

# Tariff protection, tariff escalation and African Countries: who are the real friends?

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## Abstract

Tariff protection of the final sectors and tariff escalation are said to be among the major obstacles for developing countries to up-grade the value chain and enjoy the gains from trade. For this reason, these are key issues to analyse trade negotiations. In this paper we focus on the trade relations between nine (both LDC and non-LDC) African countries and some of the big world trade players: USA, China, India, Japan and EU. Our objective is to determine which importing country is offering the less adverse – in terms of obstacles faced by the exporting African countries to up-grade in the value chain – tariff structure. To this end, we perform two exercises. First we assess the effective rate of protection using a CGE model through GTAP and computing the OERP index (Anderson, 1998). Second, we evaluate tariff escalation using a number of measures. We compare the results from the two exercises showing differences and complementarities in the two analysis presented in the paper.

## 1 - INTRODUCTION

Market access is one of the most important trading issues between developing and developed countries. Recently, the demand from developing countries in terms of market access mostly focused on the reduction of distortions affecting trade in agriculture, in particular tariff peaks, tariff dispersion and tariff escalation. In particular, tariff escalation, i.e. higher import duties on processed products than on their input commodities, is one of the most tricky objects of controversy between developed and developing countries. The reason is that while from a theoretical point of view the argument against TE is well

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established and theoretically well founded, the empirical analysis on the extent and effects of TE for developing countries is still not conclusive. As for the theory, the argument against tariff escalation is that it implies advantageously low rates of duty on imported inputs for developed countries while it gives them high protection against imported products competing with those they produce. At the same time tariff escalation is said to have a direct negative effects on developing countries since tariff escalation would be an obstacle to the move into higher stages of processing, inducing the shift of the economic activity toward primary production and away from processing (WTO, 1996). Among the reasons for which moving to higher stages of production is beneficial are: 1) escaping the deterioration in the terms-of-trade for primary commodities and the instability of primary product prices on international markets (Prebisch, 1959); 2) enjoying the higher employment opportunities and higher profits associated with the production of manufactured goods (Yeats, 1984); 3) avoid the excessive exploitation of natural resources and the damage of the environment caused by over-specialization in primary commodities (Hecht, 1997). While developing countries have emphasised the necessity to eliminate tariff escalation and developed countries (US, EU, Canada) stated their willing to do so, at the moment no agreed solution has been defined. In fact, while tariff escalation is said to be one of the major limitations to trade-induced growth in developing countries and the debate on the issue is increasing, still there is no agreement on several aspect of the issue. One of the reasons is that tariff escalation is not easy to evaluate.

This paper is a contribution to the understanding and measurement of tariff escalation. Our analysis focus on the trade relations between ten African countries and some of the big world trade players: USA, China, India, Japan and EU.

Three are the main elements that differentiate this paper from previous ones. First our analysis does not focus on specific products but the object of analysis are countries. We consider four LDC (Ethiopia, Senegal, Tanzania, Uganda) and six non LDC (Botswana, Cameroon, Ghana, Kenya, Nigeria, South Africa) African countries. The second element of interest is that in our analysis we explicit take into consideration the existence of preferential agreements between the countries in our sample. This is particularly important when considering countries which have a large number of different preferential agreements as for instance EU (Chevassus-Lozz and Gallezot, 2003). Third, this is the first paper that presents an analysis of tariff escalation for African countries with respect to India and China, two countries which are becoming increasingly important in their trade relations.

In the first part of the paper we measure the protection granted to the agri-food sector by each importing country. This is not an easy task. There are several problems with measuring the effective rate of protection which a sector enjoys. In this paper we present the results from a simulation exercise carried

on using GTAP in order to measure the *Output Rate of Effective Protection* (OERP). Also tariff escalation (TE) is characterised by a number of difficulties related to its correct measurement and interpretation. We use the most simple (and common) methodology to measure tariff escalation: the difference between two subsequent stages of production (raw-intermediate; intermediate-final). Then we show how crucial is take into consideration not only TE but also other information related to the tariff structure exporting country face. Finally we a simple graphical way to take into account all the information related with the issue of TE in evaluating who is the best friend of our sample of African countries.

The structure of the paper is the following. In the next section, we briefly discuss the strands of literature which are relevant to the present paper. In section 3 we present the OERP index and we discuss the results from the simulation exercise implemented by using GTAP. In Section 4 we measure tariff escalation and discuss which trade partner is the “best friend” of our sample of African countries. Section 6 concludes.

## **2 - LITERATURE**

Tariff escalation is said to be a major factor of difficulties for exporting developing countries, hindering export growth and diversification into processed products. Although tariff escalation has been continuously reduced due to tariff cuts, it still persists in many commodity chains. A recent analysis shows that in 12 out of 17 major commodity chains, significant tariff escalation exists, mostly at the first stage of processing (FAO, 2003). This issue is particularly relevant for agricultural products. Two are the main reasons. First, tariffs on agricultural products are still much higher than for manufacturing. Second, agricultural export are the main source of export for developing countries, and in particular for African ones. These arguments motivate the March 2003 Draft of Modalities for the Further Commitments in the context of the WTO Agreement on Agriculture (AoA) which proposes steeper cuts in the higher tariffs.<sup>2</sup>

There is a large agreement among both economists and politicians on the importance of moving towards higher values-added production for developing countries. The basic idea is that what you export matters (Hausmann et al., 2007). Following this idea, developing countries have recently started to increasingly stress the need to move to higher value–addition production. To them, tariff escalation appears one of the stumbling blocks in this direction. It follows that the issue of tariff escalation (TE) becomes crucial in

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<sup>2</sup> The last proposal – not yet agreed upon - is the following: “where the tariff on a processed product is higher than for its primary form, the proposed tariff reduction for the processed product would be equivalent to that for its primary form, multiplied by at least a factor of 1.3”.

evaluating the growth enhancing potential provided by a reduction in tariff along the lines proposed in the last DOHA Round meetings.

Among the issues of concern in the current debate the implications of the proposed tiered tariff reduction formula on LDCs has received most attention. In this paper we instead focus on a more fundamental and preliminary issue. We aim at give a detailed picture of the tariff escalation faced by a group of Africa countries with respect to developed importing countries. This task appears to be crucial in order to make the discussion well informed and based on the most accurate possible description of the current situation. To the best of our knowledge such an analysis is still missing for most of the African countries and thus the gap must be filled. Our paper is meant to be a contribution in this direction.

Two are the main methodological issues in measuring tariff escalation (TE). The first concerns tariffication, i.e. which tariff consider for each product line. The second is how to construct the categories of products to be evaluated, i.e. how to aggregate products. In literature on TE a large number of different datasets and methodologies have been used. Since recently, one big challenge for TE analysis was the issue of non-*ad valorem* tariffs. Most of previous studies had to deal with the non-trivial issue of transforming non-*ad valorem* tariffs into *ad valorem* equivalents (AVEs). Luckily there are now available data on *ad-valorem* transformation that can be directly used to compute tariff escalation. In the present study we use the TRAINS dataset. An important additional advantage of this dataset is that it also includes information on tariff preferences. This is an important element since, as shown by Chevassus-Lozz and Gallezot (2003), trade preferences have to be taken into consideration to correctly evaluate TE. This issue is clearly very important in our case since most of the importing countries we consider have a large number of preferential agreements with our sample of the Africa countries. Thanks to the information contained in the TRAINS dataset we can fully take this information in our analysis.

The second issue concerns which products lines belongs to the different stages of production. The main problem is that there is no an official method to determine which products are used as inputs in the production process of a given product. The studies carried out by the WTO (1996) and the OECD (1999) used the BEC classification. While this studies considered all products, including agricultural and agri-food, imported by 30 countries the analysis remain in both cases at a highly aggregated level by distinguishing three stages of transformation (raw products, semi-processed and fully processed products). A selection of individual product pairs was then made for each of the three processing stages in order to identify nominal tariff escalation. Since often many LDCs are highly specialized in some sectors, using the BEC makes difficult to figure out the level of tariff escalation. Another largely used source of categorization is the FAOSTAT classification system. It comprises 226 processed

commodities, that is 377 commodity pairs. Each pair represents a processing relation between one input commodity and one output commodity. Lindland (1997) uses this classification to compute tariff escalation for 26 product pairs at an eight-digit level.<sup>3</sup> Other works have instead used the scheme developed by the World Bank. Among these, Amjadi *et al* (1996) analyze the structure of European Union tariffs on 19 primary commodities exported by African countries. Finally, some studies try to determine the production relationship between primary products and processed ones on the basis of an *ad hoc* analysis. For instance, Chevassus-Lozz and Gallezot (2003) use a BEC classification modified employing information from experts to determine the technical relationship between the products considered. They measure tariff escalation not for pairs of products but at a more aggregated level, by distinguishing 3 stages of transformation per commodity processing chain. They end up with a re-classification of the first 24 chapters of the CN8-digit nomenclature (i.e. all agricultural and agri-food products). Similarly Sharma (2006) chooses some specific products and aggregates them in primary and processed. Differently from previous studies in this paper we use the official classification elaborated from the WTO board, namely the MTN.

### **3 – WHO IS THE REAL FRIEND (Part 1): the OERP Index**

In order to provide the most accurate evaluation of the impediments African countries face in up-grading along the value chain,<sup>4</sup> we begin measuring the effective rate of protection which characterized the final agri-food sector in each importing countries.<sup>5</sup> Our analysis is different from most of previous ones since we measure the effective rate of protection using the *Output Effective Rate of Protection* (OERP) index. This index introduced by Anderson (1998) overcome the well-known theoretical shortcomings of the traditional definition of ERP index.<sup>6</sup> The fundamental theoretical critique moved to the standard ERP index though, stems largely from concerns about drawing general equilibrium inferences from a partial

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<sup>3</sup>For a few products more than two processing stages are taken into account (for instance: durum wheat – durum wheat flour – pasta without eggs).

<sup>4</sup> Obviously this is not to say that absent these perverse tariff structure African country would immediately start exporting more sophisticated goods. Other constraints – in addition to the importing countries' tariff structure - may be at work, i.e. capacity constraints, competitiveness.

<sup>5</sup> In the literature on trade policy analysis, the issue of effective rate of protection and tariff escalation are sometimes associated. Actually it is important to note that the two concepts are related even if they are indeed quite different. To understand the relationship between the two concepts consider the following analytical relations. While a positive effective protection of the transformation process has not to be the result of the presence of tariff escalation, a situation of  $TE > 0$  definitely reveals a positive effective protection of the activity of transformation (Lindland 1997; Chevassus-Lozz and Gallezot, 2003). Thus the analysis of the effective rate of protection *per se* cannot indicate the presence of TE.

<sup>6</sup> For a discussion of the differences between the traditional ERP index and the OERP Index see Antimiani and Salvatici (2005).

equilibrium measure (Ethier, 1971, 1977; Bhagwati and Srinivasan, 1973; Davis, 1998). Moreover, the ERP index does not take into consideration demand elements. In a nutshell, the OERP index returns is the uniform tariff which would yield the same level of output, sector by sector, as does the initial differentiated tariff structure (Anderson, 1998). The same index also indicates the impact of protection on the ability of sectors to compete with other industries in factor markets. Indeed, output differences across sectors reflect both the structure of protection (which the “standard” effective protection index tries to measure) and differences in the production structure of the economy. The two questions, ‘how much protection is given’ and ‘how much does supply change as a result’ are distinct, and the OERP gives a precise answer to the latter.

