# Assessing the Impact of ACP/EU Economic Partner- ship Agreement on West African Countries

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# HWWA Discussion Paper

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**ABSTRACT**

The European Union is currently negotiating free trade agreements, called Economic Partnership Agreements (EPAs), with African countries as part of the Cotonou Agreement between the European Union and African, Caribbean and Pacific countries. The paper empirically assesses the impact of the EPAs on trade flows and government revenue for 14 West African countries. The results indicate that the decline in import duties due to the preferential tariff elimination might be of some cause for concern and that complementary fiscal and economic policies have to be implemented before or at the time the EPAs come into force.

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## 1.    Introduction

The objective of the Lomé IV Convention and its precursors was to improve the trade performance of the African, Caribbean and Pacific (ACP) group of countries, with the ultimate aim of promoting their economic growth and development. For that purpose, the European Community offered non-reciprocal trade preferences to products originating in ACP countries. The Cotonou Agreement, which was concluded in June 2000, provides for a shift from the system of non-reciprocal trade preferences to Economic Partnership Agreements (EPAs). ACP countries that enter into EPAs are required to set up a free trade area (FTA) with the European Union (EU). This means that they would have to open up their domestic markets for almost all products from the EU within a twelve-year period, which should last from 2008 to 2020.

Negotiations on EPAs, which started in September 2002, are expected to be concluded by 31 December 2007 at the latest. The Cotonou Agreement largely leaves it to the ACP countries to decide on the geographical configuration of future EPAs. Yet the EU is not willing to negotiate bilateral FTAs with such a large number of countries, but rather prefers to conclude EPAs with various regional groupings of ACP countries. One of these regional groupings will be the Economic Community of West African States (ECOWAS), on which this paper focuses.[1] Founded in 1975, ECOWAS is a regional group of fifteen West African countries which has reduced trade barriers among its members' countries and aims to create a customs union by 2005 with a common external tariff and a common trade policy.[2] With the exception of Cote d'Ivoire, Ghana and Nigeria, all ECOWAS members belong to the group of least developed countries (LDCs).

The driving force behind the EU's search for new trading arrangements was the need to ensure the WTO compatibility of future ACP-EU trade relations. Non-reciprocal trade preferences granted under the Lomé Conventions required an exemption from WTO rules, because they were neither available to all developing countries nor restricted to just LDCs. At the Fourth WTO Ministerial Conference in Doha, the EU was granted the last waiver under

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[1] ECOWAS consists of the following countries: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo.

the Lomé Convention allowing it to maintain the preferential tariff treatment for products originating in ACP countries. Accordingly, ACP countries will continue to enjoy duty-free access to EU markets for all industrial and a large part of agricultural products until the end of 2007.

The Cotonou Agreement recognises that ACP countries might not be in a position to enter into EPAs. The EU would then examine all alternative possibilities in order to provide these countries with a new framework for trade that is equivalent to their existing situation and in conformity with WTO rules. Under present circumstances, ACP countries which decide not to participate in an EPA would have no other alternative but to export under the EU's scheme of the Generalised System of Preferences (GSP). For non-LDCs, this would mean less-favourable access to the EU market than the one granted under the current regime of the Cotonou Agreement and thus a decline in their export earnings from the EU market (Brenton, 2003). However, as access to EU markets through the GSP is on a non-reciprocal basis, ACP countries would continue to be allowed to impose import duties on the whole range of EU products both for revenue reasons and for protecting domestic industries.

Special GSP arrangements, which are also known as the "Everything But Arms" (EBA) initiative, apply to the group of LDCs. The EBA initiative took effect on 5 March 2001 and was later incorporated into the revised GSP scheme. It provides duty-free access to imports of all products (except arms and munitions) from LDCs without any quantitative restrictions. Only three products were not liberalised immediately: bananas, rice and sugar. They will be given duty- and quota-free access by January 2006, September 2009, and July 2009, respectively. In the meantime, duties on these products will be gradually reduced. Moreover, there are duty-free tariff quotas for rice and sugar, which will be increased annually. In principle, the special arrangements for LDCs are far more generous than either the general arrangements under the GSP or the trade preferences which are currently available under the Cotonou Agreement.

It is not to be expected that EPAs will entail an increase in market access preferences that ACP countries are enjoying under the Cotonou Agreement, as the scope for additional trade

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2 Within ECOWAS, a (sub-)group of eight countries has achieved deeper integration by forming the West African Economic and Monetary Union (WAEMU), that is, they have agreed on principles of closer economic relations including a common currency.

preferences is rather limited on the Community side, mainly due to the political sensitivity of liberalising trade in agricultural products. Therefore, it seems likely that least-developed ACP countries have little incentive to participate in an EPA, as they benefit from the EBA initiative. However, that need not be true inasmuch as the rules of origins applied to ACP countries under the GSP which governs the EBA are more stringent than the rules applied to these countries under the Cotonou Agreement (Brenton, 2003). This means in the end that under the EBA, producers in least-developed ACP countries have to use fewer imported materials, parts and components from other ACP countries in order to obtain duty- and quota-free access to the EU than they would be allowed to use under the provisions of the Cotonou Agreement.

