TRADE PREFERENCE INDEX

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Introduction

- This paper focuses on the EU tariff preferences The **objective** is to shed some light on the market access granted by the EU preference programs.
- Because over the time a large number of preferential trade arrangements has been concluded between the EU and developing countries in order to integrate them in world trade and to promote their economic growth. For almost half a century, non-reciprocal preference schemes have sought to promote industrialization, increase exports and foster growth in developing countries.

EU preferential policies

- This paper focuses on the EU tariff preferences: the EU, as a matter of fact, has been engaged in a web of preferential trade relations:
  - the regular Generalized System of Preferences (**GSP**),
  - the Everything But Arms – (**EBA**),
  - the Africa-Caribbean-Pacific agreement (**Lomé/Cotonou agreements**),
  - the Bilateral **Euro-Mediterranean** Association Agreements.
- Preferential trade policies do vary a lot across thousands of tariff lines products and exporters. If we want to carry out sensible comparisons across sectors, 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.

Mercantilistic trade preference index

- The main **contribution** of the paper is the computation of aggregate indexes of the preferences granted by EU to different sectors and country groups.
- To this end we build on the work of Anderson and Neary defining an **aggregate measure** (Mercantilistic trade preference index – MTPI) of the **trade preference margins** computed using a partial equilibrium model (Bureau and Salvatici).

Main issues

The vast literature about preferences focuses on:

- *margins*: (usually) the difference between MFN and preferential tariffs for products;
- *coverage*: the ratio between the value of products covered by a scheme and that of the dutiable imports originating from the beneficiary country;
- *utilization*: the ratio between the value of imports that actually receive preferential treatment and the value of those that are in principle covered;
- *utility* (coverage x utilization): the ratio of the value of imports that get preferences to that of all dutiable imports from the same exporter.

Preferential Margin

- We compute the **preference 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 preference margins** with respect to possible **competitors**.

The tariff aggregation process

Several forms of trade policy aggregation have been used but most of them are without theoretical foundation:

- The simplest is the **simple average**, with the same weight on all margins, regardless of the importance of the products to which they are granted.
- 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, but trade-weighted averages have major deficiencies in the case of tariffs (*endogeneity*): as the tariff on any one good rises, its imports fall, so the now higher tariff gets a *lower* weight in the index.

Preferential margins do not seem to be affected by the *endogeneity* problem, since higher margins are typically associated with higher trade values. However, import volumes could be much larger than under an MFN regime because preferences are high or because they are imposed on highly elastic goods.

The preference margin aggregation problem

- 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. 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.
- Taking import flows as the standpoint, the appropriate way of answering the question "How do we measure trade preferences?" is to ask: what is the uniform preference margin which, if applied to all goods, would be equivalent to the actual tariffs, in the sense of yielding a constant volume of imports?

Accordingly, our policy index is strictly related to the **Mercantilistic trade restrictiveness index** introduced by Anderson and Neary (2003).

MTPI: definition

The Mercantilistic Trade Preference Index (MTPI) is the uniform preference margin (**1-** α) where α is the uniform percentage to applied to the maximum applied rates (τ^{max}) which yields the same volume (at world prices) of tariff-restricted imports as the initial vector of tariffs (τ).

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

- ***M*** denotes the Marshallian import demand functions, while holding constant the balance of trade function at level B^0,
- $\boldsymbol{p^*}$ denotes the international price vector of the K goods (k = 1, . . . , K): small country assumption,
- $\boldsymbol{M^0}$ is the value of aggregate imports (at world prices) in the reference period.

The MTPI is defined for different sectors (aggregating across exporters) or for different exporters (aggregating across sectors).

MTPI: implementation

- Partial equilibrium implementation (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 the presence of *prohibitive tariffs* since if there is no or little trade in the base period there will likely be no or little trade impact of reducing tariffs.

Notwithstanding these shortcomings, this functional form has several empirical advantages that explain its wide use.

- Furthermore, 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. Assuming that goods are differentiated according to their origin, we solve the problem by taking the domestic product as the reference good (in each sector).

