662,171	49.6	34.6	2.2	13.6
Electronic equipment	130,558	86.7	11.8	0.3	1.2
Machinery and equipment n.e.c.	118,863	31.3	49.0	0.4	19.2
Chemical, rubber, plastic products	95,891	44.0	43.0	1.8	11.2
Wearing apparel	34,925	0.1	62.2	6.8	31.0
Motor vehicules and parts	30,517	0.2	73.9	3.0	22.9
Metals n.e.c.	29,531	64.9	15.7	1.3	18.1
Transport equipment n.e.c.	29,225	66.3	28.2	2.2	3.3
Textiles	29,162	1.7	49.7	13.5	35.2
Manufactures n.e.c.	25,448	42.0	46.5	0.4	11.1
Petroleum, coal products	24,839	73.2	11.1	0.0	15.7
Minerals n.e.c.	22,378	99.4	0.3	0.0	0.3
Ferrous metals	20,252	81.4	6.5	1.0	11.1
Wood products	17,859	71.6	12.9	1.5	14.0
Leather products	16,725	5.6	64.0	13.6	16.9
Metal products	15,732	13.5	61.5	0.7	24.3
Paper products, publishing	12,664	99.1	0.3	0.0	0.6
Mineral products n.e.c.	7,600	12.8	51.7	6.1	29.5
Others	143,863	100.0	0.0	0.0	0.0

Table 3: Preferential-MTPI, simple and weighted average preferential margins

Sectors (ordered for the highest share of preferential trade)	*Preferential-MTPI margin, %*	*Weighted mean margin, %*	*Simple mean margin, %*	*Standard deviation*	*Number of tariff lines*
All products	**76**	**78**	**77**	**0.28**	**72397**
Agricultural sector	**64**	**65**	**68**	**0.32**	**11564**
Food products n.e.c.	80	83	70	0.33	6903
Sugar	72	85	95	0.18	53
Dairy products	87	91	83	0.29	114
Fishing	88	88	88	0.24	633
Vegetables, fruit, nuts	84	87	85	0.29	1678
Beverages and tobacco products	26	28	52	0.41	388
Crops n.e.c.	89	91	81	0.27	1041
Bovine cattle, sheep and goats, horses	94	96	87	0.32	32
Vegetable oils and fats	55	59	75	0.30	352
Forestry	70	71	80	0.24	104
Meat products n.e.c.	68	85	70	0.44	117
Bovine meat prods	62	73	77	0.35	62
Animal products n.e.c.	60	63	98	0.27	34
Paddy rice	7	16	70	0.38	14
Cereal grains n.e.c.	53	60	67	0.35	22
Processed rice	62	70	73	0.27	13
Wheat	59	61	81	0.21	4
Non-Agricultural sector	**84**	**87**	**84**	**0.26**	**60833**
Textiles	76	80	73	0.38	10643
Wearing apparel	82	86	78	0.36	9038
Mineral products n.e.c.	84	85	86	0.20	3445
Leather products	59	61	84	0.25	3125
Motor vehicules and parts	88	89	92	0.16	1398
Metal products	98	98	96	0.09	4623
Machinery and equipment n.e.c.	99	99	97	0.14	12762
Metals n.e.c.	96	96	88	0.20	1111
Petroleum, coal products	100	100	99	0.10	324
Wood products	92	92	93	0.14	1721
Chemical, rubber, plastic products	94	94	95	0.14	7769
Ferrous metals	94	95	95	0.11	448
Manufactures n.e.c.	98	98	98	0.09	2716
Transport equipment n.e.c.	67	69	85	0.17	855
Electronic equipment	83	86	89	0.22	728
Paper products, publishing	99	100	97	0.17	63