### 3.1 Analysis

In this section we measure the OERP index to evaluate the level of effective protection that characterize the agri-food sector in the EU, US, China and India and Japan. This would give us a preliminary estimate of how much the current tariff structure is an obstacle for African countries in upgrading in their processing activities.

Simulations have been carried out using the Global Trade Analysis Project (GTAP) CGE model and its database providing a baseline with reference to the year 2004.<sup>7</sup> For our analysis, we included 14 regions/countries and 19 sectors (see Appendix). We considered 12 raw agricultural products/sectors (this is the maximum level disaggregation available in GTAP) and also an aggregate final agri-food sector.<sup>8</sup> The objective is to evaluate the level of effective protection of the latter.

Real-world trade policy is characterized by a level of detail by far higher than any existing model can allow for. For instance, the EU tariff schedule includes more than 10,000 tariff lines. Therefore, in order to reach the consistency between the information on actual trade policy and the model aggregation it is necessary to compute some kind of average tariffs. To this end we used the data contained in MacMap-

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<sup>7</sup> The GTAP model is a computable general equilibrium (CGE) model based on Input Output tables (IO) representing 57 activities and 113 countries. We use the 2001 database of GTAP, based on the latest release of version 7, which includes a new input-outputs table for Africa, and we update the tariff structure to 2004.

<sup>8</sup> The reason for having both disaggregated sectors and a final aggregate one is that in the model each sector may be an input or an output of all other sectors.

HS6.<sup>9</sup> The latter is a database including HS-6 level details, providing also consistent and exhaustive ad valorem equivalents (AVEs) of applied border protection across the world.<sup>10</sup>

Table 1 reports the results of our calculation of the OERP index.<sup>11</sup> When  $OERP > 0$  the sector is protected, while when  $OERP < 0$  the sector is not protected (actually there is an implicit import subsidy). Two results are worth emphasising. First, there is a high variability across both exporting and importing countries. Second, the data show that as for the final agri-food sector – using OERP as our measure of effective tariff protection – the best friend of our sample of African countries is US followed by China and EU. India and Japan show the highest effective rate of protection of the agri-food sector with respect to the African countries considered.

Note that while on average the agri-food sector is less protected in the US than in all other importing countries, there is a high variability across the OERP facing the different exporting countries. To better understand this point it is worth to note results for US with respect to Uganda and Tanzania. While the US trade policies toward these countries are similar, the results in terms of OERP index is quite different. This is due to the different value added structure of the two African countries. Note, on the contrary, that for instance the effective protection for both US (14%) and EU (33%) with respect to South Africa is quite high: this indicates that the degree of (or the capability) competitiveness of South Africa is higher compared with the other exporting countries.<sup>12</sup> The result for China should not come as a surprise. Indeed China became a WTO member in 2001, finishing his access by 2004, so with a generalized MFN low tariffs. In addition this results may derive from the high capability to compete on world trade by State Trading Enterprises. Apparently the result for Japan, are due to the fact that the country's preferential regimes are more focused on Asia partner than African ones. Finally, there is India where the agri-food sector is highly protected: indeed India has a tariff structure which does not includes any preferential regime. This results can be also interpreted as the sector being characterised by a not-so much different efficiency with respect to the African exporting countries.

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<sup>9</sup> One of the amelioration of GTAP version 7 with respect to previous release is indeed the improvement in the quality of trade distortion data included in the model the use of the MacMap-HS6.

<sup>10</sup> This is an important improvement of the current version of GTAP since it allows considering applied/preferential tariffs rather than bound ones. The dataset also includes the AVEs of some NTBs (Bouët et al., 2005).

<sup>11</sup> For technical details on the method, see Antimiani and Salvatici (2005).

<sup>12</sup> Indeed, a positive OERP means that a positive uniform tariff rate would be needed in order to maintain the output of the given sector at the level it is now, i.e. the agri-food sector would need to be “protected” in a bilateral free trade scenario. A negative OERP means that the sector would be fairly competitive even in the absence of any protection.

**Table 1 - Output Effective Rate of Protection (OERP) (2004) – All sectors, selected countries**

	<i>Non-LCD</i>			<i>LCD</i>				<i>ALL</i>
	<i>Botswana</i>	<i>Nigeria</i>	<i>South Africa</i>	<i>Ethiopia</i>	<i>Senegal</i>	<i>Tanzania</i>	<i>Uganda</i>	<i>Average</i>
<i>Usa</i>	-0.01	0.00	14.16	-11.16	-0.38	-41.06	-0.93	-5.63
<i>China</i>	0.44	-0.09	2.27	4.10	3.29	4.79	3.90	2.67
<i>EU_25</i>	0.00	0.09	33.33	0.00	0.10	14.2	0.00	6.82
<i>Japan</i>	0.00	-0.26	82.78	-0.43	1.87	-8.81	-2.75	10.34
<i>India</i>	-2.84	9.90	<i>n.d.</i>	20.79	16.78	36.07	-12.55	11.36

*Note; Average is simple average by importing country. \*For South Africa is not possible to find an uniform tariffs equivalent to the actual tariffs schedule imposed by India. Source: Authors' calculation on GTAP*

#### **4 – WHO IS THE REAL FRIEND (Part 2): Tariff escalation**

In the following section, we provide a more detailed analysis of the tariff protection faced by African countries exporting to developed ones. In moving from macro to micro, we will consider the issue of tariff escalation (TE) with respect to the agri-food products. The analysis which follows thus complement the aggregate picture emerging from the previous analysis, and takes into consideration the structure of tariff for each stage of production and for each product. Before presenting the results, we describe the data used and the methodology employed to compute TE.

##### **4.1 - Data and Methodology**

As we said the issue of tariffication is crucial for measuring TE. In our analysis we use the WITS database. This has two implications. First, using WITS (through TRAINS) our analysis considers the applied tariffs and not on the commitments made by these countries in the WTO. Second, we are able to take into account all preferential agreements signed by the importing countries we are considering. This is particularly important, as suggested by Chevassus-Lozza and Gallezot (2003), because we are considering importing countries who have a number of such agreements.<sup>13</sup> Thus our tariff are preferential

<sup>13</sup> Chevassus-Lozza and Gallezot (2003) show that taking into account preferential agreements shows that in the year 2000 the phenomenon of progressivity of duties of the EU *vis a vis* developing countries is relatively minor except for countries benefiting from the GSP.



applied tariffs, i.e. we consider the preferential applied tariff whenever there a preferential agreement between two countries.

As for product classification, we use the MTN (Multilateral Trade Negotiation) classification elaborate by the WTO. Three are the main reasons for this latter choice. First, by using an official classification we minimize arbitrariness in the choice of product categories and product process lines and thus we avoin the necessity of any “author’s choice”. Second, MTN classification has a high level of disaggregation (51 headings plus 2 for petroleum) and allows a detailed evaluation of tariffs for stage of processing. Finally, we believe that adopting an official classification is a first step in the direction of making possible the comparison across studies and more easily allow knowledge accumulation on this topic.

MTN classification aggregates products of a single chapter (4 HS digit) by their level of processing stage into 3 categories: raw, semi-finished and finished or semi-processed and processed. With respect to other approaches, MTN has thus the advantage of having three rather than only two stages of processing which allows a much better analysis of the structure of trade policies. The MTN also easily allow to aggregate agricultural products into broad categories of interest such as ‘Fish and Fish Products’, ‘Tropical Beverages’, etc.

In the literature numerous methodologies have been implemented to measure tariff escalation (TE). Most studies quantify TE on the basis of bound tariffs. Instead some studies consider applied tariffs to analyse the extent of TE in practice. Other use trade (import) weights to average tariffs, bound or applied, in the case in which many tariff lines define a product. Lastly, some studies have attempted to measure TE using the concept of effective protection (e.g. Lindland 1997; Burman and others 2001).<sup>14</sup>

We evaluate the tariff escalation for the four LDC African and six non-LCD African countries in our sample based on preferential applied tariffs.<sup>15</sup> We follow the literature (see among others FAO, 1997; Sharma, 2006) and we measure nominal tariff escalation on the basis of nominal tariff wedge, the difference in tariffs between two subsequent stages of production. Nominal tariff wedge (TW) is defined as:

$$TW = T - t \tag{1}$$

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<sup>14</sup>The Effective Rate of Protection (ERP) index is usually considered a better indicator of trade protection than is nominal protection, especially in the case in which a final product is produced from multiple primary products. But in practice the use of EP is very difficult. Indeed for large number of products/ tariff lines EP is very difficult to be computed since it requires input-output coefficients which are not always available. Moreover the theoretical relation between EP and TE is not useful since the the first implies the second but not viceversa.

<sup>15</sup> Since access of LDC to EU occurs essentially through preferential agreements, some developing countries are worried that their advantage is eroded by the tariff cuts of MFN duties to be decide in the WTO negotiations. We will not discuss this issue in this paper.

where  $T$  is tariff on the given stage of production and  $t$  is tariff on the previous stage. Three situations can be characterized based on the tariff wedge (TW): Tariff escalation ( $TW > 0$ ), Tariff de-escalation ( $TW < 0$ ) and Tariff parity (neither escalation nor de-escalation) ( $TW = 0$ ). One observation concerning the methodology we adopt to compute the values of TE is in order. When there is a preferential tariff for a given stage but there is no preferential tariff for the previous one, we considered the latter to face the MFN tariff. Thus in this case, we compute the TW as the difference between the preferential for the last stage and the MFN of the previous one

## 4.2 – Results

TE measures for non-LDCs and LDC African countries in our sample reported in Table 2 and 3 respectively. Each cell in the table reports the TW (our measure of TE) for the corresponding MTN category. We report – whenever it is possible to be computed - the TW for both raw-intermediate stage and intermediate-final stage. As it clearly emerges from Table 2 and 3, for each exporting country a large number of categories are under tariff escalation (from 0% to 80%) and – apart from EU - all importing countries impose TE for some category.

## 4.3 - Discussion

We now determine “who is the real friend” of our sample of African countries considering the information about the extent of TE imposed by importing countries. We begin compare tariff escalation across importing countries for each exporting country by using the simple average of the TW for the 25 MTN categories.<sup>16</sup> Then we argue that in order to determine who is the “real friend” information on the TE is not sufficient: they must be complemented by information on the number of products categories affected by TE and by the average tariff the exporting country face.