There is a considerable body of literature on the EPAs. Yet most studies discuss various policy options for ACP countries or EU-ACP economic relations in general rather then assess the possible impact of the EPAs on trade flows or government revenue.[3] For Africa, two quantitative assessments of the trade and welfare impact have been published. Bussolo (1999) analysed the welfare impact for and policy options of the South African Development Community (SADC) within a general equilibrium framework. His results indicate that – in comparison to the base run – a unilateral trade liberalisation by SADC would be better by far in terms of real GDP growth rates than a regional EPA with the European Union.

For Eastern Africa, using a partial equilibrium model, McKay et al. (2000) estimated the (static) welfare impact of a regional EPA with the EU. In the case of a complete trade liberalisation vis-à-vis the EU, Tanzania and Uganda are both likely to encounter a decline in welfare levels, though falling consumer prices, due to lower import prices and increased competition, are benefiting consumers in East Africa. By and large, their results are driven by the lost tariff revenue on EU imports. Similar to Bussolo, they point out that their findings have to be interpreted with caution, as severe data restrictions limit the choice of the model used and the reliability of the estimated effects.

So far, no study has estimated the trade effects and fiscal impact of the EPAs on West African countries. This paper tries to fill that gap, using a comprehensive dataset which draws on various sources, some of which were not available a short while ago. Accordingly, the paper

is organised as follows: The methodology and the data used are explained in the following section, whereas the empirical results are presented in Section 3. Importantly, the analysis focuses on the impact of the EPAs on West African countries only and not on the European Union, as the effects for the EU are likely to be very small. In particular, it focuses on the trade and budget effects that might occur if West African countries open up their domestic markets. Based on the results, the final section discusses various policy implications for ECOWAS countries, summarises the major results of this paper and ends with some concluding remarks.

## 2.      Methodology and Data

The impact of an FTA on trade flows and government revenue is usually carried out in either a partial or general equilibrium framework. Focusing on individual markets or products, partial equilibrium models allow highly detailed studies on the impact of changes in trade policy instruments. In contrast, (computable) general equilibrium models make an effort to estimate the effects of discriminatory tariff preferences on the economy as a whole, by taking intersectoral linkages into account. By and large, general equilibrium models are hence more appropriate to analyse the overall welfare and trade effects. Their biggest drawback is the need for detailed information of the economies involved, such as sectoral production data in the form of a so-called social accounting matrix.

Since the required domestic production data are of very poor quality or simply not available for the vast majority of West African countries, we have to analyse the trade and fiscal effects of the EPAs in a suitable partial equilibrium framework. In general, there are two basic partial equilibrium models for estimating these effects. The first assumes homogeneous commodities while the second is built on the "Armington" assumption (Armington, 1969), since Armington explored the nature of import demand functions when domestically produced and imported goods are imperfect substitutes in use. The method used in this paper falls into the second category, since a considerable majority of European exports to West Africa consists of manufactured goods (Table 1). Manufactured commodities like transport and

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[3] See Hinkle and Schiff (2004) and Schiff and Winters (2002) for an overview of policy options and several studies on EPAs.

telecommunications equipment and electrical and non-electrical machinery are more likely to be differentiated by their country of origin than raw materials or agricultural goods.

Table 1: EU-ECOWAS Trade Structure, 2002

| Products (SITC no.[1]) | EU exports to ECOWAS | | EU imports from ECOWAS | |
|---|---|---|---|---|
| | Mill. US$ | % | Mill. US$ | % |
| Food, live animals, beverages and tobacco (0-1) | 1,864 | 17.0% | 2,902 | 31.3% |
| Raw materials (2-4) | 806 | 7.3% | 5,231 | 56.4% |
| Manufactures (5-9) | 8,301 | 75.7% | 1,147 | 12.3% |
| Total | 10,971 | 100.0% | 9,280 | 100.0% |

Source: ITC (2004). Note: [1]Standard International Trade Classification.

In the following, we use the differentiated product model, developed by Verdoorn (1960). Even though Verdoorn's model is 40 years old, it is a suitable partial equilibrium model to analyse the trade and budget effects of the proposed EU-ECOWAS EPA. The model is based on the normal assumptions of partial equilibrium analysis, such as no changes in income or exchange rates, iso-elastic import-demand functions, and infinite supply elasticities. The latter assumption, frequently applied in models of international trade, seems reasonable, since the EU is a large country and its exports to ECOWAS account for only 0.5 per cent of total EU exports in 2002 (ITC, 2004).

Verdoorn's model focuses on imports from different sources, that is, imports from preference beneficiaries ($Q_1$) and from non-beneficiaries ($Q_2$). The model is based on two key assumptions. First, the demand function of the preference donor (ECOWAS) for any good takes the following form:

$$(1) \qquad Q_1 + Q_2 = Q = \beta \, P_1^{\varepsilon \, \alpha_1} \, P_2^{\varepsilon \, \alpha_2}$$

where $P_1$ and $P_2$ are the prices of beneficiaries' and non-beneficiaries' imports, $\alpha_1$ and $\alpha_2$ are share coefficients ($\alpha_1 = Q_1/(Q_1+Q_2)$ and $\alpha_1+\alpha_2 = 1$), $\beta$ is a parameter and $\varepsilon$ represents the elasticity of import demand. By using import demand elasticities, we can employ import data without having to rely on domestic production data. This particular assumption is not only convenient, but also necessary in the case of West African countries, as these data are, apart from Senegal, not available or obsolete at the required disaggregated level (UNIDO, 2003).