Table 4: MTPI, absolute preferential margin and potential-MTPI

Sectors	*MTPI (%)*	*MTRI applied uniform tarif (%)*	*Absolute preference margin*	*Potential MTPI (%)*
All products	**28**	**6**	**3**	**41**
Agricultural sector	**38**	**59**	**35**	**47**
Animal products n.e.c.	8	60	5	31
Beverages and tobacco products	14	343	58	16
Bovine cattle, sheep and goats, horses	47	7	6	88
Bovine meat prods	35	85	45	62
Cereal grains n.e.c.	25	21	7	30
Crops n.e.c.	38	3	2	48
Dairy products	35	69	37	54
Fishing	53	3	4	57
Food products n.e.c.	47	19	17	57
Forestry	36	0	0	48
Meat products n.e.c.	20	36	9	22
Paddy rice	24	74	23	29
Processed rice	61	63	98	61
Sugar	63	48	83	66
Vegetable oils and fats	23	5	2	26
Vegetables, fruit, nuts	60	41	61	67
Wheat	65	24	45	66
Non-agricultural sector	**25**	**3**	**1**	**39**
Chemical, rubber, plastic products	22	2	1	38
Electronic equipment	9	2	0	20
Ferrous metals	63	0	1	80
Leather products	19	7	2	26
Machinery and equipment n.e.c.	26	2	1	38
Manufactures n.e.c.	16	2	0	25
Metal products	27	2	1	34
Metals n.e.c.	50	1	1	68
Mineral products n.e.c.	31	3	1	42
Minerals n.e.c.	61	0	0	73
Motor vehicules and parts	18	7	1	30
Paper products, publishing	67	0	0	75
Petroleum, coal products	61	0	1	84
Textiles	34	6	3	53
Transport equipment n.e.c.	10	2	0	15
Wearing apparel	27	8	3	43
Wood products	45	1	1	59

Table 5: Relationships between MTPI and economic variables.

Dependent variable: MTPI	*Model 1*	*Model 2*	*Model 3*
Total labor/value added	0.19***		
	(0.06)		
Value added/GDP		2.91***	
		(0.76)	
Exports/Total exports			0.37***
			(0.08)
Constant	0.35	0.56	0.46
	(0.39)	(0.40)	(0.43)
Sector and exporter dummies	Yes	Yes	Yes
Observations	1379	1405	1405
Adjusted R^2	0.37	0.37	0.37

Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: MTPI and Potential-MTPI for exporting countries (ordered by the highest share of trade)