Table 3 reports the average TE by importing country for each African country in our sample. It results that the average TE is lowest in the case of India (it is always negative) while Japan is the trading partner

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<sup>16</sup> We choose not to weight the TW by the import value for the product category or to implementing any other weighting scheme. The reason for considering the simple average rather than a more sophisticated one is that of endogeneity. Since a low import (low weight) may be caused by a high tariff, the weighted measure of tariff escalation is likely to be biased. Thus using weight would not necessarily give a better description of the extent of TE. On the other hand, considering the simple average of the TE as measure of “how friendly the importing country is” implies that in comparing tariff escalation across African countries, we are making a strong assumption. We are evaluating TE assuming that if exporting countries were facing the same level of TE these would export the same products in the same amount. We are thus not taking into account the importance that a specific product may have in the country’s (potential) export vector.

of African countries displaying the highest average TE, i.e. providing the most significant disincentive to process the goods to be exported. EU, US and China is the order of the countries in between the two extremes.

A closer look to the results clearly indicates that if we take the results for TE as an indication who is the “real friend” these conclusions would be, at least in part, misleading. Indeed it results that the position of India is due to the exceptional negative TE which characterises the sector “Coffee, tea, mate & cocoa”. This result is very interesting in that it clearly indicate the fact that looking only at the TE is not sufficient to evaluate the difficulties imposed by importing countries on exporting ones.<sup>17</sup>

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<sup>17</sup>Note that our analysis does not take into account non-tariff barriers to trade: whether goods from African countries can actually be exported under the tariff regime we describe depends in reality also on the capability of the exporter to satisfy rules of origin and SPS or technical standards.

**Table 2: Non-LDC countries: Tariff escalation for 20 MTN categories (1)**

			Botswana					Cameroon					Ghana				
			US	China	Japan	India	EU	US	China	Japan	India	EU	US	China	Japan	India	EU
Wood, pulp, paper & furniture	intermediate vs raw	0102 - 0101	0.00	5.34	0.49	4.03	0.00	0.00	3.33	1.29	1.59	0.00	0.00	2.36	1.62	1.59	0.22
	final vs intermediate	0103 - 0102	0.00	-0.36	-0.38	-0.73	0.00	0.00	-3.33	-1.29	1.71	0.50	0.00	0.14	-1.62	1.71	0.28
Textiles & clothing	intermediate vs raw	0202 - 0201	-3.47	-0.55	0.20	1.61	0.00	0.46	-0.55	0.20	-0.17	0.00	8.94	0.67	0.20	-0.17	0.00
	final vs intermediate	0203 - 0203	13.23	7.22	-1.77	1.22	0.00	5.07	5.61	5.66	3.00	0.00	0.55	7.00	0.54	3.00	0.00
Leather, rubber, footwear	intermediate vs raw	0302 - 0301	0.00	-2.93	4.93	-4.66	0.00	0.00	1.45	4.93	-6.86	0.00	0.00	1.45	4.93	-6.86	0.00
	final vs intermediate	0303 - 0302	0.00	3.00	0.93	0.52	0.00	0.00	5.66	9.85	2.72	0.00	0.00	6.62	2.77	2.72	0.00
Fish	intermediate vs raw	1102 - 1101	0.00	2.96	1.57	0.25	0.00	0.00	2.96	4.13	0.25	0.00	0.00	1.75	0.28	0.25	0.00
	final vs intermediate	1103 - 1102	0.00	-3.90	0.72	-1.32	0.00	0.00	-3.90	0.72	-1.32	0.00	0.00	-3.90	0.72	-1.32	0.00
Fruit and vegetables	intermediate vs raw	1202 - 1201	0.12	7.44	4.48	-0.45	0.00	0.12	7.44	4.48	-0.45	0.00	0.00	1.53	-2.21	-0.45	0.00
	final vs intermediate	1203 - 1202	1.43	-3.97	3.27	0.00	0.00	0.78	-3.97	3.27	0.00	0.02	0.00	-3.97	9.58	0.00	0.01
Coffee, tea, mate and cocoa	intermediate vs raw	1302 - 1301	0.00	1.70	0.50	-57.27	0.00	0.00	1.70	7.00	-57.27	0.00	0.00	8.00	1.75	-57.27	0.00
	final vs intermediate	1303 - 1302	1.49	3.19	9.40	-0.45	0.00	1.49	3.19	9.40	-0.45	0.00	0.88	7.44	18.77	-0.45	0.00
Sugar	final vs intermediate	1403 - 1402	0.02	-18.71	19.13	-5.00	0.00	0.02	-18.71	19.13	23.00	0.00	0.02	-18.71	19.13	23.00	0.00
Spices	intermediate vs raw	1502 - 1501	0.00	21.57	12.06	-7.80	0.00	0.00	21.57	12.06	-7.80	0.00	0.00	21.57	12.06	-7.80	0.00
	final vs intermediate	1503 - 1502	0.12	-18.00	-3.43	0.57	0.00	0.00	-18.00	-3.43	0.57	0.00	0.40	-18.00	6.74	0.57	0.00
Meat	intermediate vs raw	1703 - 1701	0.59	11.91	3.09	10.61	0.00	0.59	11.91	3.90	10.61	0.00	0.59	11.91	3.90	10.61	0.00
Oilseeds	final vs intermediate	1803 - 1801	-10.95	1.00	0.58	-11.56	0.00	-10.95	5.83	0.58	-35.73	0.00	-10.95	6.25	0.40	-35.73	0.00
Dairy	final vs raw	2103 - 2101	0.30	-3.53	3.12	4.51	0.00	0.30	-3.53	3.12	4.51	0.00	0.30	-3.53	3.12	4.51	0.00
Tobacco	final vs raw	2203 - 2201	6.26	31.00	6.28	5.00	0.00	4.86	31.00	6.28	5.00	0.00	6.26	31.00	6.28	5.00	0.00
Other Agricultural	intermediate vs raw	2302 - 2301	0.00	2.63	-1.01	3.67	0.00	0.00	-24.98	0.53	3.67	0.00	0.00	-24.98	0.53	3.67	0.00
	final vs intermediate	2303 - 2302	0.00	-7.19	1.24	3.57	0.00	0.00	-7.19	1.24	-5.20	0.00	0.00	-7.19	1.24	-5.20	0.00
		Average	0.44	1.90	3.11	-2.56	0.00	0.13	0.83	4.43	-2.79	0.02	0.33	1.31	4.32	-2.79	0.02
		Cases of TE	9	12	17	11	0	9	12	19	11	2	8	14	19	11	3
		% of cases TE	43%	57%	81%	52%	0%	43%	57%	90%	52%	10%	38%	67%	90%	52%	14%

Note: For each exporting country, each cell is the TW by importing country for the corresponding MTN category calculated according to equation (1). The tariffs are “applied nominal tariff rates”, including preferential tariffs. When there is no preference, the computation is made using the corresponding MFN tariff rate. Average is the simple average of the TW by importing country for all the MTN categories. *Cases of TE* gives the number of MTN categories for which TE is positive. *% cases of TE* is the percentage of MTN categories with positive TE.

**Table 2: Non-LDC countries: Tariff escalation for 20 MTN categories (2)**

			Kenya					Nigeria					South Africa				
			US	China	Japan	India	EU	US	China	Japan	India	EU	US	China	Japan	India	EU
Wood, pulp, paper & furniture	intermediate vs raw	0102 - 0101	0.00	2.00	0.49	4.03	0.00	0.00	1.83	0.66	1.59	0.00	0.00	4.75	0.30	3.12	0.06
	final vs intermediate	0103 - 0102	0.00	3.75	-0.24	-0.73	0.25	0.00	5.67	-0.66	1.71	0.24	0.00	-0.48	-0.30	-0.79	0.17
Textiles & clothing	intermediate vs raw	0202 - 0201	5.47	-3.33	0.20	1.61	0.00	5.09	-4.00	0.20	-0.17	0.00	6.89	-3.70	2.23	0.00	0.00
	final vs intermediate	0203 - 0203	1.47	9.19	2.36	1.22	0.00	1.92	2.93	-1.73	3.00	0.00	0.46	4.26	3.47	1.25	0.00
Leather, rubber, footwear	intermediate vs raw	0302 - 0301	0.00	0.99	4.93	-4.66	0.00	0.00	0.14	4.93	-6.86	0.00	0.00	2.19	2.41	-8.45	0.00
	final vs intermediate	0303 - 0302	0.00	5.08	2.42	0.52	0.00	0.00	9.43	0.93	2.72	0.00	0.00	4.92	3.26	0.59	0.00
Fish	intermediate vs raw	1102 - 1101	0.00	1.75	1.88	0.25	0.00	0.00	2.96	4.13	0.25	0.00	0.00	5.16	7.54	0.00	4.29
	final vs intermediate	1103 - 1102	0.00	-6.00	0.72	-1.32	0.00	0.00	-3.90	0.72	-1.32	0.00	0.00	-8.25	-7.46	0.00	0.96
Fruit and vegetables	intermediate vs raw	1202 - 1201	0.12	7.44	6.69	-0.45	0.00	0.12	7.44	4.48	-0.45	0.00	1.32	7.39	-4.15	-12.86	-0.51
	final vs intermediate	1203 - 1202	-0.12	-3.97	0.38	0.00	0.01	0.27	-3.97	3.27	0.00	0.01	1.25	-7.86	10.51	0.00	4.21
Coffee, tea, mate and cocoa	intermediate vs raw	1302 - 1301	0.00	2.75	-0.90	-57.27	0.00	0.00	12.25	0.50	-57.27	0.00	0.00	0.25	-7.50	-70.00	0.00
	final vs intermediate	1303 - 1302	3.33	17.75	11.20	-0.45	0.00	1.49	3.19	9.40	-0.45	0.00	1.05	-6.25	9.40	-1.36	3.45
Sugar	final vs intermediate	1403 - 1402	-0.74	-18.71	19.13	-5.00	0.00	0.02	-18.71	19.13	23.00	0.00	1.52	-40.00	20.00	-30.00	3.67
Spices	intermediate vs raw	1502 - 1501	0.00	21.57	-13.28	-7.80	0.00	0.00	21.57	9.97	-7.80	0.00	0.00	16.13	12.22	-20.00	-0.56
	final vs intermediate	1503 - 1502	0.00	-16.63	-3.43	0.57	0.00	0.08	-18.00	6.74	0.57	0.00	0.13	-18.20	0.11	1.50	3.10
Meat	intermediate vs raw	1703 - 1701	0.59	11.91	3.90	10.61	0.00	0.59	11.91	3.09	10.61	0.00	0.59	11.10	3.90	4.06	1.85
Oilseeds	final vs intermediate	1803 - 1801	-10.95	2.08	0.80	-11.56	0.00	0.00	2.08	0.58	-35.73	0.00	0.00	2.34	-4.60	-15.49	0.16
Dairy	final vs raw	2103 - 2101	0.00	-3.53	3.12	4.51	0.00	0.30	-3.53	3.12	4.51	0.00	0.30	-13.00	-4.61	0.00	7.70
Tobacco	final vs raw	2203 - 2201	16.83	31.00	6.28	5.00	0.00	6.26	31.00	6.28	5.00	0.00	-36.79	31.00	0.00	5.00	0.00
Other Agricultural	intermediate vs raw	2302 - 2301	0.00	3.33	0.00	3.67	0.00	0.00	-4.98	-6.89	3.67	0.00	0.00	3.79	-0.96	7.63	0.00
	final vs intermediate	2303 - 2302	0.00	-11.52	1.77	3.57	0.00	0.00	-7.19	1.24	-5.20	0.00	0.00	-6.58	1.77	5.00	0.00
		Average	0.76	2.71	2.31	-2.56	0.01	0.77	2.29	3.34	-2.79	0.01	-1.11	-0.53	2.26	-6.23	1.36
		Cases of TE	6	14	16	11	2	10	13	18	11	2	9	12	13	8	11
		% of cases TE	29%	67%	76%	52%	10%	48%	62%	86%	52%	10%	43%	57%	62%	38%	52%

Note: For each exporting country, each cell is the TW by importing country for the corresponding MTN category calculated according to equation (1). The tariffs are “applied nominal tariff rates”, including preferential tariffs. When there is no preference, the computation is made using the corresponding MFN tariff rate. Average is the simple average of the TW by importing country for all the MTN categories. *Cases of TE* gives the number of MTN categories for which TE is positive. *% cases of TE* is the percentage of MTN categories with positive TE.

