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# An Impact Study of the Economic Partnership Agreements (EPAs) in the Six ACP Regions

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**Abstract—** This article intends to present a very detailed analysis of the trade-related aspects of Economic Partnership Agreements (EPAs) negotiations. We use a dynamic partial equilibrium model – focusing on the demand side – at the HS6 level (covering 5,113 HS6 products). Two alternative lists of sensitive products are constructed, one giving priority to the agricultural sectors, the other focusing on tariff revenue preservation. In order to be WTO compatible, EPAs must translate into 90 percent of bilateral trade fully liberalised. We use this criterion to simulate EPAs for each negotiating regional block. ACP exports to the EU are forecast to be 10 percent higher with the EPAs than under the GSP/EBA option. On average ACP countries are forecast to lose 70 percent of tariff revenues on EU imports in the long run. Yet imports from other regions of the world will continue to provide tariff revenues. Thus when tariff revenue losses are computed on total ACP imports, losses are limited to 26 percent on average in the long run and even 19 percent when the product lists are optimised. The final impact on the economy depends on the importance of tariffs in government revenue and on potential compensatory effects. However this long term and less visible effect will mainly depend on the capacity of each ACP country to reorganise its fiscal base.

**Keywords—** Preferential Trade Agreements, Africa, EPAs, Partial Equilibrium Simulations.

## I. INTRODUCTION

This article addresses the impacts of the non-reciprocal tariff concessions granted by the EU to the ACP that had to be replaced by new – WTO compatible – preferential agreements.

The negotiations on Economic Partnership Agreements (EPAs), between the EU and a number of ACP negotiation groups were scheduled to be concluded by 31 December 2007. During 2007 seven

Interim Agreements and a Caribbean EPA have been negotiated. All establish free trade areas for goods between the EU and various ACP countries that are compatible with the provisions of GATT Article XXIV and, in the case of the Caribbean EPA, a services agreement compatible with the provisions of GATS article V. In total 35 of the 77 ACP countries have concluded negotiations on Interim Agreements or an EPA with the EU: 9 LDCs and 26 non-LDCs. Among the remaining ACP countries 32 LDCs benefit from duty and quota free access to the EU under the GSP “Everything But Arms” arrangement and 10 non-LDCs are eligible for the standard GSP. Negotiations will continue in 2008 towards full regional EPAs including a full range of trade in goods, services and trade related areas to replace the Interim Agreements.

For the agreements to be WTO compatible they needed to include reciprocal market access which covers “substantially all” trade.<sup>1</sup> However, this reciprocity is not the only objective of EPAs, which include several other elements, such as support for deep integration and development assistance. Moreover it was hoped that these agreements could also promote regional integration among sub-groups of ACP countries. ACP negotiating groups are a combination of relatively poor developing countries and LDCs, most of which are highly dependent on the trade relationship with the EU. This dependence is a central aspect when considering the potential losses in import taxes that EPAs may engender and the potential negative impacts of any deterioration in market access should EPAs not be concluded.

In many ACP countries a key fear is of significant tariff revenue losses, which often constitute a

<sup>1</sup>This quantitative requirement (90 per cent of free trade) is achieved considering both 90 per cent of bilateral trade in volume and 90 per cent of tariff lines in the Harmonised System.

significant amount of government budgetary resources. Given the narrow fiscal basis of many ACP countries, a loss of tariff income would translate into public budget constraints. However, these effects will not be immediate. Tariff losses will be dampened temporarily during the period of progressive phasing out of tariffs on EU imports. In the long run, the final outcome in terms of public budgets will mainly depend on the capacity of the ACP to reorganise their fiscal base, shifting to other forms of taxation, and to increase their tax collection capacities.

Looking at the nature of trade relations between the EU and the ACP, it is clear that far more is at stake in these negotiations for the ACP than for the EU. Disparities in trade are significant. Despite the preferences accorded by the EU during their longstanding partnership, less than 2.5 percent of EU imports come from the ACP region, with West Africa accounting for half of this. In contrast, ACP countries are highly dependent on trade relation with the EU (nearly 30 percent of their export go to the EU and 28 percent of their imports come from there,<sup>2</sup> even if the trend shows that the weight of the EU is tending to diminish at the profit of new trading partners, particularly China. Still this dependence is a central issue when considering the potential impacts of EPAs on import tax income.

Moreover ACP economies are often very specialised. On the export side, one single product (out of the 5,000 products in the HS6 classification) accounts for more than 50% of total exports in one country over two, and more than 70% in one country over three. This concentration makes these countries particularly sensitive to changes in the world market for one or more of these products; for agriculture other non economic factors such as weather or disease also affect the market, making prices very volatile. It is clear that, to reduce the vulnerability of the ACP economies, a more efficient use of their resources is not enough; it is their capacity to diversify that has to

be supported. This is one important reason why broad market access is vital to supporting economic growth.

There are several standard methodologies that can be used to assess the impact of trade policies, including computable general equilibrium (CGE models) and partial equilibrium (PE) simulation models. General equilibrium models are certainly the most appropriate to try to assess the overall trade and welfare effects of such agreements. However they require social accounting matrices for the affected countries, with comprehensive information on each economy involved and their results are driven by the quality of these data. Since these data are not available for most ACP countries, CGE modelling was not an option for this ACP-wide analysis.

Moreover, due to the high level of product specialisation of numerous ACP countries, using a CGE model describing the whole economy at an aggregated level (even at the GTAP sector level) risks missing key impacts. Last but not least, working at the product level is crucial from the point of view of policy relevance because of the problematic issue of the need to select 'sensitive products' which will be excluded from liberalisation. For these reasons, we have decided to use a partial equilibrium model, expressly built for this purpose.

In order to take account of the difference in the level of development between the two regions, we give a central place to the hypothesis that local or regional products are different from European products and thus less substitutable. In assessing the results it is also important to remember that the model relies on an assumption of infinite supply capacity, although in reality ACP countries have limited production capacities to resist international competition. This means that our figures have to be interpreted only as 'potential' gains.

Given the complexity of the EPAs, the study cannot include all issues that were at stake in the negotiations. The main focus is on trade and budgetary aspects. In particular, the paper deals with the major role that the choice of sensitive products may play in this sense.

In order to work on this, we use detailed protection data, taken from the last version of the MACMap database updated for this study with data on GSP/GSP+ protection levels. The ad-valorem equivalents of the bilateral protection levels and of the

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<sup>4</sup>It is important to keep in mind the high level of heterogeneity that exists, not only among the different regional groups, but also within them. There are countries, such as Cameroon, for which the EU is as essential trading partner (71.7 per cent of exports and 61.2 per cent of imports), while as for countries in the Caribbean and Pacific areas, for which the EU is a more marginal trading partner, mainly because of geographical distance.

consolidated tariffs are taken into account at the 6-digit level of the harmonized nomenclature (HS6). Given the uneven level of achievement of agreements signed so far, a number of simulations are also performed in order to identify the impacts of possible alternative policy options to EPAs. Though the different computations are made at the level of national economies and at the HS6 level, the results will be presented at the level of ACP negotiating regions and aggregated sectors. It is important to bear in mind that the regions are characterised by strong heterogeneity between and within themselves. One key difference is the number of LDC countries within each group, which is important to the potential impact of possible alternatives should EPAs not be signed.