Second, the elasticity of substitution ($\sigma$) of preferred and non-preferred imports can be defined as:

(2) $\qquad \dfrac{Q_1}{Q_2} = \gamma \left( \dfrac{P_1}{P_2} \right)^{\sigma}$

If the tariff (t) is eliminated only on preferred imports $Q_1$ and supply elasticities are infinite, then the price of the beneficiaries' imports $P_1$ changes by

(3) $\qquad \dfrac{\delta P_1}{P_1} = \dfrac{\delta t}{1+t}$

Then the total expansion of imports from the preferred country's viewpoint due to the trade preferences can be expressed as follows:[4]

(4) $\qquad \dfrac{\delta Q_1}{Q_1} = \left( \alpha_1 \varepsilon + (1-\alpha_1) \sigma \right) \left( \dfrac{\delta t}{1+t} \right)$

The chain reaction comes in two stages: first the tariff is eliminated only on $Q_1$, and $P_1$ falls, and then the consumer substitutes $Q_1$ for $Q_2$. Equation (4) can be rearranged by substituting $\alpha_2$ for $\alpha_1$:

(5) $\qquad \dfrac{\delta Q_1}{Q_1} = \left( \xi + \alpha_2 ( \sigma - \varepsilon) \right) \left( \dfrac{\delta t}{1+t} \right)$

The total change in preferred imports can be split into trade creation (TC) and trade diversion (TD). The former is defined as the change in imports from beneficiaries' countries ($Q_1$) and consists of the consumption effect, that is, the increase in overall consumption due to lower prices, and the displacement of domestic production. This effect can be determined from the preferred country's point of view as follows:

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[4] See Verdoorn (1960) for details.

(6)     $$TC = Q_1 \, \varepsilon \left( \frac{\delta t}{1+t} \right)$$

Similarly, trade diversion is defined as the substitution of preferred for non-preferred imports due to the preferential tariff elimination:

(7)     $$TD = Q_1 \, \alpha_2 \, (\sigma - \varepsilon) \left( \frac{\delta t}{1+t} \right)$$

Finally, the expected change in customs revenue (CR) is equal to the sum of import duties for imports from preferred countries $Q_1$, which are now excluded from import tariffs, and the replacement of imports from non-preferred countries (TD) multiplied by the import tariff:

(8)     $$\delta \, CR = \left( Q_1 + TD \right) t$$

The estimation of trade creation and diversion and the changes in customs revenue has been conducted at the four-digit level of the Harmonised System (HS). At that level of aggregation, the HS schedule consists of around 1,240 goods. This highly disaggregated approach ensures a more accurate estimation of trade effects, since it takes – in the case of trade diversion – competition from various countries at an appropriate level into account. Also, it allows the identification of the commodities that are most likely to be affected by the EPA. Tariff and trade data were obtained from the UNCTAD (2004) Trade Analysis and Information System (TRAINS), which is a comprehensive computerised information system at the tariff-line level, from the WTO Integrated Database (WTO, 2004) and from the COMTRADE database (ITC, 2004).[5]

Among ECOWAS countries, Sierra Leone and Liberia had to be excluded from the analysis, as tariff data for both countries could not be obtained. Hence, the empirical analysis has been performed for a total of 14 West African countries, that is, 13 ECOWAS countries and

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[5] TRAINS also provides trade data, but the information given is limited to import data and those years for which tariff barriers are available. See the Appendix for definitions and data sources for all variables.

Mauritania.[6] The base year is 2001, or the most recent year for which relatively reliable trade and tariff data were available.

As can be seen from (6) and (7), estimation of TC and TD in the differentiated product model requires estimates of import demand and substitution elasticities. Reliable estimates for both elasticities for West African countries at the four-digit HS level are not available.[7] As a remedy, we assumed values for these elasticities. More specifically, we set up three scenarios: low, mid and high. The scenarios differ with respect to the assumed elasticities. To address differences in elasticities that are based on the degree of homogeneity of the products, we differentiated between agricultural products, raw materials and manufactured goods (Table 2). In particular raw materials are more likely to be substituted, as they are more similar in comparison to manufactured or agricultural goods. In contrast to the import demand elasticities, the assumed values for the elasticity of substitution are higher, because imports from, for instance, the United States and the EU are more likely to be substituted than EU imports and domestically produced goods. From our perspective, the mid scenario is the most likely outcome of the EPA between ECOWAS countries and the EU. The low and high scenarios, on the other hand, provide lower and upper bound estimates of the trade and budget effects of the EPA.