Data: sources

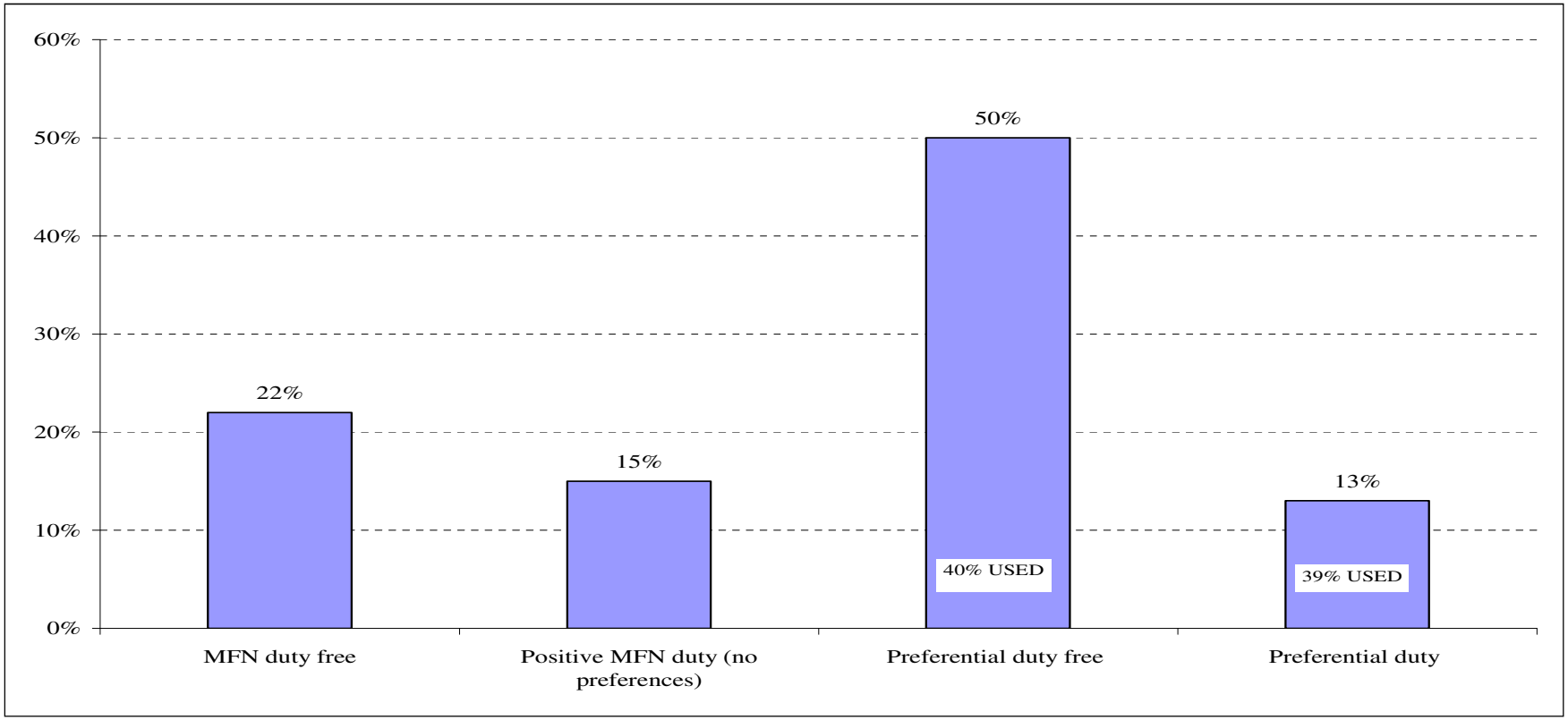
We consider **10,174 products** at the *8-digit level* of EU Combined Nomenclature classification from **169 exporters** to the **EU** (25 countries).

- **Tariffs** are from the **TARIC database** (AVEs according to MAcMap methodology).
- **Trade flows** are from the **Eurostat database Comext**.

Both data refer to **2004**.

- Information on the **elasticities of substitution** and the **domestic expenditures** is from the Version 7 of the GTAP dataset (Naranyanan and Walmsey, 2008).
- We aggregate **283,187 tariff lines** (associated with positive trade flows) in the EU up to **44 GTAP sectors**.

Shares of EU tariff lines by type of tariff regime



More than 60% of the 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.