**Table 3: LDC countries: Tariff escalation for 25 MTN categories**

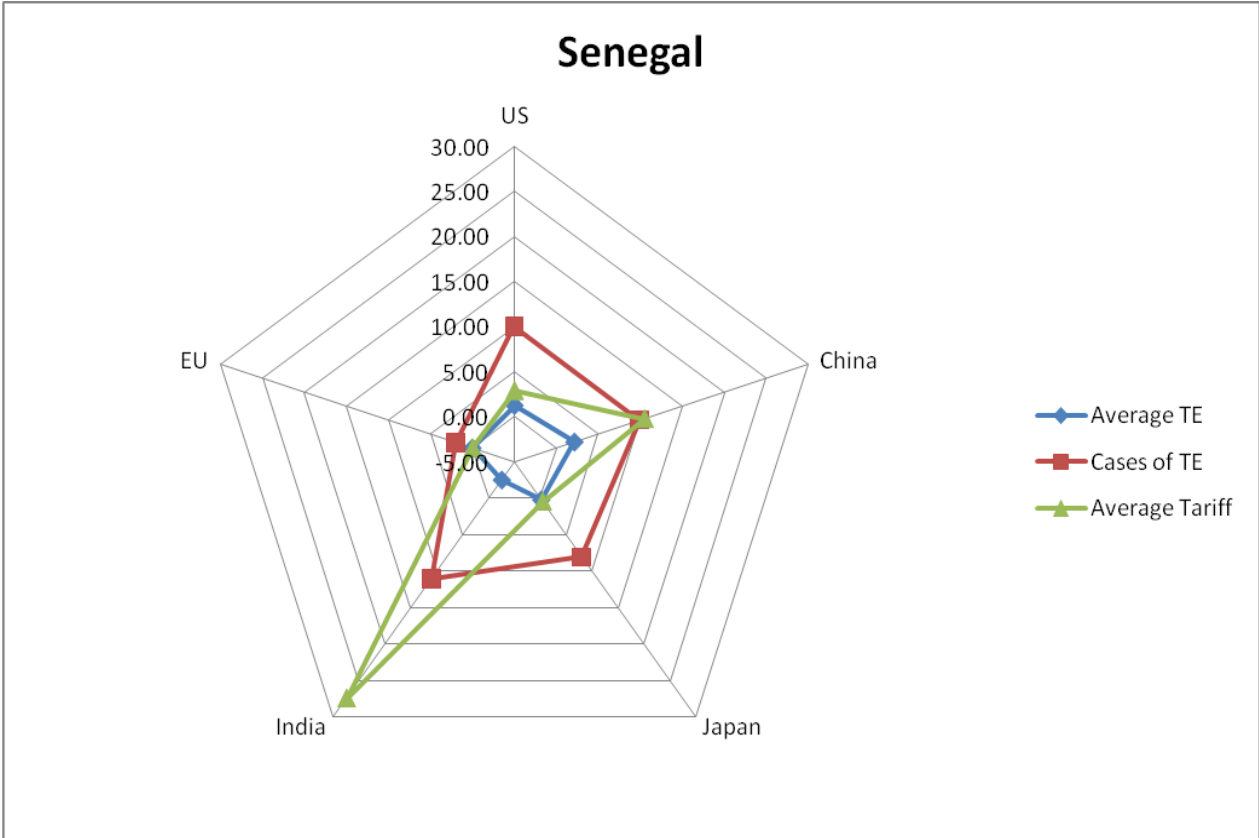
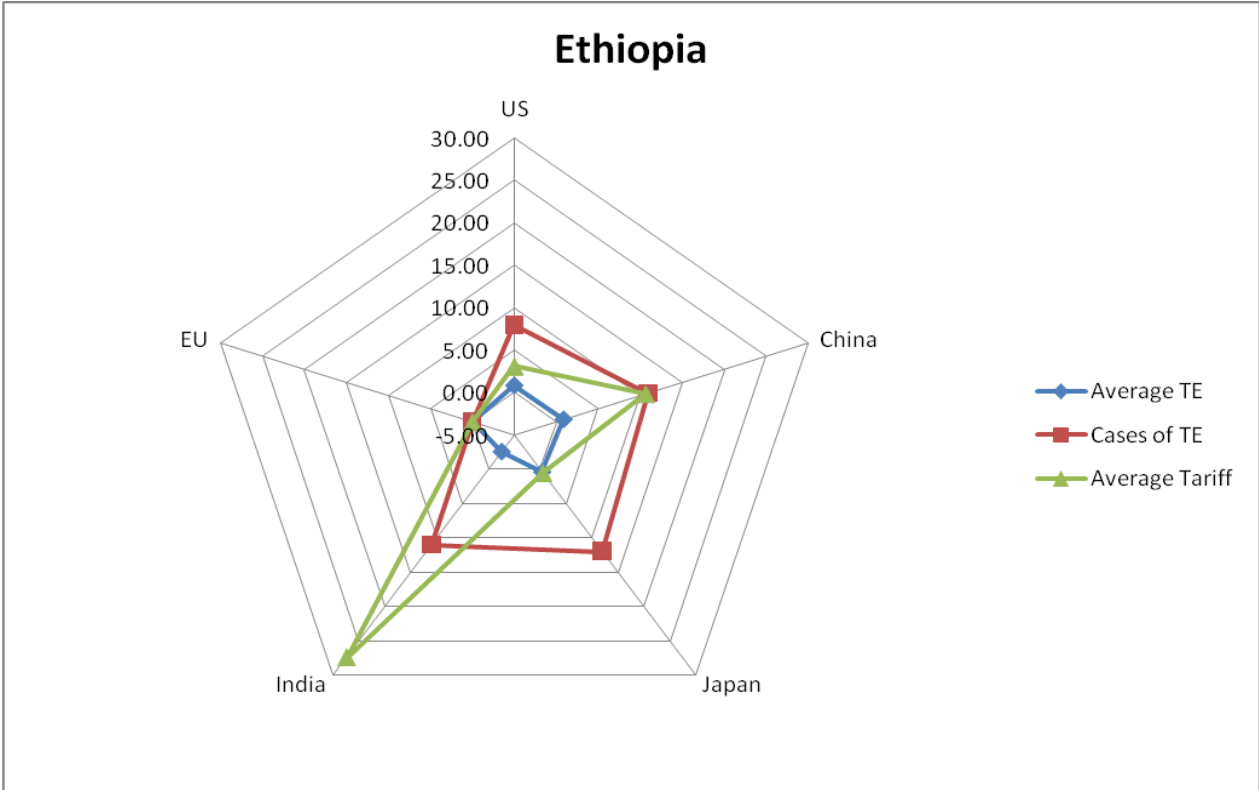
			Ethiopia					Senegal					Tanzania					Uganda				
			US	China	Japan	India	EU	US	China	Japan	India	EU	US	China	Japan	India	EU	US	China	Japan	India	EU
Wood, pulp, paper furniture	intermediate vs raw	0102 - 0101	0.00	7.47	1.05	4.03	0.00	0.00	5.37	0.00	4.03	0.00	0.00	0.00	0.00	1.59	0.00	0.00	-0.03	0.00	4.03	0.00
	final vs intermediate	0103 - 0102	0.00	-2.08	0.42	-0.73	0.00	0.00	-5.37	0.00	-0.73	0.35	0.00	5.00	0.00	1.71	0.27	0.00	0.00	0.00	-0.73	0.40
Textiles & clothing	intermediate vs raw	0202 - 0201	4.10	0.29	1.01	1.61	0.00	6.66	-8.66	0.63	1.61	0.00	2.98	2.50	0.00	-0.17	0.00	2.60	0.00	0.00	1.61	0.00
	final vs intermediate	0203 - 0203	3.60	6.26	1.12	1.22	0.00	3.69	0.75	-0.63	1.22	0.00	2.31	10.17	0.00	3.00	0.00	5.90	1.56	0.02	1.22	0.00
Leather, rubber, footwear	intermediate vs raw	0302 - 0301	0.00	-8.00	0.70	-4.66	0.00	0.00	-2.26	0.45	-4.66	0.00	0.00	-4.76	0.45	-8.86	0.00	0.00	-6.15	0.45	-4.66	0.00
	final vs intermediate	0303 - 0302	0.00	11.57	-0.70	0.52	0.00	0.00	-4.17	0.15	0.52	0.00	0.00	2.50	9.55	4.72	0.00	0.00	-1.59	0.15	0.52	0.00
Fish	intermediate vs raw	1102 - 1101	0.00	-1.35	1.94	0.25	0.00	0.00	3.46	-0.08	0.25	0.00	0.00	-6.00	2.39	0.25	0.00	0.00	-6.00	1.87	0.25	0.00
	final vs intermediate	1103 - 1102	0.00	4.32	-1.81	-1.32	0.00	0.00	3.67	1.72	-1.32	0.00	0.00	4.32	-1.48	-1.32	0.00	0.00	4.32	-1.48	-1.32	0.00
Fruit and vegetables	intermediate vs raw	1202 - 1201	0.00	15.03	0.47	-0.45	0.00	0.12	21.53	0.17	-0.45	0.00	0.00	11.53	0.22	-0.45	0.00	0.00	18.28	0.22	-0.45	0.00
	final vs intermediate	1203 - 1202	0.68	-8.53	-0.27	0.00	0.00	1.43	-21.53	-0.11	0.00	0.03	0.00	-21.53	-0.11	0.00	0.00	0.93	-21.53	1.05	0.00	0.00
Coffee, tea, mate & cocoa	intermediate vs raw	1302 - 1301	0.00	0.00	0.00	-57.27	0.00	0.00	0.00	0.00	-57.27	0.00	0.00	0.00	0.00	-57.27	0.00	0.00	0.00	0.00	-57.27	0.00
	final vs intermediate	1303 - 1302	1.49	0.00	0.71	-0.45	0.00	1.49	17.44	0.00	-0.45	0.00	1.49	0.00	0.00	-0.45	0.00	1.49	0.00	0.00	-0.45	0.00
Sugar	final vs intermediate	1403 - 1402	0.02	-18.71	-0.22	-5.00	0.00	0.02	-18.71	-0.20	-5.00	0.00	0.02	-18.71	-0.2	23.00	0.00	0.02	-18.71	-0.20	-5.00	0.00
Spices	intermediate vs raw	1502 - 1501	0.00	21.13	0.71	-7.80	0.00	0.00	36.13	1.15	-7.80	0.00	0.00	36.13	1.15	-7.80	0.00	0.00	36.13	1.15	-7.80	0.00
	final vs intermediate	1503 - 1502	0.00	-22.13	-0.65	0.57	0.00	1.00	-18.00	-0.69	0.57	0.00	0.12	-22.13	-0.69	0.57	0.00	0.12	-22.13	-0.69	0.57	0.00
Meat	intermediate vs raw	1703 - 1701	0.59	13.19	0.09	10.61	0.00	0.59	13.19	0.02	10.61	0.00	0.59	11.10	0.02	10.61	0.00	0.59	13.19	0.02	10.61	0.00
Oilseeds	final vs intermediate	1803 - 1801	0.00	5.00	3.27	-11.56	0.00	0.00	10.00	0.00	-11.56	0.00	-10.95	-7.50	0.00	-35.73	0.00	0.00	0.00	0.00	-11.56	0.00
Dairy	final vs raw	2103 - 2101	0.30	-3.53	0.00	4.51	0.00	0.30	-3.53	0.00	4.51	0.00	0.30	-3.53	0.00	4.51	0.00	0.30	-3.53	0.00	4.51	0.00
Tobacco	final vs raw	2203 - 2201	6.26	31.00	0.00	5.00	0.00	10.84	31.00	0.00	5.00	0.00	6.26	31.00	0.00	5.00	0.00	6.26	31.00	0.00	5.00	0.00
Other Agricultural	intermediate vs raw	2302 - 2301	0.00	-32.45	0.68	3.67	0.00	0.00	-13.00	0.00	3.67	0.00	0.00	-2.55	0.00	3.67	0.00	0.00	-3.95	0.00	3.67	0.00
	final vs intermediate	2303 - 2302	0.00	0.28	-0.03	3.57	0.00	0.00	-2.24	0.62	3.57	0.00	0.00	0.28	0.62	-5.20	0.00	0.00	0.28	0.62	3.57	0.00
		<b>Average</b>	0.81	0.89	0.40	-2.56	0.00	1.24	2.15	0.15	-2.56	0.02	0.15	1.32	0.57	-2.79	0.01	0.87	1.01	0.15	-2.56	0.02
		<b>Cases of TE</b>	8	11	12	11	0	10	10	8	11	2	8	10	7	11	1	9	7	9	11	1
		<b>% of cases TE</b>	38%	52%	57%	52%	0%	48%	48%	38%	52%	10%	38%	48%	33%	52%	5%	43%	33%	43%	52%	5%