Table 2: Assumed Values for the Elasticities, Four-digit Level

| Product category (HS chapters) | Import demand elasticity | | | Elasticity of substitution | | |
|---|---|---|---|---|---|---|
| | low | mid | high | low | mid | high |
| Agricultural products (01-24) | 0.4 | 0.7 | 1.0 | 1.0 | 2.0 | 3.0 |
| Raw materials (25-27) | 0.6 | 0.9 | 1.2 | 2.0 | 3.5 | 6.0 |
| Manufactured goods (28-97) | 0.8 | 1.1 | 1.4 | 1.8 | 3.0 | 4.0 |

Note: The elasticities refer to the four-digit HS level for all ECOWAS countries and Mauritania except Gambia.

Elasticities at the four-digit level are usually higher than those at a more aggregated level, as we can expect a higher degree of competition among more similar goods. For example, if two different products (e.g. aeroplanes and motor vehicles) belong to a given category (transport equipment), then we can expect that the elasticity of substitution among imports of motor

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[6] Though Mauritania left ECOWAS in 1999, it will be included in the following analysis, as it will take part in trade negotiations and the (West African) regional EPA with the EU.

[7] Moreover, it would be very hard to estimate reliable elasticities for these countries, since the trade data is not consistent over a longer period.

vehicles from different countries would be higher than the one between motor vehicles and aeroplanes. Only the more disaggregated level allows a differentiation between such goods, implying higher elasticities. In general, our assumed figures are well within the range of similar elasticities of other developing countries.[8]

For Gambia, we assumed values for both elasticities at the aggregated level, that is, total imports, as disaggregated tariff data could not be obtained (Table 3). In comparison to the figures for the other West African countries, both elasticities are lower, as the degree of substitutability is likely to be smaller on a more aggregated level.[9]

Table 3: Assumed Values for the Elasticities, Total Imports, Gambia

| Product | Import demand elasticity | | | Elasticity of substitution | | |
|---|---|---|---|---|---|---|
| | low | mid | high | Low | mid | high |
| Total imports | 0.5 | 0.7 | 0.9 | 1.3 | 2.0 | 2.5 |

Information on import duties has been obtained from IMF staff reports on each West African country (IMF, 2004). Based on the IMF data, we have computed collection ratios, that is, the share of duty collected on the c.i.f. value of imports.[10] Collection ratios are clustered in the range 5 to 10 per cent in half of West African countries, with Cape Verde and Nigeria above and Ghana and Mali below that range (Table 4). Collection efficiency ratios, which are defined as the percentage of the collection ratio of import-weighted tariff rates, have also been calculated. They provide information on whether there are particular exemptions, such as special trade preferences, due to export-processing zones, and/or deficiencies in the duty collection due to red tape, smuggling or corruption. Also, since there are no preferential tariff rates for West African countries included in the TRAINS database, the reported import-weighted tariff rates are naturally larger than the collection rates.

By this measure, Guinea and Senegal are particularly good performers, collecting 90 per cent of their statutory rates. Ghana, Guinea-Bissau and Mali, on the other hand, have a rather poor record in collection efficiency, with ratios below 45 per cent. Importantly for the empirical

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[8] For a survey of trade elasticities, see Sawyer and Sprinkle (1999). More recent estimates are provided by Gallaway et al. (2003) and Kee et al. (2004).

[9] Again, these assumed values for Gambia are similar to the estimated figures for other developing countries at this level of aggregation.

results, only the actual collected import duties will be incorporated in the analysis, as these duties are subject to elimination as part of the EPA.[11]

Table 4: Efficiency of Import Duty Collections, 2001

| Country | Collection ratio[1] (%) | Import-weighted tariff rate (%) | Collection efficiency[2] (%) |
|---------|---------|---------|---------|
| Benin | 9.7 | 12.6 | 76.5 |
| Burkina Faso | 6.8 | 11.0 | 61.3 |
| Cape Verde | 12.1 | 15.4 | 78.7 |
| Côte d'Ivoire | 7.4 | 10.7 | 68.8 |
| Gambia | 9.2 | 11.8 | 78.3 |
| Ghana[3] | 4.7 | 16.2 | 29.1 |
| Guinea | 5.4 | 6.0 | 89.9 |
| Guinea-Bissau | 5.4 | 14.2 | 38.2 |
| Mali | 4.6 | 10.6 | 43.7 |
| Mauritania | 6.4 | 8.7 | 73.3 |
| Niger | 6.9 | 12.9 | 53.4 |
| Nigeria[3] | 15.9 | 20.0 | 79.7 |
| Senegal | 8.5 | 9.4 | 90.0 |
| Togo | 8.4 | 10.9 | 77.0 |
| Average[4] | 8.0 | 12.2 | 67.0 |

Sources: Own calculations based on IMF (2004), UNCTAD (2004) and ITC (2004) data. Notes:
Notes: [1]Percentage of duty collected of the c.i.f. value of imports. [2]Collection ratio divided by import-weighted tariff rate. [3]2000. [4] Unweighted averages.