The paper is structured as follows. After reviewing the literature, section three focuses on the initial protection and discusses the detailed features of market access in the EPAs. Then, in the fourth section we describe the model and the data used. Finally, the results of the EPAs simulations are presented and discussed.

## II. LITERATURE REVIEW

General equilibrium models are certainly more appropriate tools to assess the overall trade and welfare effects of such agreements. However, as indicated above, they lack detail on a sectoral level (they use GTAP sectoral disaggregation while numerous ACP countries are highly specialized in a few products) and on ACP regions (social accounting matrixes are only available for a limited number of individual ACP countries). For these reasons, a few studies have, like our study, employed a PE model.

Both types of approaches tend to ignore the adjustment costs faced by an economy. Those costs emerge from the reallocation of factors of production across sectors, or the reorganization of the fiscal base, shifting to other forms of taxation to replace tariffs. Moreover, they both assume that tariff cuts will translate into proportional reductions in prices which benefit the final consumer. In reality it is likely that some of the cut will be appropriated by the producers/importers, and/or by the exporter (EU) due to an incomplete pass-through of tariff changes to consumer prices (see Gasiorsek & Winters, 2004 [4]).

In addition to such technical difficulties with the models, different trade scenarios often do not incorporate important aspects of the EPAs negotiations, such as the consequences of excluding specific products from tariff liberalization on the ACP side, and the use of different methods to select them. Including these “sensitive” products in the analysis can significantly change results. Obviously, to introduce this important aspect effectively, it is necessary to work at the most disaggregated level (HS6 product level).

Finally to understand the results, it is important to be aware of the assumptions that have been made in each study in the design of trade simulations. In this respect many studies erroneously compare EPA negotiations to the status-quo (Cotonou-Lomé). In reality in the absence of EPAs, ACP countries would revert to the situation of other developing economies in the WTO: the Generalised System of Preferences (GSP) (or, potentially, GSP+, a more generous system which is available for a limited number of developed countries) and EBA for LDCs.

Overall, the literature based on partial equilibrium models, tends to show that European exporters are the main beneficiaries of the EPAs, as their sales to the ACP markets increase substantially after the implementation of these agreements. Implementation pushes the prices of imports from Europe down, thus reducing the imports from non-EU countries. At the same time the welfare of ACP consumers is increased due to a reduction in prices. In some cases, however, whenever less efficient EU producers replace more efficient non-European producers, this type of import substitution is associated with a relative loss of overall economic efficiency.

The United Nation Economic Commission for Africa (UNECA, 2005) has provided an exhaustive assessment of the effect of EPAs on African economies, based on the SMART partial equilibrium model. The study forecasts that European firms could increase their exports by more than 20 percent, while imports from third markets would fall, partly as a result. In the meantime, consumer welfare is forecast to increase by USD 509 million, with fiscal losses amounting to USD 1,972 millions. These results concur with the conclusions of other studies, for example Busse et al. (2004)[1] looking only at the

ECOWAS regional economic community, the Secretariat (2003) [12] for the COMESA sub-region, Ndlela & Tekere (2003)[9] for SADC and Scollay (2002) [11] for the Pacific.

Milner et al. (2005)[8] provide an innovative analysis of the decomposition of welfare effects in a PE framework. Their approach is rather different from previous studies. Along with trade creation and trade diversion, they also explicitly model the resulting consumption effects. The net welfare effects vary from sector to sector, depending on the competitiveness of imports from the EU compared to the rest of the world and compared to regional production. The method is applied to an EAC (East African Cooperation: Kenya, Tanzania, and Uganda)-EU EPA as an illustration, with estimates of the effects on Tanzania and Uganda. The analysis suggests that the welfare effects (excluding revenue effects) from a reciprocal agreement with the EU will be small whether positive (for Uganda) or negative (for Tanzania). However ACP countries are forecast to have large adjustment costs, especially due to tariff revenue losses.

Results presented so far do not take into consideration the impact of the terms of trade or structural changes on the output of ACP countries. They also do not indicate the ‘second order effects’ as trade shifts to third markets or endowments are reallocated. General Equilibrium Modelling gives information on these issues. Using the GTAP model and database (version 6.0), Keck & Piermartini (2007) [6] try to estimate the impact of EPAs on the SADC sub-region. The authors find that after the implementation of a fully reciprocal EPA, the welfare of the SADC sub-region would grow by USD 1.5 billion, due in part to the improvement in their terms of trade. For some SADC countries, in order to reap the full benefits, it is crucial to seek further integration between SADC countries, in parallel to EPAs. However the paper focuses only on SADC and more importantly it does not explore alternatives to EPAs.

Perez (2007) [10] and Bouet et al. [2] tries to investigate whether EPAs are the first best optimum for ACP countries compared to other main alternatives under a general equilibrium framework (GTAP model and MIRAGE model). According to their simulations, switching from the Cotonou preferences to the GSP and EBA would be less costly than adopting EPAs but

results differ by regions. In particular, SADC countries can gain significantly to the EPAs. The author also investigates the “GSP+” option as well as other WTO compatible solutions.

In our study we stick to a partial equilibrium model, the advantaged and disadvantages of which have been extensively discussed above. Our analysis aims to improve on previous studies in several ways:

The partial equilibrium model has been designed to allow for a very detailed evaluation (at the HS6 headings) of the EPA negotiations and the alternatives to them. Consequently very detailed data is used, both for trade and protection. We accurately deal with the possibility of excluding some products from liberalisation by ACP countries. Different selection methods are considered, to see whether or not the approach to selection makes a difference. The issue of the products currently covered by special protocols is also taken into account. Finally for some specific products a capacity constraint has also been implemented.

Contrarily to other PE approaches, we do not rely on the perfect import substitutability hypothesis. On the contrary we introduce a horizontal and vertical differentiation between products.

Different scenarios are simulated in order to assess the impact of both the EPAs negotiations and alternatives to them. When assessing the impact of EPAs we use as the counterfactual the GSP/EBA combination of market access, instead of the status quo.

Different time horizons are considered: 2015 and 2022, to evaluate impacts both in the medium and the long run. In this paper, only 2022 results are presented.

When presenting the effects of EPAs on ACP countries’ public finances we disentangle the overall outcome into three effects: a direct effect, due to tariff liberalisation; a trade diversion effect.