Note: For each exporting country, each cell is the TW by importing country for the corresponding MTN category calculated according to equation (1). The tariffs are “applied nominal tariff rates”, including preferential tariffs. When there is no preference, the computation is made using the corresponding MFN tariff rate. Average is the simple average of the TW by importing country for all the MTN categories. *Cases of TE* gives the number of MTN categories for which TE is positive. *% cases of TE* is the percentage of MTN categories with positive TE.

A simple and better way of organizing all the information about the tariff structure and the obstacle exporting countries face in upgrading along the product the tariff structure is to plot them on a graph. This allow to simultaneously take into consideration information which are related but not easy to summarize a single index. Indeed in order to correctly evaluate who is the “best friend”, we need to take into at least three elements: 1) the average tariff escalation; 2) how many stages of production are affected by TE; ) the average tariff level. As an example we report the graphs for the LDC countries in our sample (Figure 1).

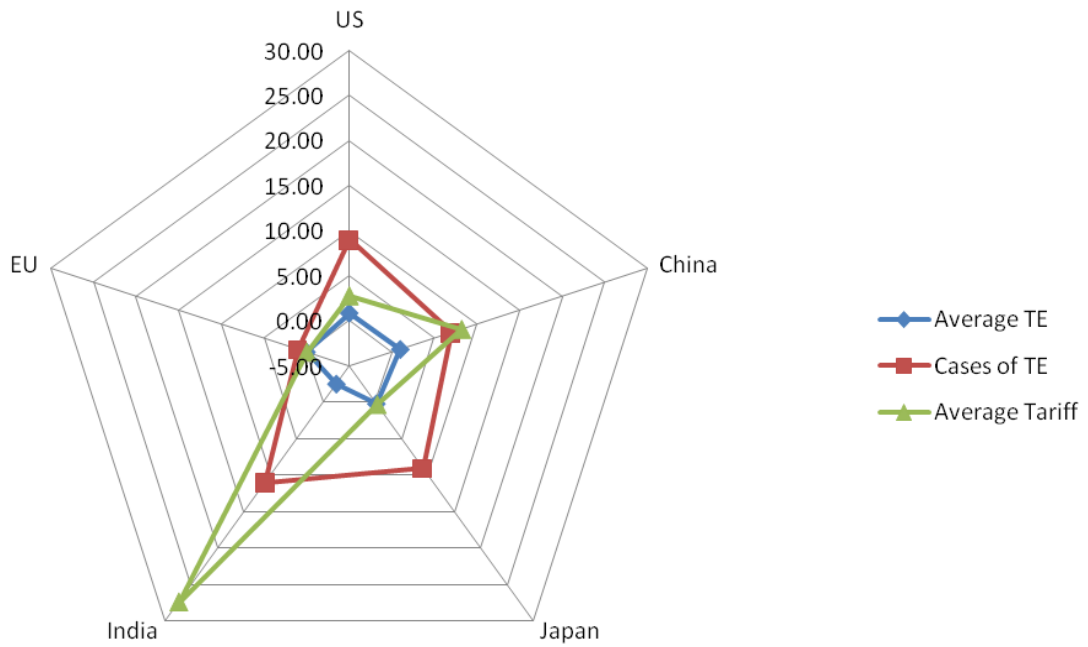
As it is well known, the EU preferential tariff structure is very open *vis a vis* African countries: LDCs can export through the Everything but Arms regime or an equivalent treatment if they signed the Economic Partnership Agreements - EPAs- recently negotiated with the EU. This means that African LDCs face zero tariffs for all exports but for arms and few agricultural commodities (such as rice, sugar and fresh bananas, that are in the process of becoming duty and quota free as well). Non-LDC countries that signed EPAs face tariffs equivalent to those regulated by the Cotonou Agreement, with substantial share of duty and quota free access and other tariffs considered generally very low, and expected in coming years to be reduced to duty free quota free; African non-LDCs that did not sign EPAs export under the EU's GSP. As we see from the Table this is the case of South Africa which is the only country in the sample to face positive TE. The USA and Japan also offer preferential trade schemes to African countries, though with more limited product coverage compared to EU's regimes. Our result that the US displays the second best average TE could be explained by the fact that in addition to its GSP Scheme the USA import goods from African countries under the AGOA regime, offering duty and quota free access on several products. China's tariff preferences are granted to only few African countries while India has no preferential scheme for Africa, which is the reason for the very high average tariff.

**Figure 1: Average tariff escalation, number of products line with TE and average tariff, selected countries**

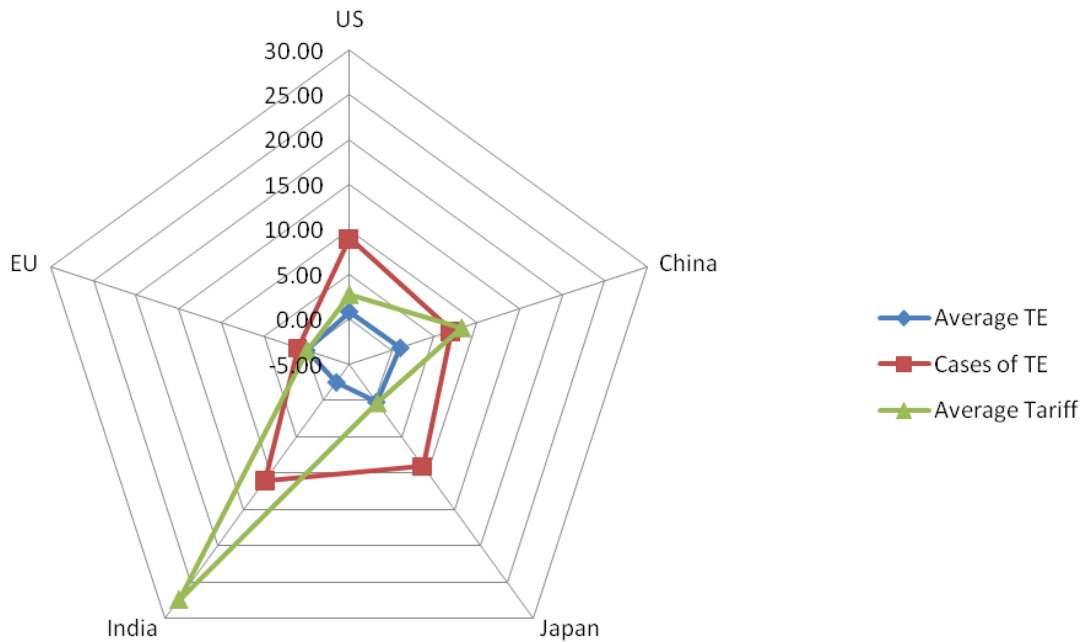




## Tanzania



## Uganda



**Table 3: Average Tariff Escalation faced by African countries by importing country**

	Usa	China	Japan	India	EU
<b>Non LDC</b>					
Botswana	0.44	1.9	3.11	-2.56	0.00
Cameroon	0.13	0.83	4.43	-2.79	0.02
Ghana	0.33	1.31	4.32	-2.79	0.02
Kenya	0.76	2.71	2.31	-2.56	0.01
Nigeria	0.77	2.29	3.34	-2.79	0.01
South Africa	-1.11	-0.53	2.26	-6.23	1.36
<i>Average Non LDC</i>	<i>0.22</i>	<i>1.42</i>	<i>3.30</i>	<i>-3.29</i>	<i>0.24</i>
<b>LDC</b>					
Ethiopia	0.81	0.89	0.40	-2.56	0.00
Senegal	1.24	2.15	0.15	-2.56	0.02
Tanzania	0.15	1.32	0.57	-2.79	0.01
Uganda	0.87	1.01	0.15	-2.56	0.02
<i>Average LDC</i>	<i>0.77</i>	<i>1.34</i>	<i>0.32</i>	<i>-2.62</i>	<i>0.01</i>
<b>Total Average</b>	<b>0.44</b>	<b>1.39</b>	<b>2.10</b>	<b>-3.02</b>	<b>0.15</b>

*Note: average is the simple average of the TE imposed by the importing country on the exporting one calculated on the 20 MTN categories.*

In addition to comparing the overall average TE imposed by the five trading partners on each African country in our sample, it is also interesting to look at the TE profile of each of the five major players. Only the EU and India display homogenous TE across exporting African countries, with the exception for South Africa in the case of the EU since their trading relations are regulated by a bilateral FTA (called TDCA). The other major trading partners show a varying degree of TE. It is important to note that - excluding Japan and EU – importing partner do not offer LDCs *on average* better treatment in terms of TE compared to non-LDC. Considering each importing country separately, things appear to be even worse. Only EU treats each LDC better than non-LDCs while only in the case of India LDCs are treated no worse than non-LDCs. Instead for rich countries such as USA and Japan there are many cases in which LDCs are worse off than non-LDCs: a country like Botswana (with a much wider manufacturing sector and higher export competitiveness than LDCs) is imposed a much lower TE than LDCs like Ethiopia (in the case of US) and Tanzania (for Japan), while it is these countries that need the more an international trade regime which reduces the disincentives to move up the value chain. This is the nonsensical current situation despite the fact that some of importing countries do offer a better preferential scheme in general to LDCs (such as EBA) and that WTO (as well as UN and World Bank) strongly encourage OECD countries to include special and differential treatment to LDCs in all their trade policies and agreements.