## 3.     Empirical Results

Under the likely terms of any EPA agreement, tariffs facing EU exporters in West Africa are to be phased out over a period of twelve years from 2008 to 2020. Rather than projecting the separate impact of each of the staged cuts, we have focused on the final stage, in which all tariff barriers have been eliminated. As can be seen from Table 5, in the case of a complete tariff liberalisation vis-à-vis EU imports in all West African countries, total imports from the EU are expected to increase in the mid-scenario in the range of 5.2 per cent (Guinea-Bissau) to 20.8 per cent (Nigeria). Apart from Nigeria, relatively high trade effects can be expected in Benin (increase in total imports by 11.6 per cent), Cape Verde (11.7 per cent), Senegal (11.5 per cent) and Togo (10.9 per cent). The reasons for this outcome are mainly above-average tariff rates for EU imports and/or relatively high import-duty collection-efficiency ratios. In

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[10] The abbreviation c.i.f. stands for cost, insurance and freight.

[11] In the past, several studies that analysed the impact of trade liberalisation in developing countries relied on import-weighted tariff rates to compute trade, budget and welfare effects. Their estimates are likely to be biased if collection ratios and import-weighted tariff rates differ.

absolute terms, the increase in total imports in Nigeria is by far the largest in West Africa, due to the magnitude of both overall and EU imports.

Table 5: Trade Effects of EPA on ECOWAS Countries, 2001

| Country | Scenario setting | Trade creation | | Trade diversion | | Total trade effect | |
|---|---|---|---|---|---|---|---|
| | | mill. US$ | % of preferred imports | mill. US$ | % of non-preferred imports | mill. US$ | % of preferred imports |
| Benin | Low | 13.8 | 5.2% | 5.6 | 1.7% | 19.4 | 7.2% |
| | Mid | 20.4 | 7.6% | 10.7 | 3.2% | 31.1 | 11.6% |
| | High | 27.0 | 10.1% | 15.5 | 4.6% | 42.6 | 15.9% |
| Burkina Faso | Low | 9.9 | 4.0% | 5.1 | 1.7% | 15.0 | 6.1% |
| | Mid | 14.1 | 5.7% | 9.8 | 3.2% | 23.9 | 9.7% |
| | High | 18.3 | 7.4% | 14.4 | 4.7% | 32.8 | 13.3% |
| Cape Verde | Low | 11.5 | 6.3% | 2.4 | 3.7% | 13.8 | 7.5% |
| | Mid | 16.9 | 9.2% | 4.5 | 7.1% | 21.5 | 11.7% |
| | High | 22.3 | 12.2% | 6.5 | 10.2% | 28.8 | 15.7% |
| Côte d'Ivoire | Low | 48.4 | 4.2% | 13.1 | 1.5% | 61.5 | 5.3% |
| | Mid | 69.3 | 6.0% | 25.3 | 2.9% | 94.7 | 8.2% |
| | High | 90.3 | 7.8% | 35.9 | 4.2% | 126.2 | 10.9% |
| Gambia | Low | 5.9 | 4.1% | 3.6 | 4.1% | 9.5 | 6.7% |
| | Mid | 8.2 | 5.8% | 5.8 | 6.6% | 14.0 | 9.9% |
| | High | 10.6 | 7.4% | 7.2 | 8.2% | 17.7 | 12.5% |
| Ghana[1] | Low | 31.6 | 2.5% | 21.2 | 1.3% | 52.9 | 4.2% |
| | Mid | 45.8 | 3.7% | 40.2 | 2.4% | 85.9 | 6.9% |
| | High | 59.9 | 4.8% | 59.2 | 3.6% | 119.1 | 9.5% |
| Guinea | Low | 9.8 | 3.3% | 5.2 | 1.7% | 15.0 | 5.1% |
| | Mid | 14.3 | 4.9% | 10.0 | 3.3% | 24.3 | 8.3% |
| | High | 18.8 | 6.4% | 15.6 | 5.1% | 34.4 | 11.7% |
| Guinea-Bissau | Low | 1.1 | 3.0% | 0.1 | 0.5% | 1.2 | 3.4% |
| | Mid | 1.6 | 4.5% | 0.3 | 1.1% | 1.9 | 5.2% |
| | High | 2.2 | 6.0% | 0.4 | 1.5% | 2.5 | 7.0% |
| Mali | Low | 9.3 | 2.5% | 4.3 | 0.7% | 13.6 | 3.7% |
| | Mid | 13.3 | 3.6% | 8.3 | 1.3% | 21.6 | 5.9% |
| | High | 17.4 | 4.7% | 11.8 | 1.8% | 29.1 | 7.9% |
| Mauritania | Low | 6.9 | 3.9% | 2.8 | 1.5% | 9.7 | 5.5% |
| | Mid | 9.8 | 5.5% | 5.4 | 2.8% | 15.2 | 8.6% |
| | High | 12.7 | 7.2% | 7.9 | 4.0% | 20.6 | 11.6% |
| Niger | Low | 3.0 | 3.2% | 1.8 | 0.8% | 4.8 | 5.1% |
| | Mid | 4.6 | 4.9% | 3.5 | 1.5% | 8.1 | 8.6% |
| | High | 6.1 | 6.5% | 5.3 | 2.3% | 11.4 | 12.1% |
| Nigeria[1] | Low | 244.5 | 8.8% | 118.6 | 3.9% | 363.1 | 13.1% |
| | Mid | 348.3 | 12.5% | 229.1 | 7.6% | 577.4 | 20.8% |
| | High | 452.1 | 16.3% | 327.6 | 10.8% | 779.7 | 28.0% |
| Senegal | Low | 49.2 | 5.5% | 16.3 | 2.0% | 65.6 | 7.3% |
| | Mid | 71.2 | 8.0% | 31.4 | 3.8% | 102.7 | 11.5% |
| | High | 93.2 | 10.4% | 45.7 | 5.5% | 138.9 | 15.5% |
| Togo | Low | 6.9 | 4.5% | 3.4 | 1.7% | 10.3 | 6.8% |
| | Mid | 10.1 | 6.6% | 6.5 | 3.2% | 16.6 | 10.9% |
| | High | 13.2 | 8.7% | 10.1 | 5.0% | 23.3 | 15.3% |