### III. CURRENT AND FUTURE TRADE POLICIES BETWEEN THE EU AND THE ACP COUNTRIES

In this section firstly we give snapshot of the protection applied and faced by ACP countries, using detrail tariff data (at HS6 level). Secondly we discuss the current and future trade policies between the EU

and ACP countries. Finally we design a WTO compatible EPA, by optimizing the use of flexibility provided by the ‘substantially all trade’ clause.

#### A. Current protection pattern

ACP regions apply different levels of protection to EU exports. CEMAC, COMESA and Pacific regions appear to be the most protective with an average duty of 13.5 percent and 12 percent, respectively. On the other hand, SADC and ECOWAS regions are the most liberal (7.1 percent and 8.1 percent).

The structure of tariffs has the usual shape - the highest level of protection is in agriculture, with peaks in agrofood (COMESA, 36 percent) and vegetable production (Pacific, 56 percent). In manufacturing, CEMAC and SADC still protect textiles (for protectionist, but also for tariff revenue reasons) while COMESA protects the metallurgic sector. Table 1 displays the average rate of protection applied by ACP regions on EU and ACP partners. The current ACP protection structure has strong negative impacts on other ACP regions, due to the latter’s sectoral specialisation. For SADC, the intra regional tariff is still around 15 percent, twice as high as that applied to EU exports to the region. Except for the CEMAC and the Caribbean areas, important gains are expected from the ACP countries’ own regional integration.

Regarding the EU trade policy towards ACP, the Cotonou agreement gives free access to all industrial products, while applying some protection in agriculture. Moreover, ACP-LDCs enjoy duty and quota free market access under the EU’s unilateral EBA initiative which provides market access to all LDCs. More precisely in the case of EBA the phasing out of the last remaining quotas (Banana, Sugar and Rice) is currently on-going and will be completed by 2009.

Table 1: ACP average applied tariffs. Regional level.

%	EC.	CE.	CO.	SA.	Carib.	Pac.	EU
ECOWAS	4.0	4.2	7.5	7.3	5.2	6.0	8.1
CEMAC	11.7	1.3	14.0	16.1	11.9	30.0	13.5
COMESA	11.2	8.6	3.7	12.7	19.7	3.8	13.1
SADC	8.7	10.3	9.6	14.6	3.3	36.4	7.1
Carib.	1.0	0.1	14.0	1.3	0.3	14.0	9.5
Pacific	8.8	16.2	9.2	5.5	12.0	40.9	12.0

Source: Authors’ computation based on MACMapHS6v2.

As shown in Table 2, our calculations indicate that some ACP countries still face an average tariff rate higher than that applied by the EU to imports from the Rest of the World. The aggregated figure presented here is affected by both the number of LDCs countries within each region and by the export composition of each zone in relation to the EU. On average, ACP countries are strongly specialised in some agricultural products which are still highly protected in the EU.<sup>3</sup>

Table 2: Initial EU applied protection by sectors.

%	EC.	CE.	CO.	SA.	Car.	Pac.	RoW
Total	0.2	0.6	5.4	3.8	3.8	12.9	2.6
Veg Prod.	1.0	6.1	13.8	48.2	13.9	20.0	10.8
Livestocks	43.4	27.7	11.3	83.2	84.8	28.8	61.3
Agr. Food		0.1	0.1	0.1	0.6	0.1	8.5
Primary							0.4
Elec. and Machinery							1.8
Metallurgy							1.2
Textile						0.3	6.4
Other Indus.	0.1		0.7	0.4	0.1	0.4	1.7

Source: Authors’ computation based on MACMapHS6v2.

#### B. Trade policies between the EU and ACP countries

Properly speaking the European Union began a cooperation policy with the African, Caribbean and Pacific (ACP) states as a whole in 1975. Until 2000 these relations were governed by the regularly updated Lomé Conventions. The economic cooperation, implemented through a system of trade preferences, ensured that manufactured and agricultural products (not in direct competition with products covered by the common agricultural policy) could enter the European Community without being subject to customs duties or quantitative restrictions. Most importantly, this access was on a non-reciprocal basis, in the sense that ACP states were merely requested to apply the most favoured nation clause to the Union and to refrain from discriminating between countries of the Union. Specific regimes were applied to products of extreme importance for ACP states such as sugar, beef and veal, rum and bananas.

<sup>3</sup> This is the case, for example, for developing countries in the SADC region where producers are disadvantaged by the high level of EU protection in tobacco and rice.

In the years running up to the expiration of the IV Lomé convention, ACP-EU cooperation faced pressures on several fronts. First, ACP countries felt that the principle of ‘equal partnership’ had been eroded and replaced by a relationship based on ‘conditionality’. Moreover, despite preferential access to EU markets, ACP export performance was deteriorating over time. Finally the non-reciprocal preferential trade regime provided by the Lomé convention was increasingly seen as unacceptable and ‘incompatible’ with international trade rules. All these arguments highlighted the need for a re-appraisal of development cooperation in general and of ACP-EU cooperation and its trade elements in particular.

The new Cotonou Partnership Agreement was signed between the ACP countries and the European Union, on 23 June 2000 in Cotonou (Benin). It was concluded for a twenty-year period from March 2000 to February 2020 with a clause for a mid-term review every five years.

Major changes from the Lomé Conventions include the strengthening of the political dimensions of the partnership, the deepening of the regional integration process between ACP countries, the preparation of a new WTO compatible trade policy and a more rationalised performance-based aid management. Accordingly, the driving force behind the EU’s search for new trading arrangements was the need to ensure that future ACP-EU trade relations were compatible with the requirements of the World Trade Organization (WTO), specifically, GATT article XXIV.<sup>4</sup>

At the Fourth WTO ministerial conference in Doha in 2001, the EU was granted the most recent waiver for the Lomé conventions, allowing it to maintain the current non reciprocal tariff preferences for ACP countries until 31 December 2007. Negotiations for the so-called new Economic Partnership Agreements (hereafter EPAs), started in September 2002 and should be completed by 2007, to comply with the requirements of the waiver.

While on the one hand it is clear that reciprocity and free trade should be phased in progressively and asymmetrically within the EPAs “within a reasonable period of time”, as required by GATT XXIV, on the other hand several matters remain unclear. For example, the interpretation of the ‘substantially all the trade’ that should be liberalised? What is a “reasonable period of time”? Or, more importantly, what will happen in the case that EPAs are not signed on time?

Not all ACP countries face the same choices. ACP-least developed countries (LDCs) will still benefit from the Everything But Arms (EBA) initiative whatever they decide to do. However LDCs need to compare alternatives including ‘variables’ other than applied duties. The EPA negotiations may yield less restrictive rules of origin, for instance. In this case the gains associated with more favourable duties could be offset by more elevated administrative costs, or incapacity to meet origin requirements.