Countries		MTPI	Potential-MTPI	Countries		MTPI	Potential-MTPI	Countries		MTPI	Potential-MTPI	Countries		MTPI	Potential-MTPI
Developed countries		**27%**	**31%**	MYS	Malaysia	17%	41%	MNG	Mongolia	11%	21%	BGD	Bangladesh	52%	95%
USA	United states of america	3%	22%	MEX	Mexico	43%	85%	MHL	Marshall islands	48%	62%	VUT	Vanuatu	34%	93%
JPN	Japan	0%	19%	BRA	Brazil	31%	39%	TJK	Tajikistan	9%	72%	TZA	Tanzania	84%	100%
CAN	Canada	22%	32%	THA	Thailand	16%	40%	ARM	Armenia	49%	88%	SLB	Solomon islands	100%	100%
TWN	Taiwan	14%	36%	IND	India	26%	40%	TKM	Turkmenistan	35%	44%	MDG	Madagascar	81%	92%
SGP	Singapore	1%	70%	IDN	Indonesia	17%	30%	ZWE	Zimbabwe	83%	100%	UGA	Uganda	68%	100%
RUS	Russian federation	21%	57%	ZAF	South africa	27%	39%	TON	Tonga	40%	94%	AFG	Afghanistan	7%	89%
CHE	Switzerland	75%	87%	PHL	Philippines	19%	47%	PAK	Pakistan	60%	76%	NPL	Nepal	85%	99%
AUS	Australia	16%	22%	TUR	Turkey	49%	97%	PRY	Paraguay	55%	67%	MWI	Malawi	87%	99%
ANT	Netherland antilles	36%	37%	ARG	Argentina	41%	54%	GUY	Guyana	35%	42%	KHM	Cambodia	55%	88%
HKG	Hong kong	1%	9%	CHL	Chile	29%	35%	ALB	Albania	33%	97%	LAO	Lao people's democratic	59%	96%
ABW	Aruba	56%	65%	CUB	Cuba	39%	45%	BWA	Botswana	66%	68%	MDV	Maldives	88%	93%
NZL	New zealand	19%	53%	VNM	Viet nam	23%	39%	BOL	Bolivia	58%	96%	ZMB	Zambia	95%	100%
CYM	Cayman islands	42%	91%	VEN	Venezuela	77%	95%	CMR	Cameroon	77%	83%	BTN	Bhutan	18%	99%
___	Anguilla	59%	94%	COL	Colombia	68%	86%	COG	Congo	51%	54%	AGO	Angola	15%	95%
TCA	Turks and caicos islands	67%	95%	EGY	Egypt	62%	85%	DMA	Dominica	100%	100%	BDI	Burundi	94%	100%
HRV	Croatia	65%	92%	DZA	Algeria	61%	93%	DOM	Dominican republic	73%	98%	CPV	Cape verde	90%	98%
AND	Andorra	51%	89%	LBY	Libyan arab jamahiriya	23%	33%	ECU	Ecuador	66%	67%	CAF	Central african republic	45%	100%
SMR	San marino	7%	92%	YUG	Yugoslavia	24%	75%	GAB	Gabon	70%	86%	TCD	Chad	1%	100%
BGR	Bulgaria	61%	72%	PER	Peru	74%	90%	GHA	Ghana	85%	97%	COM	Comoros	85%	100%
FRO	Faroe islands	92%	99%	MAR	Morocco	78%	94%	GRD	Grenada	97%	100%	COD	Congo (democratic rep.)	91%	98%
GIB	Gibraltar	0%	88%	BIH	Bosnia and herzegovina	57%	91%	IRN	Iran	26%	40%	BEN	Benin	81%	98%
NOR	Norway	79%	89%	TUN	Tunisia	54%	97%	IRQ	Iraq	62%	91%	GNQ	Equatorial guinea	92%	98%
ISL	Iceland	74%	93%	NAM	Namibia	64%	67%	CIV	Côte d'ivoire	74%	84%	ETH	Ethiopia	51%	61%
PYF	French polynesia	47%	99%	SWZ	Swaziland	68%	73%	JAM	Jamaica	93%	100%	ERI	Eritrea	45%	86%
MAC	Macau	3%	18%	LKA	Sri lanka	6%	10%	JOR	Jordan	31%	93%	DJI	Djibouti	18%	99%
COK	Cook islands	47%	91%	GTM	Guatemala	78%	86%	KEN	Kenya	80%	100%	GMB	Gambia	74%	97%
GRL	Greenland	92%	100%	CRI	Costa rica	65%	80%	LBN	Lebanon	56%	71%	GIN	Guinea	32%	85%
BMU	Bermuda	2%	60%	HND	Honduras	66%	96%	MUS	Mauritius	58%	62%	HTI	Haiti	23%	90%
FLK	Falkland islands	68%	99%	NIC	Nicaragua	80%	91%	OMN	Oman	31%	40%	LBR	Liberia	71%	82%
BRN	Brunei darussalam	0%	99%	BLZ	Belize	89%	99%	NGA	Nigeria	61%	92%	MLI	Mali	24%	80%
NRU	Nauru	60%	85%	PNG	Papua new guinea	86%	100%	KNA	Saint kitts and nevis	76%	98%	MRT	Mauritania	78%	96%
ATG	Antigua and barbuda	15%	67%	URY	Uruguay	48%	61%	LCA	Saint lucia	100%	100%	NER	Niger	58%	96%
BHS	Bahamas	82%	91%	UKR	Ukraine	43%	56%	VCT	Saint vincent and the gr	100%	100%	GNB	Guinea-bissau	1%	62%
BHR	Bahrain	38%	60%	BLR	Belarus	31%	56%	SAU	Saudi arabia	29%	69%	RWA	Rwanda	52%	90%
BRB	Barbados	96%	99%	MDA	Moldova, rep.of	5%	8%	SYC	Seychelles	85%	99%	STP	Sao tome and principe	66%	95%
ISR	Israel	60%	84%	KAZ	Kazakstan	48%	74%	SYR	Syrian arab republic	64%	97%	SEN	Senegal	72%	96%
KWT	Kuwait	34%	65%	AZE	Azerbaijan	38%	65%	TTO	Trinidad and tobago	82%	100%	SLE	Sierra leone	34%	99%
QAT	Qatar	33%	73%	GEO	Georgia	48%	58%	**LDCs**		**38%**	**62%**	SOM	Somalia	18%	91%
ROM	Romania	65%	91%	UZB	Uzbekistan	15%	27%	WSM	Samoa	77%	98%	SDN	Sudan	43%	92%
ARE	United arab emirates	29%	62%	SLV	El salvador	65%	78%	MOZ	Mozambique	31%	31%	TGO	Togo	95%	100%
Developing Countries		**28%**	**33%**	KGZ	Kyrgyzstan	5%	23%	LSO	Lesotho	45%	95%	BFA	Burkina faso	44%	99%
CHN	China	3%	18%	FJI	Fiji	100%	100%	KIR	Kiribati	3%	87%	YEM	Yemen	71%	95%