Source: Own calculations. Note: [1]2000

The low and high scenarios give an impression of the expected range of the trade effects. In general, the results for the high scenario are roughly twice as large as those

for the low scenario, since the assumed values for the elasticities in both scenarios are – on average – also roughly twice as large. There are, however, differences at the country level, since the import structure in West African countries differs. This applies in particular to Ghana and Togo, as in both countries, imported raw materials from the EU make up a relatively large share in total imports.

Trade creation exceeds trade diversion (in absolute levels) in all scenarios and all West African countries. For trade creation, the increase in EU imports in the mid scenario ranges from 3.6 per cent in Mali to 12.5 per cent in Nigeria. Again, relatively high trade barriers vis-à-vis EU imports are the main reason for the larger trade effects in Nigeria. The trade diversion effects are somewhat smaller. From the perspective of non-preferred imports, the largest decline can be expected (again) in Nigeria with a decrease of US$ 229 million or 7.6 per cent. At first sight, the larger trade creation figures are somewhat surprising, given the fact that the assumed values for the elasticity of substitution is in all cases larger than the import demand elasticity.[12] This assumption is reasonable, since imports from different sources, say, the European Union and the United States, are much more likely to be substituted than EU imports and domestically produced goods. This holds in particular for manufactured goods like machinery, cars, etc., which make up the bulk of ECOWAS imports. Nevertheless, the results are plausible, if we take into account that the estimation of the trade effects has been performed at the four-digit HS level. At that level of disaggregation, there are only or mostly imports from the EU for a considerable number of products and, thus, no or very small trade diversion effects.[13]

These figures are likely to be upper-bound estimates of the static trade effects, since it is highly likely that ECOWAS countries will exclude certain products from the tariff elimination. An examination conducted within the WTO's Committee on Regional Trade Agreements suggests that FTAs typically cover between 80 and 95 per cent of the trade between FTA members (WTO, 2002). If ECOWAS countries decide to exclude certain products the trade effects will hence be smaller.

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[12] This holds even for the differences between the elasticity of substitution and the import demand elasticity, since $\varepsilon$ is subtracted from $\sigma$ in the trade diversion formula.

[13] In contrast to trade creation, the trade diversion formula includes the share of non-beneficiary imports ($\alpha_2$). Since EU imports make up – on average – half of total West African imports, TD declines.

Apart from the impact on trade flows, the tariff elimination will lead to a decline in import duties and, hence, total government revenue. In absolute terms, the decline in import duties in the mid scenario ranges from US$ 2.2 million in Guinea-Bissau to US$ 487.8 million in Nigeria (Table 6).