The main problem arises with the non-LDCs ACP countries which are not in a position to enter an EPA and for whom “alternative trade arrangements” have to be provided by 2008, once the Doha waiver for the current market access arrangements lapses.

The alternative available is that non-LDCs ACP countries avail of their access to the Generalized System of Preferences (GSP). Currently they already have access to the general scheme available to all developing countries (although rarely used as Cotonou preferences are usually more generous). A more attractive alternative would be the GSP-plus scheme, which provides improved market access to “vulnerable” countries which show commitment to a sustainable approach to development by ratifying and implementing a series of international conventions.

Although, on the one hand, this solution would be fully WTO compatible, as the GSP is legally justified under the Enabling Clause, on the other side, it will not grant to the ACP the same level of preferences that they currently enjoy. Both the GSP and GSP plus provide for a less favourable treatment.

Table 3 displays the impact in terms of average tariff applied by the EU to ACP exports if ACP countries were to move from Cotonou preferences to those provided by either GSP or GSP+ (EBA for LDCs). All regions will suffer, but the impact varies

<sup>4</sup> Article XXIV, provides exceptions to MFN treatment for customs unions (CUs) and free-trade areas. In particular it requires that, in free trade areas and customs unions, trade preferences are permitted only when duties and other restrictive regulations are eliminated on ‘substantially all the trade’ between the constituent territories. Thus preferences in an FTA have to be reciprocal.

depending on the number of LDCs in the group and the structure of exports. Even for ECOWAS and CEMAC, which export mainly raw products that tend to have low or zero MFN tariffs (oil, cocoa, cotton), the effects are still visible. They move from an average tariff of close to zero to 1.7 percent and 2.8 percent respectively. Moreover, tariff escalation will become an issue, with a jump of protection for processed products from zero to 6 percent on average.

The Caribbean and Pacific regions will also see strong impacts from the reduction in their preferential margins on sugar and bananas, key exports from both regions. For COMESA, moving to GSP would more than double its average tariff rate (from 5.4 to 13.7 percent). Overall, the difference between GSP and GSP plus is not significant, except in Eastern Africa.<sup>5</sup>

Table 3: Average protection rates when moving from Cotonou to GSP and GSP+.

Regions	Cotonou	GSP	GSP+
ECOWAS+	0.2%	1.7%	1.7%
CEMAC+	0.6%	2.9%	2.8%
COMESA	5.4%	13.7%	11.9%
SADC	3.8%	4.5%	4.3%
Caribbean	3.8%	16.3%	15.9%
Pacific	12.9%	27.6%	27.2%
RoW	2.6%	2.6%	2.6%

Source: Authors' computation based on MAcMapHS6v2.

### C. EPAs: designing a WTO compatible agreement

As already mentioned, EPAs have to satisfy Article XXIV of the GATT. Among other things, this means that the desire of most ACP countries to maintain some tariffs for protectionist and tax reasons can, to some extent, be fulfilled. However to determine to what extent this will be possible it is important to consider what 'substantially all trade' would mean for them in terms of share of trade to be liberalised. Concerning this point we have followed the guidelines of the European Commission, which considers that a

PTA is WTO compatible if 90 percent of bilateral trade is fully liberalized.

Assuming full liberalization from the EU side, this would imply a liberalization of 80 percent of the ACP imports if trade flows were balanced. However, when implementing this criterion at the regional level, important differences appear. Indeed, depending on the extent to which ACP regions display negative or positive trade balances with the EU, the extent of liberalisation of imports required to meet the 90 percent target will naturally vary. For instance the Pacific region, which exports much more to the EU than it imports (distance effect), could potentially shelter up to 42 percent of its original imports and still cover 90 percent of trade. On the contrary, for the Caribbean region, which has a negative trade balance with the EU, the share of the excluded imports would represent less than 20 percent. For other regions, ECOWAS will be entitled to exclude 21% of its imports originating in the EU, CEMAC 23%, COMESA 19% and SADC 25%.

On the issue of timing, we assume that the EPA will be implemented over a period of 15 years. However to reflect the asymmetry between partners, the EU is assumed to grant free access to all ACP exports by 2008. Even if such a choice would exceed the recommendation of the article XXIV:5, it could be easily justified due to the specific weaknesses of African countries and the number of LDCs among them.

A last question remains: how do we select sensitive products? Two approaches have been chosen, following guidelines provided by EU Commission's DG Trade experts.

**H1 Scenario:** in this scenario, priority for protection is given to agricultural products.

Agricultural products are selected first for exclusion. After these products are ruled out, the most sensitive manufactured products (identified here as the ones contributing the most to tariff revenues) are also excluded, up to the overall level of residual protection assumed to be acceptable. Adopting such strategy would not optimise the choice of products in order to minimise the losses in tariff revenues, but in this way we reflect the political sensitivity of the agricultural sector in most ACP countries. The ranking inside this category is given by the theoretical value of tariff

<sup>5</sup> This is due to the fact that several countries in the region, especially Mauritius, are significant exporters in the textiles sector, where GSP plus eliminates protection, while GSP provides only limited advantages. As GSP plus does not cover either sugar or bananas its impact on the tariffs applied to other regions is limited.



revenue (Imports from the EU x tariff). All computations are made at the regional level, adding up national effects by product.

**H2 Scenario:** in this scenario, the objective is to reduce tariff revenue losses at the regional level. A discrete choice model has been built to ensure that products are chosen in a way that minimises tariff losses, at initial trade level, subject to two constraints: the share of excluded trade should not exceed the amount allowed and the number of products in the regional list should not be above 20 percent of total tariff lines.

Due to the different approaches, products contained in the exclusion lists vary considerably: agricultural products under H1, manufacturing goods (e.g. cars, used clothes) under H2.

The consequences of the exclusion lists are displayed in Table 4. The result is far from full liberalisation. Due to the extensive list of excluded products which the Pacific region could potentially include, the effects of liberalisation are completely neutralised in that region. Other regions could retain between one-fifth and half of their initial protection. Obviously, since the H2 scenario is aimed at protecting tariff revenue, the better outcome is achieved under this approach. Under this second option, COMESA could still keep half of its initial level of protection by excluding just 19 percent of EU imports from liberalisation.

Table 4: ACP Average tariffs on EU products at the end of EPA process.

Regions	Reference Situation	EPA H1-2022	EPA H2-2022
ECOWAS+	8.1%	1.5%	3.6%
CEMAC+	13.5%	3.8%	6.4%
COMESA	13.1%	4.8%	6.7%
SADC	7.1%	2.9%	4.4%
Caribbean	9.5%	3.1%	4.1%
Pacific	12.0%	12.0%	11.9%

Source: Authors' computation.