The TE profile of China merits a special consideration given the important role this country has increasingly acquired in the African continent, as major trading partners and investor. Our results show that consistently the group of LDCs face a higher escalation than non-LDCs, and the TE profile seems exactly dual with respect to these two groups with two uniform TE (with the particularly high TE for Senegal receiving even worse treatment than other LDCs). The apparently worse treatment by China of LDCs compared to their non-LDCs neighbours should be urgently addressed. Given the size of the Chinese economy, and the potential for future growth of imports from Africa, with spillovers on income generation in African countries, the Chinese Government should consider liberalizing its import regime *vis a vis* African countries, starting with the LDCs. This would be beneficial and in line with the decision to become a major cooperating partner of Africa, as value addition in African exports going to China would entail also increased interaction in terms of investment with African and Chinese enterprises working together with benefits in terms of capital, technology and knowledge transfer as well as much needed financial resources for the African processing sector.

As argued above, China and India have not yet adopted any preferential scheme for African exports and are urged to do more in terms of eliminating their TE for Africa. However, the fact that USA and Japan display significant TE is an even more serious issue. Indeed, countries like China and India are still considered developing countries included by the WTO and may have non-trade concerns such as food security and poverty reduction in their trade policy design. On the contrary, the so-called QUAD countries (EU J US CAN) are the largest traders in the world and the major importers of African exports and are expected to do more. Indeed they are currently under pressure by public opinion and international organisations to relax their trade policies to support African plans to move out of merely exporting primary goods towards manufacturing with increasing value addition. QUAD countries do offer GSPs and have pledged to even improve their treatment to Africa but our result show that, with the exception of EU, much more needs to be done in terms of elimination of TE.

The above findings and observations could lead to a direction for policy recommendations and reform. The large trading partners, in the spirit of improved cooperation with poorer countries, should converge towards the best possible preferential regime for African countries, EU's. At least OECD countries should make these improvements a priority and as they have maintained and stated many times that they want to support export-led poverty reduction strategies to African countries also through trade policy. In particular they should offer LDCs more favourable treatment also in terms of TE to give an incentive to the African economic actors to move up the value chain. This is included in the Special and Differential Treatment principle of WTO treaties and should be reflected in all trade polices including TE.

## **5 – CONCLUSIONS AND FURTHER RESEARCH**

Developing countries are denouncing the tariff escalation practised by developed countries as an obstacle to the development of their processing industry. This situation is particularly important for agricultural and food products. Using the OERP index we found that the final agri-food sector is less protected in US, followed by China and EU. But when we look at the structure of tariffs, we find that as for tariff escalation the EU market impose less obstacles to African countries in trying to up-grade along the value chain also thanks to the many preferential agreements that the EU has signed with them. Even if interesting, these results need several refinements and further analysis to include more countries and a more detailed sectoral analysis. This is left for future research.

Some policy recommendations drawing on our results on today's tariff escalation profiles are highlighted in the paper. However new waves of preferential trade agreements – in particular related to regional integration and North-South FTAs- are occupying the negotiating, political and academic fora. Clearly, any new proposal of reduction of duties leads to a reduction of the tariff escalation. However, as this paper demonstrated, these liberalization proposals have to be evaluated also in the context of existing preferential agreements; nominal improvements in the tariff structures faced by African exporters, as in the cases of EU preferential schemes for Africa, do not seem to have led to significant improvements in the incentives provided for processing of goods to be exported. Identifying the real friends is not a clear-cut exercise, but certainly a much needed one. Consequently, developing countries should not be pressurized to quickly negotiate and implement trade reforms, but left sufficient time to analyse in depth new liberalization proposals, since the devil is in the details, and the economic impact of changes in the tariff regimes of major trading partners, including the escalation profile, may not be unequivocal.

In future research, the implications of today's tariff structures and of their possible future modifications on investment patterns should also be considered. It will be particularly relevant to investigate the possible relationships between the FDI flows from USA, China, India, Japan and EU towards African countries and the sectoral patterns of tariff escalation they face.

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## APPENDIX

**Table A1: GTAP data accounts**

<b>Commodities and Activities</b>	<b>Factors</b>
Paddy rice	Land
Wheat	Labour skilled
Other cereals	Labour unskilled
Vegetables and fruit	Capital
Oil seeds	Natural resources
Sugar cane and beet	<b>Regions</b>
Plant based fibers	China
Other crops	India
Cattle, sheep, goats and horses	Japan
Other live animals	USA
Raw milk	EU_25
Wool and silk	Uganda
Forestry	Tanzania
Fishing	South Africa
Minerals	Senegal
<b>Food sector</b>	Nigeria
<b>Wearing sector</b>	Ethiopia
<b>Manufacture</b>	Botswana
<b>Services</b>	Sub-Saharan countries
	Rest of the World

**Table A2: Applied nominal tariff for Agri-food products (MTN 4 digits)**

EU	Botswana	Cameroon	Ethiopia	Ghana	Kenia	Nigeria	Senegal	South Africa	Uganda	Tanzania
0101	0	0	0	0	0	0	0	0	0	0
0102	0	0	0	0.22	0	0	0	0.06	0	0
0103	0	0.5	0	0.5	0.25	0.24	0.35	0.23	0.4	0.27
0201	0	0	0	0	0	0	0	0	0	0
0202	0	0	0	0	0	0	0	0	0	0
0203	0	0	0	0	0	0	0	0	0	0
0301	0	0	0	0	0	0	0	0	0	0
0302	0	0	0	0	0	0	0	0	0	0
0303	0	0	0	0	0	0	0	0	0	0
1101	0	0	0	0	0	0	0	4.67	0	0
1102	0	0	0	0	0	0	0	8.96	0	0
1103	0	0	0	0	0	0	0	9.92	0	0
1201	0	0	0	0	0	0	0	1.47	0	0
1202	0	0	0	0	0	0	0	0.96	0	0
1203	0	0.02	0	0.01	0.01	0.01	0.03	5.17	0	0
1301	0	0	0	0	0	0	0	0	0	0
1302	0	0	0	0	0	0	0	0	0	0
1303	0	0	0	0	0	0	0	3.45	0	0
1402	0	0	0	0	0	0	0	5.63	0	0
1403	0	0	0	0	0	0	0	9.3	0	0
1501	0	0	0	0	0	0	0	0.56	0	0
1502	0	0	0	0	0	0	0	0	0	0
1503	0	0	0	0	0	0	0	3.1	0	0
1701	0	0	0	0	0	0	0	0.09	0	0
1703	0	0	0	0	0	0	0	1.94	0	0
1801	0	0	0	0	0	0	0	0	0	0
1803	0	0	0	0	0	0	0	0.16	0	0
2003	0	0	0	0	0	0	0	4.79	0	0
2101	0	0	0	0	0	0	0	0	0	0
2103	0	0	0	0	0	0	0	7.7	0	0
2201	0	0	0	0	0	0	0	0	0	0
2203	0	0	0	0	0	0	0	0	0	0
2301	0	0	0	0	0	0	0	0	0	0
2302	0	0	0	0	0	0	0	0	0	0
2303	0	0	0	0	0	0	0	0	0	0
<b>average</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>1.95</b>	<b>0.01</b>	<b>0.01</b>

01	0.00	0.50	0.00	0.50	0.25	0.24	0.35	0.23	0.40	0.27
02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.25	0.00	0.00
12	0.00	0.02	0.00	0.01	0.01	0.01	0.03	3.70	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.45	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.67	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.54	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.85	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.70	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>average</b>	<b>0.00</b>	<b>0.04</b>	<b>0.00</b>	<b>0.04</b>	<b>0.02</b>	<b>0.02</b>	<b>0.03</b>	<b>2.20</b>	<b>0.03</b>	<b>0.02</b>



<b>India</b>	Botswana	Cameroon	Ethiopia	Ghana	Kenia	Nigeria	Senegal	South Africa	Uganda	Tanzania
0101	5.91	5.91	5.91	5.91	5.91	5.91	5.91	6.88	5.91	5.91
0102	9.94	7.5	9.94	7.5	9.94	7.5	9.94	10	9.94	7.5
0103	9.21	9.21	9.21	9.21	9.21	9.21	9.21	9.21	9.21	9.21
0201	7.17	7.17	7.17	7.17	7.17	7.17	7.17	8.75	7.17	7.17
0202	8.78	7	8.78	7	8.78	7	8.78	8.75	8.78	7
0203	10	10	10	10	10	10	10	10	10	10
0301	13.86	13.86	13.86	13.86	13.86	13.86	13.86	17.86	13.86	13.86
0302	9.2	7	9.2	7	9.2	7	9.2	9.41	9.2	5
0303	9.72	9.72	9.72	9.72	9.72	9.72	9.72	10	9.72	9.72
1101	29.75	29.75	29.75	29.75	29.75	29.75	29.75	30	29.75	29.75
1102	30	30	30	30	30	30	30	30	30	30
1103	28.68	28.68	28.68	28.68	28.68	28.68	28.68	30	28.68	28.68
1201	30.45	30.45	30.45	30.45	30.45	30.45	30.45	42.86	30.45	30.45
1202	30	30	30	30	30	30	30	30	30	30
1203	30	30	30	30	30	30	30	30	30	30
1301	87.27	87.27	87.27	87.27	87.27	87.27	87.27	100	87.27	87.27
1302	30	30	30	30	30	30	30	30	30	30
1303	29.55	29.55	29.55	29.55	29.55	29.55	29.55	28.64	29.55	29.55
1402	35	7	35	7	35	7	35	60	35	7
1403	30	30	30	30	30	30	30	30	30	30
1501	37.8	37.8	37.8	37.8	37.8	37.8	37.8	50	37.8	37.8
1502	30	30	30	30	30	30	30	30	30	30
1503	30.57	30.57	30.57	30.57	30.57	30.57	30.57	31.5	30.57	30.57
1701	23.45	23.45	23.45	23.45	23.45	23.45	23.45	30	23.45	23.45
1703	34.06	34.06	34.06	34.06	34.06	34.06	34.06	34.06	34.06	34.06
1801	35.33	59.5	35.33	59.5	35.33	59.5	35.33	35.33	35.33	59.5
1803	23.77	23.77	23.77	23.77	23.77	23.77	23.77	19.84	23.77	23.77
2003	77.99	77.99	77.99	77.99	77.99	77.99	77.99	71.76	77.99	77.99
2101	30	30	30	30	30	30	30	30	30	30
2103	34.51	34.51	34.51	34.51	34.51	34.51	34.51	30	34.51	34.51
2201	30	30	30	30	30	30	30	30	30	30
2203	35	35	35	35	35	35	35	35	35	35
2301	16.93	16.93	16.93	16.93	16.93	16.93	16.93	12.37	16.93	16.93
2302	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20	20.6	20.6
2303	24.17	15.4	24.17	15.4	24.17	15.4	24.17	25	24.17	15.4
<b>average</b>	<b>27.39</b>	<b>26.85</b>	<b>27.39</b>	<b>26.85</b>	<b>27.39</b>	<b>26.85</b>	<b>27.39</b>	<b>29.06</b>	<b>27.39</b>	<b>26.79</b>