Table 6: Decline in Import Duties in ECOWAS Countries, 2001

| Country | Scenario setting | Decline in import duties | | | |
|---------|------------------|-----------|-----------------------|-------------------------------|----------|
| | | mill. US$ | % of total import duties | % of total government revenue[2] | % of GDP |
| Benin | Low | 26.7 | 46.0% | 8.3% | 1.13% |
| | Mid | 27.6 | 47.4% | 8.6% | 1.16% |
| | High | 28.3 | 48.7% | 8.8% | 1.19% |
| Burkina Faso | Low | 16.8 | 45.0% | 5.4% | 0.68% |
| | Mid | 17.5 | 46.8% | 5.6% | 0.71% |
| | High | 18.2 | 48.5% | 5.8% | 0.73% |
| Cape Verde | Low | 23.5 | 78.0% | 19.4% | 3.99% |
| | Mid | 24.0 | 79.9% | 19.8% | 4.09% |
| | High | 24.5 | 81.5% | 20.2% | 4.17% |
| Côte d'Ivoire | Low | 81.2 | 54.4% | 4.5% | 0.78% |
| | Mid | 82.9 | 55.5% | 4.6% | 0.80% |
| | High | 84.3 | 56.5% | 4.6% | 0.81% |
| Gambia | Low | 13.5 | 63.8% | 21.5% | 3.47% |
| | Mid | 13.8 | 65.0% | 21.9% | 3.54% |
| | High | 14.0 | 65.8% | 22.1% | 3.58% |
| Ghana[1] | Low | 80.3 | 58.7% | 9.1% | 1.61% |
| | Mid | 90.8 | 66.4% | 10.3% | 1.82% |
| | High | 102.4 | 74.9% | 11.6% | 2.06% |
| Guinea | Low | 16.3 | 50.6% | 4.8% | 0.55% |
| | Mid | 16.7 | 51.6% | 4.9% | 0.56% |
| | High | 17.0 | 52.7% | 5.0% | 0.57% |
| Guinea-Bissau | Low | 2.14 | 65.2% | 5.5% | 1.08% |
| | Mid | 2.16 | 65.8% | 5.6% | 1.09% |
| | High | 2.18 | 66.3% | 5.6% | 1.09% |
| Mali | Low | 16.0 | 34.3% | 3.7% | 0.60% |
| | Mid | 16.6 | 35.6% | 3.8% | 0.63% |
| | High | 17.1 | 36.7% | 3.9% | 0.65% |
| Mauritania | Low | 11.4 | 47.8% | 6.1% | 1.13% |
| | Mid | 11.8 | 49.3% | 6.3% | 1.17% |
| | High | 12.1 | 50.5% | 6.5% | 1.20% |
| Niger | Low | 6.3 | 28.3% | 3.5% | 0.32% |
| | Mid | 6.6 | 29.6% | 3.6% | 0.34% |
| | High | 6.9 | 30.8% | 3.8% | 0.35% |
| Nigeria[1] | Low | 460.1 | 49.7% | 2.4% | 1.12% |
| | Mid | 487.8 | 52.7% | 2.5% | 1.19% |
| | High | 512.8 | 55.4% | 2.6% | 1.25% |
| Senegal | Low | 85.8 | 58.6% | 10.4% | 1.85% |
| | Mid | 87.9 | 60.0% | 10.7% | 1.89% |
| | High | 89.7 | 61.3% | 10.9% | 1.93% |
| Togo | Low | 12.5 | 41.8% | 7.2% | 0.99% |
| | Mid | 12.9 | 43.2% | 7.4% | 1.02% |
| | High | 13.3 | 44.6% | 7.6% | 1.06% |

Source: Own calculations. Notes: [1]2000. [2]excl. grants.

As a share of total import duties, the decrease will be largest in Cape Verde with a decline of 79.9 per cent. More importantly, import duties can be a significant source of total government revenue. A considerable decline might then affect the public financial positions of West African governments and their ability to provide public goods. From this perspective, Cape Verde and Gambia will be particularly affected with an estimated decline in total government revenue in the mid scenario of 19.8 and 21.9 per cent, respectively. As a share of GDP, the percentage figures for both countries amount to 4.1 and 3.5, which are very large numbers. Based on these calculations, both countries would face a severe impact on their economies.[14]

The reasons for the far above average (relative) decline in import duties and government revenues are Cape Verde's and Gambia's relatively large share of EU imports to their GDP, their dependence on import duties to finance public expenditures and their relatively high collection efficiency ratios (Table 7).

Table 7: Trade and Key Government Revenue Indicators, 2001

| Country | Imports from the EU in % of total imports | Import duties in % of total government revenue[1] | Government deficit (-)/surplus (+) | |
| --- | --- | --- | --- | --- |
| | | | (incl. Grants) | (excl. grants) |
| | | | % of GDP | |
| Benin | 44.4 | 18.1 | -1.5 | -4.2 |
| Burkina Faso | 44.6 | 12.0 | -4.0 | -11.3 |
| Cape Verde | 74.3 | 24.8 | -5.2 | -11.0 |
| Côte d'Ivoire | 57.4 | 8.2 | 0.9 | 0.3 |
| Gambia | 61.8 | 33.7 | -6.3 | -9.8 |
| Ghana[3] | 43.1 | 15.5 | -10.1 | -14.6 |
| Guinea | 49.0 | 9.4 | -4.4 | -7.8 |
| Guinea-Bissau | 59.7 | 8.5 | -11.7 | -26.2 |
| Mali | 36.3 | 10.7 | -5.1 | -9.5 |
| Mauritania | 47.5 | 12.8 | -1.8 | -5.7 |
| Niger | 28.9 | 12.3 | -2.4 | -7.1 |
| Nigeria[3] | 47.9 | 4.7 | -1.5 | -1.5 |
| Senegal | 51.8 | 17.8 | -2.0 | -3.9 |
| Togo | 43.0 | 17.1 | -2.1 | -2.6 |
| Average[2] | 49.3 | 14.7 | -4.6 | -8.9 |

Sources: World Bank (2004ab), UNCTAD (2004), ITC (2004) and own calculations. Notes: [1]Excluding grants. [2]Unweighted averages. [3]2000.

In contrast to Cape Verde and Gambia, the overall impact on government revenue would be somewhat smaller in other West African countries. Still considerable effects can be expected in Ghana and Senegal with a decline in government revenue in the magnitude of 10 to 11 per cent (Table 6). If we take into account that these countries

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[14] These calculations are based on the assumption that there will be no other policy changes, such as transfers from abroad or changes in domestic taxes to make up for the loss of government revenues.

already have relatively large budget deficits (Table 7), the importance of the impact of the EPA on government revenue becomes clearly visible.