#### IV. THE MODEL THE DATA SOURCES AND THE EXPERIMENT DESIGN

In this section we firstly describe the structure of the model. Major caveats are highlighted in order to enable the reader to properly interpret the results. The

model's equations are available upon request. Data are described in a second sub-section. In follows a discussion on the employed calibration procedure. At last, we conclude with a discussion of the scenario simulated and the choice of the relevant counterfactual, namely the status-quo versus GSP.

##### A. The Model

The quantitative study of the impact of EPAs is therefore performed using a dynamic partial equilibrium model, expressly built for this purpose. The model, which is based on usual assumptions of partial equilibrium analysis has been designed to allow a very detailed evaluation of the impact on trade and government budgets of the ongoing EPA negotiations.<sup>6</sup>

Regional income, which is assumed to be fixed, is allocated among different HS6-products (5,113 HS6 products) using a system of nested CES functions (the demand nesting is shown in Figure 1).

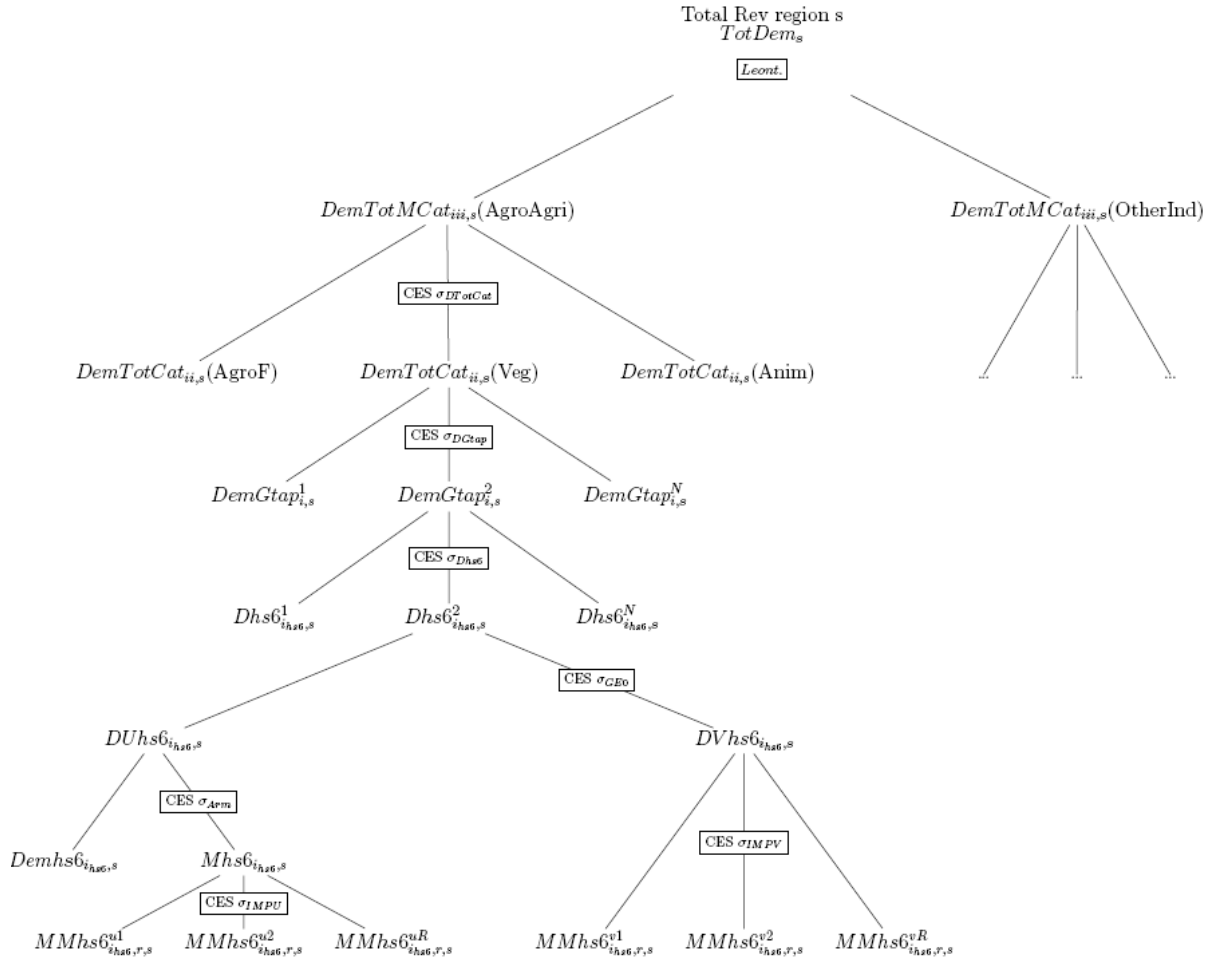
More precisely, at the first stage consumers have to arbitrate between two main categories of products: agricultural (AgroAgri) and industrial (OtherInd).

Here we assume a complementarity between the two (Leontieff preferences). Then, the total demand for each category is allocated between different sectors with a weak substitution ( $\sigma_{DTotCat} = 0.8$ ). For instance in the case of the main category AgroAgri we have considered three sub-sectors: Agro-food (AgroF), Vegetables (Veg) and Animal (Anim) products. The consumption of these large sectors are splitted between between GTAP-defined sectors (see Hertel & Tsigas, 1999 [4]), with an elasticity of substitution of 0.95.

The last stage of product disaggregation will go from the GTAP level to the HS6 nomenclature ( $\sigma_{DHS6} = 1.5$ ). The choice made on the elasticity of substitutions, (0.8, 0.95, 1.5), reflects the will to be transparent and systematic. Moreover, increasing substitutability with the level of disaggregation appears to be a sounded assumption even if the exact level of substitution is difficult to define.

<sup>6</sup> Some of them are quite suitable to the situation, such as the fixed exchange rate assumption due to the existence of the CFA franc zone.

Figure 1: Demand tree



As far as consumption choices within each HS6 category are concerned, we make use of a nested Armington “assumption” (Armington, 1969). Without excessive complexity, it allows the particular status of domestic goods, together with product differentiation according to geographical origin and horizontal product differentiation between varieties to be taken into account. The last point is crucial in the context of EPAs once in most of the cases, EU products are not in direct competition with the ACP ones (Fontagné et al., 2008 [3]).

More precisely, for every HS6 product, a CES ( $\sigma_{GEOHS6}$ ) allocates the demand between goods originated in countries with the same level of development and goods originated in countries of a

different category. Then, DU is distributed between local variety and imported ones thanks to a CES function with an elasticity of substitution  $\sigma_{ARMHS6}$ . A last stage is added to define the exact origin of products across similar countries group (CES with  $\sigma_{IMPUHS6}$ ). On the other side, DV is distributed across different importers using a CES with an elasticity  $\sigma_{IMPVHS6}$ . To have a consistent tree, we need to have  $\sigma_{GEOHS6} > \sigma_{ARMHS6} > \sigma_{IMPVHS6}$  and  $\sigma_{GEOHS6} > \sigma_{IMPUHS6}$ , e.g. for an ACP country, a products will be more substitutable with other ACP countries (included in DU) than with the EU (included in DV).