Data: Preference Utilization

- 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 (τ) 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.

MTPI: Potential vs. Preferential

- Our import demand system is not limited to the preferential imports. In this respect, we compute a **Preferential-MTPI**, using preferential (rather than total)-trade weights, that can be compared with the traditional trade-weighted preference margins in order to have an idea of the relevance of the pure aggregation bias.
- We are not able to deal with the *coverage* of EU preferential schemes since we have no information about each specific preferential scheme.
- In order to shed some light on the relevance of the utilization issue, we compute a **Potential-MTPI** assuming that all eligible imports do pay the preferential duty: this represents an upper-bound estimate of the possible value of the granted preference margins if they were fully utilized.

Preferential-MTPI, simple and weighted average preference margins (%)

- The table shows the most relevant sectors in terms of preferential trade.
- The MTPI margins are positively correlated with the averages, though the sector ranking is not always the same.
- The simple averages are often misleading, but the trade-weighted averages (as it could have been expected) are quite close to the preferential MTPIs.

Sectors	*Preferential-MTPI margin (1-α)*	*Weighted mean margin,*	*Simple mean margin,*	*Number of tariff lines*
All products	**76**	**78**	**77**	**72397**
Agricultural sector	**64**	**65**	**68**	**11564**
Beverages and tobacco products	25	28	52	388
Food products n.e.c.	80	83	70	6903
Processed rice	61	70	73	13
Fishing	88	88	88	633
Vegetables, fruit, nuts	84	87	85	1678
Crops n.e.c.	89	91	81	1041
Bovine cattle, sheep and goats, horses	94	96	87	32
No-Agricultural sector	**84**	**87**	**84**	**60833**
Textiles	76	80	73	10643
Wearing apparel	82	86	78	9038
Mineral products n.e.c.	84	85	86	3445
Leather products	58	61	84	3125
Motor vehicules and parts	88	89	92	1398
Metal products	98	98	96	4623
Machinery and equipment n.e.c.	99	99	97	12762

Preferential-MTPI

- The Preferential-MTPI provides a rigorous answer to the preferential margin **aggregation problem**, but it does not take into account the other relevant dimensions of any preferential policies, such as *utilization* and *utility*.
- For **example**, if we consider two sectors characterized by the same preference 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 relevance of preferential trade on the overall trade flows.
- 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.
- In **conclusion**, the MTPI provides a much more satisfactory picture, since it would be equal to the Preferential-MTPI if all trade was preferential, but it *decreases* with the share of preferential imports with respect to total trade.

MTPI and Potential-MTPI preference margins (%): agriculture

- The MTPI margins are significantly lower than the preferential-MTPI ones.
- 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%**, the highest percentages are in the case of **wheat** and **sugar** (respectively, **65** and **63%**).
- Comparing MTPI and Potential-MTPI margins, the largest differences regard the animal sectors: **cattles, meat and dairy products**.

Sectors	*MTPI*	*Potential MTPI*
All products	**28**	**41**
Agricultural sector	**38**	**47**
Wheat	65	66
Sugar	63	66
Processed rice	61	61
Vegetables, fruit, nuts	60	67
Fishing	53	57
Bovine cattle, sheep, horses	47	88
Food products n.e.c.	47	57
Crops n.e.c.	38	48
Forestry	36	48
Bovine meat prods	35	62
Dairy products	35	54
Cereal grains n.e.c.	25	30
Paddy rice	24	29
Vegetable oils and fats	23	26
Meat products n.e.c.	20	22
Beverages and tobacco products	14	16
Animal products n.e.c.	8	31

MTPI and Potential-MTPI preference margins (%): manufacture

- Taking into account preferential imports only, non-agricultural preferences exceed the agricultural ones, while considering the relevance of the preferential trade flows with respect to the non-preferential ones we get the **opposite result**.
- Most industrial sectors present lower figures (the overall margin is **25%**), with a minimum equal to **9%** in the case of **electronic equipment**.
- Larger differences between MTPI and Potential-MTPI emerge for **textiles, apparels, and chemical, rubber and plastic products** possibly due to the rules of origin requirements.