01	3.30	3.30	3.30	3.30	3.30	3.30	3.30	2.33	3.30	3.30
02	2.83	2.83	2.83	2.83	2.83	2.83	2.83	1.25	2.83	2.83
03	-4.14	-4.14	-4.14	-4.14	-4.14	-4.14	-4.14	-7.86	-4.14	-4.14
11	-1.07	-1.07	-1.07	-1.07	-1.07	-1.07	-1.07	0.00	-1.07	-1.07
12	-0.45	-0.45	-0.45	-0.45	-0.45	-0.45	-0.45	-12.86	-0.45	-0.45
13	-57.72	-57.72	-57.72	-57.72	-57.72	-57.72	-57.72	-71.36	-57.72	-57.72
14	-5.00	23.00	-5.00	23.00	-5.00	23.00	-5.00	-30.00	-5.00	23.00
15	-7.23	-7.23	-7.23	-7.23	-7.23	-7.23	-7.23	-18.50	-7.23	-7.23
17	10.61	10.61	10.61	10.61	10.61	10.61	10.61	4.06	10.61	10.61
18	-11.56	-35.73	-11.56	-35.73	-11.56	-35.73	-11.56	-15.49	-11.56	-35.73
21	4.51	4.51	4.51	4.51	4.51	4.51	4.51	0.00	4.51	4.51
22	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
23	7.24	-1.53	7.24	-1.53	7.24	-1.53	7.24	12.63	7.24	-1.53
<b>average</b>	<b>-4.13</b>	<b>-4.51</b>	<b>-4.13</b>	<b>-4.51</b>	<b>-4.13</b>	<b>-4.51</b>	<b>-4.13</b>	<b>-10.06</b>	<b>-4.13</b>	<b>-4.51</b>

<b>Japan</b>	Botswana	Cameroon	Ethiopia	Ghana	Kenia	Nigeria	Senegal	South Africa	Uganda	Tanzania
0101	0	0	0.03	0	0	0	0	0	0	0
0102	0.49	1.29	1.08	1.62	0.49	0.66	0	0.3	0	0
0103	0.11	0	1.5	0	0.25	0	0	0	0	0
0201	3.37	3.37	0	3.37	3.37	3.37	0	0	0	0
0202	3.57	3.57	1.01	3.57	3.57	3.57	0.63	2.23	0	0
0203	1.8	9.23	2.13	4.11	5.93	1.84	0	5.7	0.02	0
0301	0.3	0.3	0	0.3	0.3	0.3	0	0.3	0	0
0302	5.23	5.23	0.7	5.23	5.23	5.23	0.45	2.71	0.45	0.45
0303	6.16	15.08	0	8	7.65	6.16	0.6	5.97	0.6	10
1101	4.31	1.75	0.53	5.6	4	1.75	2.47	3.76	0.52	0
1102	5.88	5.88	2.47	5.88	5.88	5.88	2.39	11.3	2.39	2.39
1103	6.6	6.6	0.66	6.6	6.6	6.6	4.11	3.84	0.91	0.91
1201	2.21	2.21	0	2.21	0	2.21	0.05	8.81	0	0
1202	6.69	6.69	0.47	0	6.69	6.69	0.22	4.66	0.22	0.22
1203	9.96	9.96	0.2	9.58	7.07	9.96	0.11	15.17	1.27	0.11
1301	6.5	0	0	0	7.9	6.5	0	14.5	0	0
1302	7	7	0	1.75	7	7	0	7	0	0
1303	16.4	16.4	0.71	20.52	18.2	16.4	0	16.4	0	0
1402	2.87	2.87	0.22	2.87	2.87	2.87	0.2	0	0.2	0.2
1403	22	22	0	22	22	22	0	20	0	0
1501	0.16	0.16	0.44	0.16	25.5	2.25	0	0	0	0
1502	12.22	12.22	1.15	12.22	12.22	12.22	1.15	12.22	1.15	1.15
1503	8.79	8.79	0.5	18.96	8.79	18.96	0.46	12.33	0.46	0.46
1701	0.81	0	0	0	0	0.81	0	0	0	0
1703	3.9	3.9	0.09	3.9	3.9	3.9	0.02	3.9	0.02	0.02
1801	0	0	0	0	0	0	0	5	0	0
1803	0.58	0.58	3.27	0.4	0.8	0.58	0	0.4	0	0
2003	7.47	7.47	0.04	0	0	0	0.03	16.99	0.03	0.03
2101	23.36	23.36	0	23.36	23.36	23.36	0	23.36	0	0
2103	26.48	26.48	0	26.48	26.48	26.48	0	18.75	0	0
2201	0	0	0	0	0	0	0	0	0	0
2203	6.28	6.28	0	6.28	6.28	6.28	0	0	0	0
2301	1.54	0	0	0	0	7.42	0	0.96	0	0
2302	0.53	0.53	0.68	0.53	0	0.53	0	0	0	0
2303	1.77	1.77	0.65	1.77	1.77	1.77	0.62	1.77	0.62	0.62
<b>average</b>	<b>5.87</b>	<b>6.03</b>	<b>0.53</b>	<b>5.64</b>	<b>6.40</b>	<b>6.10</b>	<b>0.39</b>	<b>6.24</b>	<b>0.25</b>	<b>0.47</b>

01	0.11	0.00	1.47	0.00	0.25	0.00	0.00	0.00	0.00	0.00
02	-1.57	5.86	2.13	0.74	2.56	-1.53	0.00	5.70	0.02	0.00
03	5.86	14.78	0.00	7.70	7.35	5.86	0.60	5.67	0.60	10.00
11	2.29	4.85	0.13	1.00	2.60	4.85	1.64	0.08	0.39	0.91
12	7.75	7.75	0.20	7.37	7.07	7.75	0.06	6.36	1.27	0.11
13	9.90	16.40	0.71	20.52	10.30	9.90	0.00	1.90	0.00	0.00
14	19.13	19.13	-0.22	19.13	19.13	19.13	-0.20	20.00	-0.20	-0.20
15	8.63	8.63	0.06	18.80	-16.71	16.71	0.46	12.33	0.46	0.46
17	3.09	3.90	0.09	3.90	3.90	3.09	0.02	3.90	0.02	0.02
18	0.58	0.58	3.27	0.40	0.80	0.58	0.00	-4.60	0.00	0.00
21	3.12	3.12	0.00	3.12	3.12	3.12	0.00	-4.61	0.00	0.00
22	6.28	6.28	0.00	6.28	6.28	6.28	0.00	0.00	0.00	0.00
23	0.23	1.77	0.65	1.77	1.77	-5.65	0.62	0.81	0.62	0.62
<b>average</b>	<b>5.03</b>	<b>7.16</b>	<b>0.65</b>	<b>6.98</b>	<b>3.72</b>	<b>5.39</b>	<b>0.25</b>	<b>3.66</b>	<b>0.24</b>	<b>0.92</b>

USA	Botswana	Cameroon	Ethiopia	Ghana	Kenya	Nigeria	Senegal	South Africa	Uganda	Tanzania
0101	0	0	0	0	0	0	0	0	0	0
0102	0	0	0	0	0	0	0	0	0	0
0103	0	0	0	0	0	0	0	0	0	0
0201	3.47	3.47	3.47	0	3.47	3.47	0	1.25	0	3.47
0202	0	3.93	7.57	8.94	8.94	8.56	6.66	8.14	2.6	6.45
0203	13.23	9	11.17	9.49	10.41	10.48	10.35	8.6	8.5	8.76
0301	0	0	0	0	0	0	0	0	0	0
0302	0	0	0	0	0	0	0	0	0	0
0303	0	0	0	0	0	0	0	0	0	0
1101	0	0	0	0	0	0	0	0	0	0
1102	0	0	0	0	0	0	0	0	0	0
1103	0	0	0	0	0	0	0	0	0	0
1201	0	0	0	0	0	0	0	0	0	0
1202	0.12	0.12	0	0	0.12	0.12	0.12	1.32	0	0
1203	1.55	0.9	0.68	0	0	0.39	1.55	2.57	0.93	0
1301	0	0	0	0	0	0	0	0	0	0
1302	0	0	0	0	0	0	0	0	0	0
1303	1.49	1.49	1.49	0.88	3.33	1.49	1.49	1.05	1.49	1.49
1402	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0	0.74	0.74
1403	0.76	0.76	0.76	0.76	0	0.76	0.76	1.52	0.76	0.76
1501	0	0	0	0	0	0	0	0	0	0
1502	0	0	0	0	0	0	0	0	0	0
1503	0.12	0	0	0.4	0	0.08	1	0.13	0.12	0.12
1701	0	0	0	0	0	0	0	0	0	0
1703	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
1801	10.95	10.95	0	10.95	10.95	0	0	0	0	10.95
1803	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0
2101	0	0	0	0	0	0	0	0	0	0
2103	0.3	0.3	0.3	0.3	0	0.3	0.3	0.3	0.3	0.3
2201	37.49	38.89	37.49	37.49	26.92	37.49	32.91	36.79	37.49	37.49
2203	43.75	43.75	43.75	43.75	43.75	43.75	43.75	0	43.75	43.75
2301	0	0	0	0	0	0	0	0	0	0
2302	0	0	0	0	0	0	0	0	0	0
2303	0	0	0	0	0	0	0	0	0	0
<b>average</b>	<b>3.27</b>	<b>3.28</b>	<b>3.09</b>	<b>3.27</b>	<b>3.12</b>	<b>3.09</b>	<b>2.86</b>	<b>1.78</b>	<b>2.78</b>	<b>3.28</b>