This framework is also suitable to see how the EPA could affect the regional integration process by diverting intra ACP trade.

Since, the choice of product origins is made at the HS6 level, we would have needed Armington elasticities at this level even if we have only access to elasticities at the GTAP level, drawn from the GTAP database. At the HS6 level only import demand elasticities are available for a number of countries, thanks to the estimation provided by the World Bank (Kee et al., 2004 [7]). However, the structural form of the model (nested CES) gives a relation between all elasticities and particularly between direct price elasticities and elasticities of substitution. So, we calibrate elasticities at the product level in order to match Armington elasticities of substitution at the GTAP level and direct price elasticities computed by the World Bank at the HS6 level. To avoid unrealistic results from the simulations, we limit  $\sigma_{\text{GEOHS6}}$  in the range [1.1, 8],  $\sigma_{\text{ARMUHS6}}$  to [1.05, 8] and we assume  $\sigma_{\text{IMPUHS6}} = \text{Min}(2 \sigma_{\text{ARMHS6}}, 12)$ ,  $\sigma_{\text{IMPVHS6}} = \text{Min}(2 \sigma_{\text{ARMHS6}}, 12)$ .

This partial equilibrium model focuses on the demand side. The supply side is assumed to be perfectly adjustable and so, the elasticity of supply is equal to infinity. This means that production prices are constant over all scenarios, while consumer prices follow the changes in product taxes, in this case tariffs. As a result of this assumption, volume changes and value changes of producer prices will be the same for all the results presented.

This assumption, while realistic for the EU side, may seem crude for ACP countries. Indeed the EU's production capacity would have no problem adapting to the forecast shifts in demand within the ACP. Even if their demand were to double, it would never exceed 1 percent of EU production. In contrast, ACP countries suffer severe capacity constraints when adapting to changes in demand.

The main consequence of these hypotheses on our results have several consequences. We overestimate the effects on the EU exports (in volume) from ACP liberalisation, since ACP producers would not reduce their price to face increasing competition. We overestimate the effects of EU liberalisation on ACP exports (in volume) as we assume that they have no supply constraints.

Consequently, forecast increases in ACP exports should be interpreted as potential gains. To transform them into real gains, specific policies would have to be

set up to support production in the sectors where the highest increases are forecast. In this way bottleneck effects could be avoided.

## B. Data Sources

Even setting our analysis in a partial equilibrium framework, our model requires very detailed data which unfortunately is not always available. So we have to make some key assumptions for missing data.

For trade data, we make use of a number of sources in order to complete missing information, notably concerning African countries' trade. Specifically we employ COMEXT (source Eurostat) for EU-ACP relations and BACI (CEPII's database, which is a harmonized trade database based on UN-COMTRADE) for all the other importers. Many weaknesses remain on intra-African trade flows, bringing a lot of uncertainty to any exercise focusing on intra-African trade relations (e.g. a deep regional integration process). To reduce the annual volatility in trade data as much as possible we calibrate the model using a mean figure based on three years (2002-2004).

Tariff data for the year 2004 are obtained from MacMap-v2 (CEPII). Both the ad valorem tariffs and Tariff-Rate-Quotas are considered. An addendum has been made to take account of the recent EU GSP reform.

Due to the crucial role of sugar and bananas, in ACP exports and preferential treatment, a specific approach has been adopted for these two products. We accurately calibrate the equivalent marginal rate of protection faced by each country, given their production costs. Indeed, due to the quota system and a strong variation in their production structures, the same change in the rate of protection (moving from the Cotonou regime to GSP, or preference erosion as a result of the DDA) will not have the same impact on all of the ACP countries.

As in reality government never receives 100 percent of their theoretical tariff duty receipts (computed as the sum of the official tariff rates multiplied by the import values) we decided to adopt an optimistic assumption: an average collection rate of 80 percent for developing countries and 60 percent for LDCs.<sup>24</sup>

To include the share of domestic production in domestic consumption for agriculture we used highly disaggregated data compiled by the FAO. We employ

this data to calibrate the initial market share of local and imported HS6 products. Whenever data at this level is not available or inaccurate, we determine this proportion from the GTAP 6.2 database, making the assumption that the same share holds at the most disaggregated level. For the industry sectors, detailed data are available from UNIDO, but only for a small number of countries. Consequently we decided to rely on the same assumption made in the case of non-accessible agricultural data (i.e. based on the GTAP database).

Finally the model structure requires values for several elasticities, namely elasticity of substitution between products from the most aggregated level to HS6 (industrial and agricultural goods, meat and vegetables, poultry meat and pork meat) and across geographical origins. At the HS6 level only import demand elasticities are available for many countries thanks to the estimations performed by the World Bank (Kee et al., 2004). The only other reliable estimates are provided by the GTAP 6.2 database, at the GTAP sectoral level. A specific calibration procedure is applied to jointly determine the other substitution elasticities used in the model. With our calibration method we maintain coherence between the initial levels of consumption, the Armington elasticities at the GTAP level and the demand elasticities for the HS6 products.

### C. Experiment design

Two main scenarios have been simulated, differing in the choice of ‘sensitive products’. First, the end of Cotonou, successful EPA negotiations with full duty-free, quota-free access for ACP countries to the EU and the liberalisation of ACP imports under the H1 scenario (sensitive products are not liberalised and they are concentrated in agriculture). H1 would be our central scenario when presenting the results. Then, a second scenario, with the same baseline, the same EU policy but the H2 scenario for ACP countries (sensitive products are not liberalised and they are chosen in order to reduce fiscal losses at the regional level).

In both cases, we assume that the complete implementation of the EPAs by the ACP countries will be staggered over 15 years. From 2008 to 2015, a cut of 20% is applied to customs duty on the non-sensitive

products imported from the EU; while the complete elimination on these products is achieved in 2022. In addition to the liberalisation process, we also deepen the trade integration within each negotiating block. More precisely, we assume that each region will become a free trade area in 2015. As for the EU, it gives free access to all ACP products in 2008.

### D. Choosing the right counterfactual: different options

The debate addressing the consequences of the EPAs is often based on irrelevant assumptions. In particular the alternative to the EPAs is not the status quo. In the context of the WTO waiver, there is a commitment to move towards WTO compatibility. That means either FTAs, or, in their absence, ACP countries would go back to the situation of other developing economies in the WTO.

LDCs are already eligible for EBA preferences. This alternative is therefore the next best option for them. The rest of the ACP countries would have to go back to preferences provided under the GSP scheme, which means a considerable downgrading of their preferential access.

Alternatively, a limited number of ACP countries could envisage claiming the benefit of the GSP+.