Table 7: MTPI for exporting regions (%)

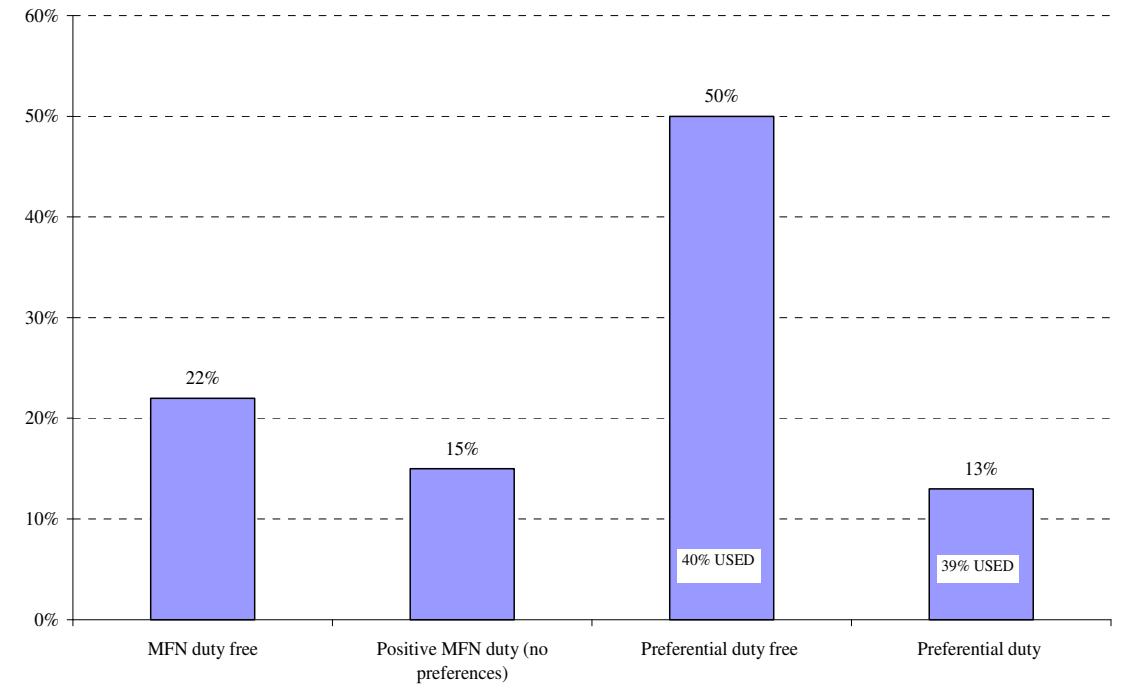
Sector	*Africa*	*Asia*	*Europe*	*North America*	*Pacific*	*South America*
All products	56	17	69	8	21	45
Agricultural sector	48	33	56	32	43	50
Non-agricultural sector	66	15	74	3	6	43

Table 8: Sensitivity of the Preference Margin Sensitivity to changes in the elasticities of substitution σ_j (%).