Sectors	*MTPI*	*Potential MTPI*
All products	**28**	**41**
Non-agricultural sector	**25**	**39**
Paper products, publishing	67	75
Ferrous metals	63	80
Minerals n.e.c.	61	73
Petroleum, coal products	61	84
Metals n.e.c.	50	68
Wood products	45	59
Textiles	34	53
Mineral products n.e.c.	31	42
Metal products	27	34
Wearing apparel	27	43
Machinery and equipment n.e.c.	26	38
Chemical, rubber, plastic products	22	38
Leather products	19	26
Motor vehicules and parts	18	30
Manufactures n.e.c.	16	25
Transport equipment n.e.c.	10	15
Electronic equipment	9	20

MTRI uniform tariff equivalents and absolute preference margins (%)

- 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), **wheat** and **meat** (both 45).
- Notwithstanding the large **absolute margin** (**35 points**), still the primary sectors remain by far the most protected since the MTRI uniform tariff is almost twenty times larger than in the case of the non-agricultural sector.
- 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 ad valorem equivalents exceeding 500%.

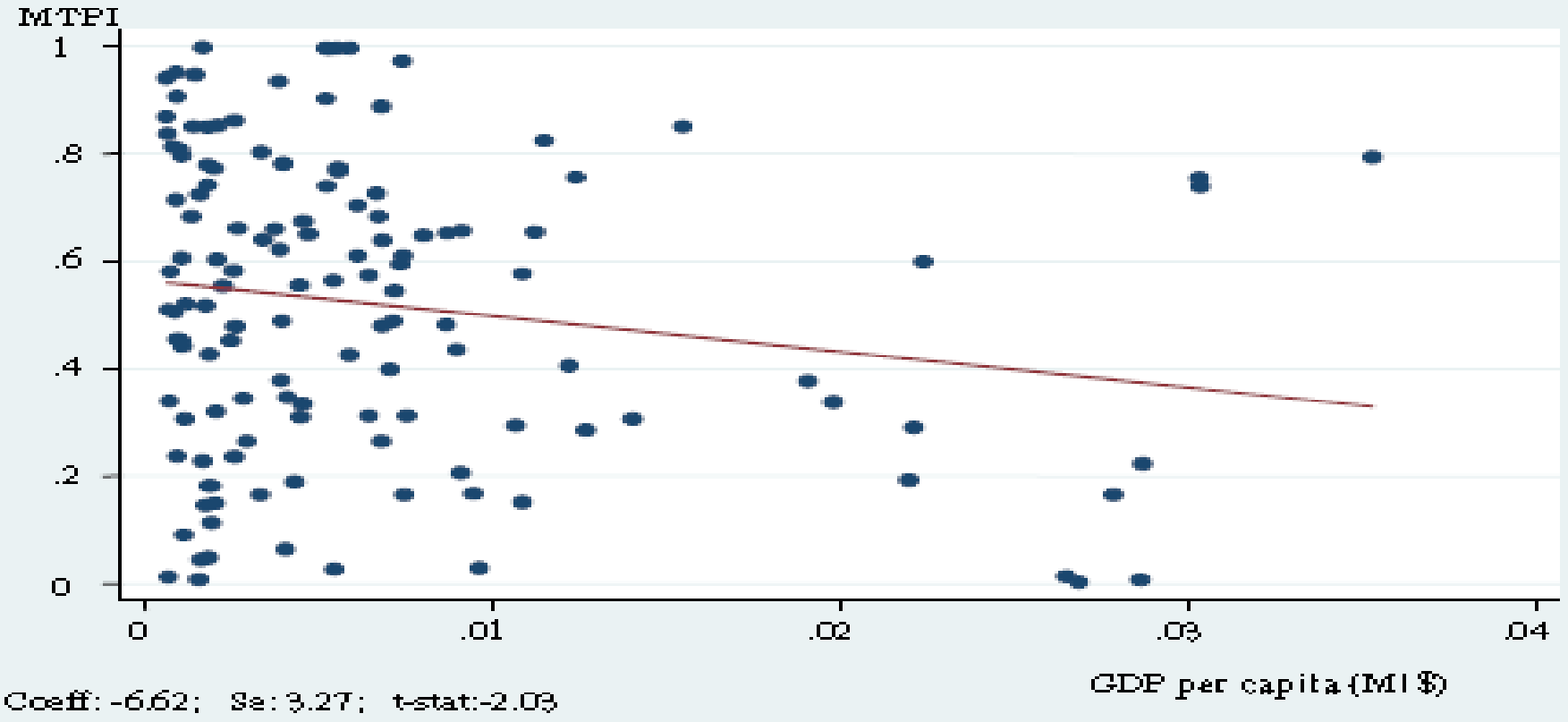
Sectors	*MTRI*	*Absolute preference margin*
All products	**6.4**	**2.5**
Agricultural sector	**59**	**35**
Animal products n.e.c.	60	5
Beverages and tobacco products	343	58
Bovine cattle, sheep and goats, horses	6.7	6
Bovine meat prods	85	45
Cereal grains n.e.c.	21	7
Crops n.e.c.	2.5	1.5
Dairy products	69	37
Fishing	3.4	4
Food products n.e.c.	19	17
Forestry	0.2	0.1
Meat products n.e.c.	36	9
Paddy rice	74	23
Processed rice	63	98
Sugar	48	83
Vegetable oils and fats	5.2	2
Vegetables, fruit, nuts	41	61
Wheat	24	45
Non-agricultural sector	**3**	**1**