Therefore EPAs gains and losses, in terms of exports, imports or tariff revenues must be assessed, not in comparison with the current situation, but rather with an alternative situation corresponding to reduced preferential access.

Table 5: The cost of not-signing an EPA. Regional results, with full implementation of EBA. (Exports (to EU) volume changes, %)

Regions	GSP	GSP+
All ACP	-4.9	-3.5
ECOWAS+	-2.6	-2.5
CEMAC+	-4.1	-3.9
COMESA	-12.1	-5.1
SADC	-1.6	-1.4
Caribbean	-9.1	-7.2
Pacific	-8.4	-7

Source: Simulations results

We begin with the situation in 2004 and then we move to 2007. From this starting point we perform two alternative reference scenarios. We first simulate the case in which at the end of 2007 EPA is not

signed, in other words EBA applied for LDCs (including the removal of the last restrictions for sugar, rice and bananas in 2009) and GSP for non-LDCs ACP. We will use this as the reference situation. Alternatively we consider the combination of EBA for LDCs and GSP+ for non-LDCs ACP.

The trade and budgetary impact of EPAs would be presented as a deviation from the reference situation in the next section.

Considering the first option (EBA for ACP LDCs and GSP for the remaining ACP countries), the loss of preferences associated with the lapsing of the Cotonou scheme would result in a fall of 4.8 percent in ACP exports to the EU. For COMESA, the Caribbean and the Pacific countries the reduction would be even sharper, reaching 12 percent for the former (table 5). The second option, providing GSP+ preferences to all non LDC ACP countries, seems to have little impact compared to the more general GSP scheme. A positive impact is seen only for the COMESA region, due to the more favourable treatment of textile products in the GSP+.

Table 6: The cost of not-signing an EPA. Sectoral results, with full implementation of EBA. (Exports (to EU) volume changes, %)

Sectors	GSP	GSP+
Total	-5	-3.5
Vegetal Prod.	-10.7	-10.2
Livestocks	-30	-29.9
Agr. Food	-13.8	-12.3
Primary	0	0
Metallurgy	-2.1	-2.1
Elec. and Machinery	-0.3	0
Textile	-27.7	-0.4
Other Industries	-2.1	-1.6
Sugar-Banana	-54.2	-54.2

Source: Simulations results

The sectoral impact of our reference scenario is illustrated in Table 6. Losses are concentrated in products associated with specific protocols: sugar and bananas (55 percent), which also explains the difficult situation of the Caribbean countries. It is worth noting that for sugar the impact of the EU's domestic reform is not directly considered here. However the consequent fall in the sugar price in the EU market will reduce the preferential margins granted to ACP countries in any case. Other products strongly affected

are livestock (with a 30 percent fall in exports) and textiles (-27 percent). For the latter, under GSP+ losses are cancelled out.

## V. ASSESSING THE IMPACTS OF EPAS

This section is devoted to the analysis of the forecast trade and fiscal impacts of EPAs.

### A. The trade impact of EPAs

In this subsection we examine the impact of the EPAs, using as the counterfactual the combination of EBA for LDC ACP countries and GSP for non-LDCs ACP countries. As indicated in table 8 we forecast a 10.7 percent increase in the volume of ACP exports to the EU in 2022 under an EPA scenario. This percentage is calculated in comparison with the benchmark scenario: GSP and EBA. If we were to consider the current situation as a benchmark, signing EPAs would have led to a more limited gain of 5.4 percent  $((1.107 \times 0.952) - 1)$ . Hence we see the importance of using the correct benchmark if we wish to accurately assess likely impacts. All in all, we can conclude that ACP exports to the EU are forecast to be 10.7 percent higher with EPAs than in their absence and 5.4 percent higher than is currently the case. These figures refer to the scenario in which a multilateral agreement has not been reached. Under the assumption of the simultaneous successful completion of the Doha Round, the margins of preferences on the EU market associated with EPAs, would be eroded. Hence, export gains would be slightly reduced for all ACP regions. With or without an agreement at multilateral level in the immediate future, preference erosion is unavoidable over time. Nevertheless the EPAs will provide a temporary advantage in terms of market access, particularly for the livestock sector.

Finally, we should keep in mind that increases in exports will not translate into equivalent changes in the ACP trade balance, since imports from the EU will also be liberalised with consequent changes in their trade flows. This is particularly true for the 2022 time horizon. In 2015, only 20 percent of the liberalisation of ACP countries in relation to EU imports will be achieved, while full access will be provided to the EU

market. Accordingly, a transitory gain for the trade balance of ACP countries is expected over the period.

Table 7: Trade consequences for ACP regions by region. Volume changes, % . (Implementation of EPAs: EPA-2022-H1)

Regions	Exports to the EU	Imports from the EU
All ACP	10.7	17.7
ECOWAS+	4	15.1
CEMAC+	7.3	17.2
COMESA	25.5	20.7
SADC	6.6	10.6
Caribbean	25.2	27.1
Pacific	37.1	-0.2

Source: Simulations results

Table 8: Trade consequences for ACP regions by sector. Volume changes, % . (Implementation of EPAs: EPA-2022-H1)

Regions	Exports to the EU	Imports from the EU
Total	10.7	17.7
Vegetal Prod.	41.4	0.8
Livestocks	143.9	0.6
Agr. Food	16.9	3.6
Primary	0	26.1
Metallurgy	2.1	27.6
Elec. And Machinery	0.3	19.5
Textile	38.3	36.8
Other Industries	8.1	13.9

Source: Simulations results

The sectoral breakdown of these forecast export gains is detailed in Table 8. In percentage terms, the largest gains would accrue to exporters in the livestock sector, where exports are forecast to increase by 140 percent.<sup>7</sup> Exports of vegetable products and textiles are also forecast to increase significantly, by 40 percent. The completion of the Doha Round would be particularly detrimental to these forecast gains in the textiles sector. The relatively high MFN tariffs which still exist in textiles in the EU, will be reduced. Consequently the value of preferences given to developing countries will also shrink.

<sup>7</sup>Non tariff barriers are not considered here. They may limit this potential increase, as may the existing supply capacities. These results should therefore be seen as potential increases in exports given the existing trade pattern.

Turning to imports (see Table 7 an average 17.7 percent increase in ACP imports is forecast for ACP countries in 2022. Note that this percentage applies both to the current situation and to the benchmark, as no difference between the two exists in terms of EU access to ACP markets. This outcome corresponds to a situation where liberalisation is fully achieved. When considering the 2015 horizon, the increase in the ACP imports from the EU is forecast to be limited to 7 percent. This smaller percentage is explained by the limited liberalisation of ACP imports over this time horizon. Once again, the Caribbean is the region most affected, with a forecast increase in EU imports of 27 percent. The SADC region is at the opposite of the spectrum with imports forecast to increase by only 11 percent.