Sector	*0.3* σ_j*	*1.3* σ_j*	*2* σ_j*	*3* σ_j*
All products	**34**	**28**	**26**	**24**
Agricultural sector	47	41	38	36
Non-agricultural sector	28	24	22	21

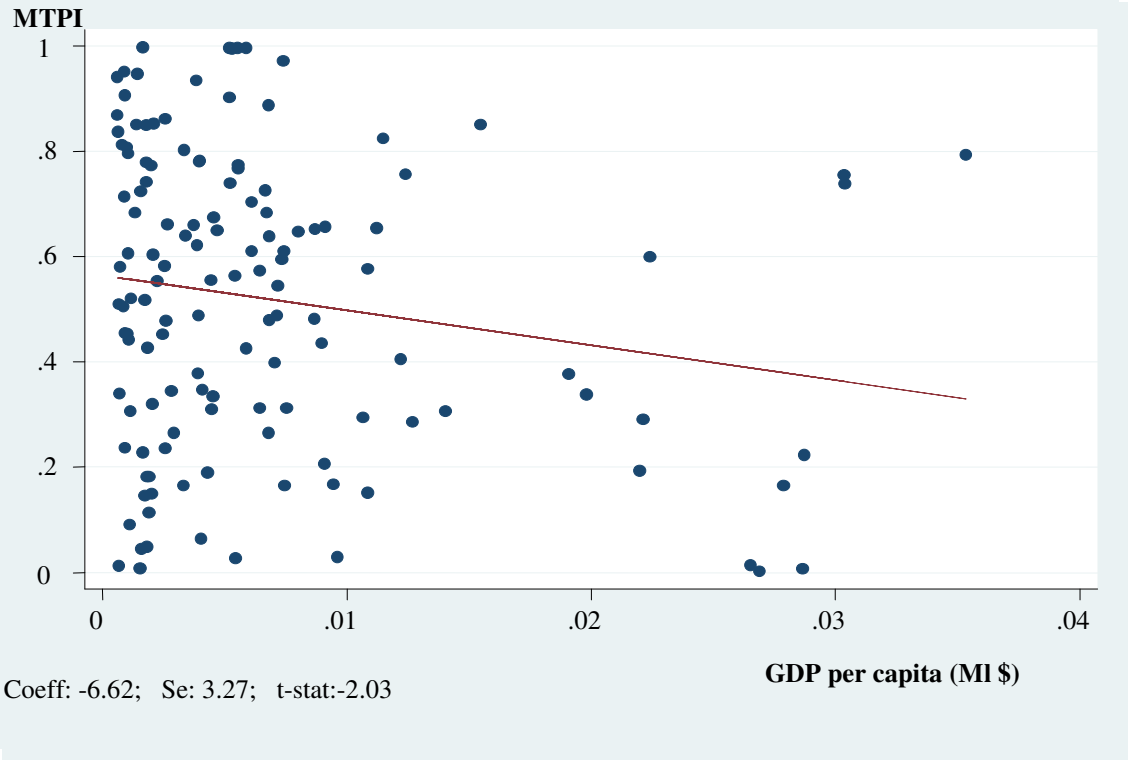
FIGURES

Figure 1: Shares of bilateral EU tariff lines by type of tariff regime (2004)



Source: Authors using data from MacMap and Comext (2004).

Figure 2: GDP per-capita and MTPI.



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