01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02	9.76	5.53	7.70	9.49	6.94	7.01	10.35	7.35	8.50	5.29
03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	1.55	0.90	0.68	0.00	0.00	0.39	1.55	2.57	0.93	0.00
13	1.49	1.49	1.49	0.88	3.33	1.49	1.49	1.05	1.49	1.49
14	0.02	0.02	0.02	0.02	-0.74	0.02	0.02	1.52	0.02	0.02
15	0.12	0.00	0.00	0.40	0.00	0.08	1.00	0.13	0.12	0.12
17	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
18	-10.95	-10.95	0.00	-10.95	-10.95	0.00	0.00	0.00	0.00	-10.95
21	0.30	0.30	0.30	0.30	0.00	0.30	0.30	0.30	0.30	0.30
22	6.26	4.86	6.26	6.26	16.83	6.26	10.84	-36.79	6.26	6.26
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>average</b>	<b>0.70</b>	<b>0.21</b>	<b>1.31</b>	<b>0.54</b>	<b>1.23</b>	<b>1.24</b>	<b>2.01</b>	<b>-1.79</b>	<b>1.40</b>	<b>0.24</b>

<b>China</b>	Botswana	Cameroon	Ethiopia	Ghana	Kenia	Nigeria	Senegal	South Africa	Uganda	Tanzania
0101	0.03	0	0.03	0	0	0	0	0	0.03	0
0102	5.37	3.33	7.5	2.36	2	1.83	5.37	4.75	0	0
0103	5.01	0	5.42	2.5	5.75	7.5	0	4.27	0	5
0201	9.33	9.33	0	9.33	9.33	14	9.33	13.25	0	0
0202	8.78	8.78	0.29	10	6	10	0.67	9.55	0	2.5
0203	16	14.39	6.55	17	15.19	12.93	1.42	13.81	1.56	12.67
0301	8.93	8.93	8.93	8.93	8.93	8.93	8.93	7.87	8.93	8.93
0302	6	10.38	0.93	10.38	9.92	9.07	6.67	10.06	2.78	4.17
0303	9	16.04	12.5	17	15	18.5	2.5	14.98	1.19	6.67
1101	10.79	10.79	1.35	12	12	10.79	4.87	10.84	6	6
1102	13.75	13.75	0	13.75	13.75	13.75	8.33	16	0	0
1103	9.85	9.85	4.32	9.85	7.75	9.85	12	7.75	4.32	4.32
1201	14.09	14.09	6.5	20	14.09	14.09	0	14.14	3.25	10
1202	21.53	21.53	21.53	21.53	21.53	21.53	21.53	21.53	21.53	21.53
1203	17.56	17.56	13	17.56	17.56	17.56	0	13.67	0	0
1301	12.55	12.55	0	2	11.5	2	0	14	0	0
1302	14.25	14.25	0	10	14.25	14.25	0	14.25	0	0
1303	17.44	17.44	0	17.44	32	17.44	17.44	8	0	0
1402	29.71	29.71	29.71	29.71	29.71	29.71	29.71	50	29.71	29.71
1403	11	11	11	11	11	11	11	10	11	11
1501	14.56	14.56	15	14.56	14.56	14.56	0	20	0	0
1502	36.13	36.13	36.13	36.13	36.13	36.13	36.13	36.13	36.13	36.13
1503	18.13	18.13	14	18.13	19.5	18.13	18.13	17.93	14	14
1701	5.86	5.86	4.58	5.86	5.86	5.86	4.58	6.67	4.58	6.67
1703	17.77	17.77	17.77	17.77	17.77	17.77	17.77	17.77	17.77	17.77
1801	9.83	5	0	12.5	8.75	8.75	0	9.83	0	7.5
1803	10.83	10.83	5	18.75	10.83	10.83	10	12.17	0	0
2003	21.06	21.06	21.06	21.06	21.06	21.06	21.06	19.86	21.06	21.06
2101	15	15	15	15	15	15	15	15	15	15
2103	11.47	11.47	11.47	11.47	11.47	11.47	11.47	2	11.47	11.47
2201	10	10	10	10	10	10	10	10	10	10
2203	41	41	41	41	41	41	41	41	41	41
2301	12.39	40	40	40	11.69	20	23.07	15.79	11.5	10.1
2302	15.02	15.02	7.55	15.02	15.02	15.02	10.07	19.58	7.55	7.55
2303	7.83	7.83	7.83	7.83	3.5	7.83	7.83	13	7.83	7.83
<b>average</b>	<b>13.94</b>	<b>14.67</b>	<b>10.74</b>	<b>15.07</b>	<b>14.27</b>	<b>14.23</b>	<b>10.45</b>	<b>14.73</b>	<b>8.23</b>	<b>9.39</b>

01	4.98	0.00	5.39	2.50	5.75	7.50	0.00	4.27	-0.03	5.00
02	6.67	5.06	6.55	7.67	5.86	-1.07	-7.91	0.56	1.56	12.67
03	0.07	7.11	3.57	8.07	6.07	9.57	-6.43	7.11	-7.74	-2.26
11	-0.94	-0.94	2.97	-2.15	-4.25	-0.94	7.13	-3.09	-1.68	-1.68
12	3.47	3.47	6.50	-2.44	3.47	3.47	0.00	-0.47	-3.25	-10.00
13	4.89	4.89	0.00	15.44	20.50	15.44	17.44	-6.00	0.00	0.00
14	-18.71	-18.71	-18.71	-18.71	-18.71	-18.71	-18.71	-40.00	-18.71	-18.71
15	3.57	3.57	-1.00	3.57	4.94	3.57	18.13	-2.07	14.00	14.00
17	11.91	11.91	13.19	11.91	11.91	11.91	13.19	11.10	13.19	11.10
18	1.00	5.83	5.00	6.25	2.08	2.08	10.00	2.34	0.00	-7.50
21	-3.53	-3.53	-3.53	-3.53	-3.53	-3.53	-3.53	-13.00	-3.53	-3.53
22	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00
23	-4.56	-32.17	-32.17	-32.17	-8.19	-12.17	-15.24	-2.79	-3.67	-2.27
<b>average</b>	<b>3.06</b>	<b>1.35</b>	<b>1.44</b>	<b>2.11</b>	<b>4.38</b>	<b>3.70</b>	<b>3.47</b>	<b>-0.85</b>	<b>1.63</b>	<b>2.14</b>



<b>China</b>	Botswana	Cameroon	Ethiopia	Ghana	Kenia	Nigeria	Senegal	South Africa	Uganda	Tanzania
0101	0.03	0	0.03	0	0	0	0	0	0.03	0
0102	5.37	3.33	7.5	2.36	2	1.83	5.37	4.75	0	0
0103	5.01	0	5.42	2.5	5.75	7.5	0	4.27	0	5
0201	9.33	9.33	0	9.33	9.33	14	9.33	13.25	0	0
0202	8.78	8.78	0.29	10	6	10	0.67	9.55	0	2.5
0203	16	14.39	6.55	17	15.19	12.93	1.42	13.81	1.56	12.67
0301	8.93	8.93	8.93	8.93	8.93	8.93	8.93	7.87	8.93	8.93
0302	6	10.38	0.93	10.38	9.92	9.07	6.67	10.06	2.78	4.17
0303	9	16.04	12.5	17	15	18.5	2.5	14.98	1.19	6.67
1101	10.79	10.79	1.35	12	12	10.79	4.87	10.84	6	6
1102	13.75	13.75	0	13.75	13.75	13.75	8.33	16	0	0
1103	9.85	9.85	4.32	9.85	7.75	9.85	12	7.75	4.32	4.32
1201	14.09	14.09	6.5	20	14.09	14.09	0	14.14	3.25	10
1202	21.53	21.53	21.53	21.53	21.53	21.53	21.53	21.53	21.53	21.53
1203	17.56	17.56	13	17.56	17.56	17.56	0	13.67	0	0
1301	12.55	12.55	0	2	11.5	2	0	14	0	0
1302	14.25	14.25	0	10	14.25	14.25	0	14.25	0	0
1303	17.44	17.44	0	17.44	32	17.44	17.44	8	0	0
1402	29.71	29.71	29.71	29.71	29.71	29.71	29.71	50	29.71	29.71
1403	11	11	11	11	11	11	11	10	11	11
1501	14.56	14.56	15	14.56	14.56	14.56	0	20	0	0
1502	36.13	36.13	36.13	36.13	36.13	36.13	36.13	36.13	36.13	36.13
1503	18.13	18.13	14	18.13	19.5	18.13	18.13	17.93	14	14
1701	5.86	5.86	4.58	5.86	5.86	5.86	4.58	6.67	4.58	6.67
1703	17.77	17.77	17.77	17.77	17.77	17.77	17.77	17.77	17.77	17.77
1801	9.83	5	0	12.5	8.75	8.75	0	9.83	0	7.5
1803	10.83	10.83	5	18.75	10.83	10.83	10	12.17	0	0
2003	21.06	21.06	21.06	21.06	21.06	21.06	21.06	19.86	21.06	21.06
2101	15	15	15	15	15	15	15	15	15	15
2103	11.47	11.47	11.47	11.47	11.47	11.47	11.47	2	11.47	11.47
2201	10	10	10	10	10	10	10	10	10	10
2203	41	41	41	41	41	41	41	41	41	41
2301	12.39	40	40	40	11.69	20	23.07	15.79	11.5	10.1
2302	15.02	15.02	7.55	15.02	15.02	15.02	10.07	19.58	7.55	7.55
2303	7.83	7.83	7.83	7.83	3.5	7.83	7.83	13	7.83	7.83
<b>average</b>	<b>13.94</b>	<b>14.67</b>	<b>10.74</b>	<b>15.07</b>	<b>14.27</b>	<b>14.23</b>	<b>10.45</b>	<b>14.73</b>	<b>8.23</b>	<b>9.39</b>

01	4.98	0.00	5.39	2.50	5.75	7.50	0.00	4.27	-0.03	5.00
02	6.67	5.06	6.55	7.67	5.86	-1.07	-7.91	0.56	1.56	12.67
03	0.07	7.11	3.57	8.07	6.07	9.57	-6.43	7.11	-7.74	-2.26
11	-0.94	-0.94	2.97	-2.15	-4.25	-0.94	7.13	-3.09	-1.68	-1.68
12	3.47	3.47	6.50	-2.44	3.47	3.47	0.00	-0.47	-3.25	-10.00
13	4.89	4.89	0.00	15.44	20.50	15.44	17.44	-6.00	0.00	0.00
14	-18.71	-18.71	-18.71	-18.71	-18.71	-18.71	-18.71	-40.00	-18.71	-18.71
15	3.57	3.57	-1.00	3.57	4.94	3.57	18.13	-2.07	14.00	14.00
17	11.91	11.91	13.19	11.91	11.91	11.91	13.19	11.10	13.19	11.10
18	1.00	5.83	5.00	6.25	2.08	2.08	10.00	2.34	0.00	-7.50
21	-3.53	-3.53	-3.53	-3.53	-3.53	-3.53	-3.53	-13.00	-3.53	-3.53
22	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00
23	-4.56	-32.17	-32.17	-32.17	-8.19	-12.17	-15.24	-2.79	-3.67	-2.27
<b>average</b>	<b>3.06</b>	<b>1.35</b>	<b>1.44</b>	<b>2.11</b>	<b>4.38</b>	<b>3.70</b>	<b>3.47</b>	<b>-0.85</b>	<b>1.63</b>	<b>2.14</b>