The sectoral composition of these import increases (see Table 8) points to a concentration in industrial goods (particularly textiles) and primary products. The increase is negligible in agriculture. All in all, the composition of respective changes in exports and imports mirrors the traditional trade specialisation of Europe and the ACP, with the latter specialised in agriculture and the former in industrial goods. The exception is textiles, where exports and imports will both increase; this might be explained by a vertical division of labour (with ACP countries importing intermediate products from the EU) takes place.

### *B. The impact of excluding products*

Two issues which are amongst the most contentious in the EPA debate are the percentage of products to be excluded from liberalisation (on the ACP side), and the choice of these excluded products. As already pointed out we selected sensitive products following two different methods.

Under scenario H1, priority is given to the exclusion of agricultural products, while under scenario H2 we minimize tariff revenue losses.

We can see from Table 10 that the alternative assumption (H2), optimally choosing tariff lines in order to secure tariff revenues, would efficiently protect sensitive products, while limiting the increase in imports.

The results presented in the left part are averages, which clearly hide tremendous differences in the expected impacts of the alternative choices of the

exclusions at the sectoral level. For instance a manufactured sector with tariff peaks will have numerous products excluded using H2; while using H1 largely protects agricultural products. The last two columns illustrate the impacts at sectoral level. Under H2, the surge in ACP imports of textile products from the EU would be curbed: they would be five times lower than under scenario H1. On the contrary, imports of vegetable products, livestock and agrifood would increase more under H2. Reducing potential increases in imports is not the only issue. Whenever imports are also industrial inputs, restraining them and making them more expensive could have a negative impact in terms of overall competitiveness.

Unfortunately the structure of the model does not permit us to address this issue.

Table 10: The role of the exclusion list on regional imports. ACP Import volume from the EU, regional and sectoral breakdown. (% Change)

Regions	H1	H2	Sectors	H1	H2
All ACP	17.7	13.1	Total	17.7	13.1
ECOWAS+	15.1	10.3	Vegetal Prod.	0.8	8
CEMAC+	17.2	12.6	Livestocks	0.6	12.1
COMESA	20.7	16	Agr. Food	3.6	7
SADC	10.6	6.6	Primary	26.1	21.4
Caribbean	27.1	22.5	Metallurgy	27.6	14.9
Pacific	-0.2	1	Elec. and Machinery	19.5	14.7
			Textile	36.8	7.3
			Other Industries	13.9	9.3

Source: Simulations results.

### C. Impacts on tariff and government revenues

The effects of EPAs on the ACPs' public finances have been widely debated. However the different impacts have rarely been disentangled.

For the elimination of customs duties on many European duties we identify two main effects: a direct effect and a trade diversion effect. Concerning the first, the overall effect of cutting tariffs will depend on the combination of both reducing tariffs and the increase in imports as a result of falling import prices, until liberalisation is complete. However we observe that the direct effect is always negative, which means that the impact on the fall in duty is always larger than that of the increase in volumes.

A second effect of the EPAs is trade diversion, expected from any FTA. Here, untaxed imports from the EU - or from countries belonging to the same ACP region - will replace currently taxed imports from the rest of the world. Accordingly, trade diversion provides additional negative impacts, in addition to the direct effects.

Table 10: Fiscal losses (Mios of euros) H1 scenario vs full FTA

	Direct Effect		Trade Diversion Effect		% of tariff revenue losses in scenario H1	
	H1	Full FTA	H1	Full FTA	On EU exports	On all origins
All ACP	1390	1970	467	569	-71	-19
ECOWAS	530	648	172	178	-82	-27
CEMAC	246	345	27	32	-71	-30
COMESA	297	478	128	160	-62	-16
SADC	91	157	49	51	-58	-16
Caribbean	226	337	84	137	-67	-13
Pacific	0	5	7	11	-1	-9

Source: Simulations results.

Trade diversion is illustrated in Table 10 where fiscal losses are displayed for scenario H1 as well as an hypothetical full liberalisation scenario between the EU and the ACP countries. As the combination of both effects the average loss of tariff revenue on EU imports for all ACP is forecast to be 71 percent in 2022 (702 millions of 2004 euros). The lowest losses are forecast in the SADC region (58 percent), while the region most heavily affected is forecast to be ECOWAS, for which the trade diversion effect would be particularly detrimental (losses of 700 millions of euros annually in the long run or 82 percent of the tariff revenue in 2022).

However, this threat needs to be viewed in the wider context. First, as we have seen above, EPAs will not be fully fledged FTAs, in that there will not be 100 percent symmetric liberalisation between the parties. Tariff revenue will continue to be collected on EU imports, as a certain number of products can be excluded from tariff cuts. As displayed in Table 10, the total losses for the ACP under scenario H1 is only 73% of the fiscal cost of a full FTA.

Moreover, the European Union is not the only trade partner for ACP countries. They still collect tariff revenue on most third countries imports: if the scenario H1 reduces the tariff revenue collected on EU

export by 71%, it is just a 19% decline in total tariff revenue for these countries.

Last, if ACP objective is to minimise tariff revenue losses on EU products, scenario H2 becomes more relevant. In this case, tariff losses are drastically results: from 71% to 52% for all ACP regions (-82% to -57% for ECOWAS, -58%.to -37% for SADC).

## VI. CONCLUSION

This article provide a detail assessment of the market access component of the EPA between the EU and the 6 ACP regions. Our analysis is based on a partial equilibrium mode at the HS6 level (5113 products) for the EU25 and 60 ACP countries. Realistic EPA scenarios are built assuming partial liberalisation of ACP regions in respect of GATT article XXIV. ACP exports to the EU are forecast to be 10 percent higher with the EPAs than under the GSP/EBA option. On average ACP countries are forecast to lose 70 percent of tariff revenues on EU imports in the long run. Yet imports from other regions of the world will continue to provide tariff revenues. Thus when tariff revenue losses are computed on total ACP imports, losses are limited to 26 percent on average in the long run and even 19 percent when the product lists are optimised. The final impact on the economy depends on the importance of tariffs in government revenue and on potential compensatory effects. However this long term and less visible effect will mainly depend on the capacity of each ACP country to reorganise its fiscal base.

Finally for the last point it is clear that the effects of EPAs on the ACPs' public finances will be different across countries depending on the initial importance of tariff revenue in total government income. For instance, Congo, where tariff revenue losses are forecast to be high,(almost a third) depends relatively little on this source of revenue (7.1%). However several West African countries, like Ghana and to a greater extent the Ivory Coast, which are heavily dependent for their budget on this revenue, may go through difficult transition phases due to heavy predicted losses in customs receipts. In this context, it will be important for the negotiators to concentrate on these latter types of countries. The absolute values of customs revenue losses computed in this study give a

clear picture of the financial requirements for the implementation of such a program.

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