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

- There is a positive and statistically significant association between MTPI values and **labor shares in value added** (*Model 1*), suggesting that the EU grants larger preferences to the labor-intensive sectors.
- *Model 2* 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**: the EU preferential policy is more generous with the sectors where the exporting countries seem to have their comparative advantage.

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

- The **European countries**, which are in most cases targeted by the so-called "neighborhood policy", enjoy the largest margins (*69%*).
- The second most preferred region (*56%*) is **Africa** 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%*), where the EU has been rather active in signing reciprocal agreements (Chile) or granting unilateral preferences to some Mercosur members (e.g., Argentina, Brazil).
- Even if the relatively low value (*8%*) 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 (*32%*).
- In the case of the **Pacific area** (*21%*), 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 (*17%*) of the overall **Asian** preferences, 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.



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, though it could be explained by the few developed countries – such as **Norway, Switzerland and Iceland** – presenting high MTPI values.

Sensitivity of the Preference Margin to changes in the elasticities of substitution (%)

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

- Even though the ranking of different sectors does not change, the MTPIs are obviously quite **sensitive** to the degree of substitution between products.
- 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 agricultural and non-agricultural** sectors.

CONCLUSIONS (I)

- In this work, assuming a specific functional form for the import demand we compute an index (MTPI) providing a summary measure of the EU preferential policies, taking into account the different margins in a large number of tariff lines.
- The Preferential-MTPI provides a theoretically consistent aggregation of individual preference margins, but it tends to overestimate the relevance of preferential policies since it does not take into account the intensity of preferential trade. The comparison with a-theoretic, ad hoc aggregators shows that much of the evidence based on these indexes is inherently flawed.
- In terms of the MTPI, the **overall EU preference margin** is around **28**%, corresponding to **2,5** percentage points in absolute terms. Most **agricultural sectors** are far above the average with the highest percentage (**38%**), corresponding to **35** percentage points in absolute terms. On the contrary most non-agricultural sectors present much lower figures (**25%** with a margin in absolute terms equal to only **1** percentage points overall).

CONCLUSIONS (II)

- The **Potential-MTPI**, assuming that all imports paid the preferential duty, allows us to provide an assessment of the "dilution effect" that results from administrative costs and rules of origin wiping out some of the competitive advantages granted by the (apparently more generous) margins.
- Partial **correlations** of MTPI figures with exporters' characteristics do not confirm some of the **criticisms** raised against the EU trade policy.
- Theoretically consistent preferential policies **aggregation** is possible if we are willing to impose some **structure** on the importing country behavior. However, caution should be used in drawing conclusions since results are inherently sensitive to
  - assumptions about the **functional form**: e.g., **overestimation** due to poor handling of prohibitive tariffs;
  - assumptions regarding the elasticity of **substitution**: e.g. the existence of a **single nest** implies the same substitutability both across different exporters (for the same products) and across different products (for the same exporters).