In comparison to the trade effects, the differences in changes in import duties in the low and high scenarios in Table 6 are much smaller, since EU imports will be duty free after an EPA comes into force and only small losses in import duties are due to trade diversion effects. The precision of the estimated losses in import duties is therefore much higher. This is, however, not the case in Ghana, where import duties will decline between US$ 80 million and US$ 102 million. In this country, large trade diversion effects occur in a single product category (Petroleum Oils, HS heading 2710), implying a severe impact on government revenue.

An important advantage of the partial equilibrium approach is the ability to identify the most affected products of the EPA at a fairly disaggregated level. To single out the sensitive products and product categories, we have sorted the disaggregated effects by changes in total EU imports. Among the numerous products affected, we identified (more aggregated) product groups rather than individual products. For this exercise, we sorted the total trade effects by absolute and relative changes. To ensure that both indicators, that is, absolute and relative changes in EU imports, were taken into account simultaneously, we standardised them in a first step:

$$(9) \qquad z_{ij} = \frac{x_{ij} - \mu_j}{\xi_j}$$

where the standardised score (z) of product i on indicator j (1, 2), namely absolute and relative changes in total EU imports, was derived from the actual score (x) minus the arithmetic mean of this indicator for all products ($\mu$) adjusted by the standard deviation ($\xi$) of the indicator over all products.

The standardised values were combined by taking the unweighted arithmetic mean of both scores:

$$(10) \qquad \text{Standardised Changes in } Q_1 = \frac{\sum_{j=1}^{2} z_{ij}}{2}$$

A higher standardised score implies that both relative and absolute changes will occur in this product category. After this procedure we obtained a list of all products at the four-digit level (HS heading). To identify which product groups are most likely to be affected by the EPA, we computed the occurrence of the top 100 four-digit products at the two-digit level (HS chapters) and divided the number by the total number of headings per chapter.

As can be seen from Table 8, if 20 to 33 per cent of all four-digit categories per HS chapter are listed in the top 100, we observe a moderate impact at the two-digit level (framed cells). The more affected products are indicated by the grey coloured cells, ranging from greater than 33 per cent up to 50 per cent. The most affected commodities with relative occurrences of greater than 50 up to 100 per cent are coloured dark-grey.[15]

The results clearly indicate that a few product categories are sensitive in almost all West African countries with respect to changes in trade flows. More specifically, apparel and clothing (HS chapters 61 and 62), other made up textile articles (63), and footwear, gaiters and the like (64) will be highly affected by an EPA. To a lesser degree, but still considerably affected are: sugars and sugar confectionery (17), preparations of cereal, flour, starch/milk (19), essential oils and resinoids (33), soap and organic surface-active agents (34), manufactures of straw, esparto and other (46), cotton (52), carpets and textile floor coverage (57), knitted or crocheted fabrics (60), cars, trucks, motorbikes (87), furniture, bedding, mattress (94), and toys, games and sports requisites (95). For these products, the changes in total imports, measured in absolute and relative terms, are far above average.[16]

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[15] Importantly, the following results do not change much if we focus on the top 50 instead of the top 100.

[16] The trade effects for all individual West African countries at the four-digit level can be obtained from the first author upon request.

Table 8: Relative Frequency of HS Chapter Occurrence (%), Trade Effects Top 100, 2001

| HS no. | HS chapters | Benin | Burkina Faso | Cape Verde | Côte d'Ivoire | Ghana[1] | Guinea | Guinea-Bissau | Mali | Mauritania | Niger | Nigeria[1] | Senegal | Togo |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | Live animals | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 02 | Meat and edible meat offal | 10 | 0 | 30 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 |
| 03 | Fish & crustacean, mollusc & other | 0 | 0 | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 14 |
| 04 | Dairy products, birds' eggs | 10 | 0 | 10 | 10 | 10 | 0 | 10 | 10 | 10 | 10 | 10 | 0 | 10 |
| 05 | Products of animal origin | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 06 | Live tree & other plant, bulb, roots | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07 | Edible vegetables and certain roots | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 |
| 08 | Edible fruit and nuts | 7 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09 | Coffee, tea and spices | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | Cereals | 0 | 0 | 0 | 13 | 0 | 13 | 0 | 0 | 0 | 0 | 25 | 13 | 0 |
| 11 | Malt, starches | 11 | 11 | 0 | 0 | 0 | 11 | 11 | 0 | 0 | 11 | 0 | 0 | 0 |
| 12 | Oil seed, oleaginous fruits | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | Lac, natural gums, resins | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | Vegetable plaiting materials | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | Animal/vegetable fats & oils | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 5 | 0 | 0 | 10 | 0 |
| 16 | Preparations of meat, fish or crust. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | Sugars and sugar confectionery | 0 | 25 | 25 | 25 | 0 | 25 | 50 | 25 | 0 | 25 | 25 | 25 | 25 |
| 18 | Cocoa and cocoa preparations | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | Preparations of cereal, flour | 0 | 0 | 20 | 20 | 0 | 0 | 20 | 40 | 0 | 20 | 0 | 20 | 0 |
| 20 | Preparations of vegetable, fruit, nuts | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | Miscellaneous edible preparations | 0 | 0 | 17 | 17 | 0 | 0 | 33 | 17 | 0 | 0 | 17 | 17 | 0 |
| 22 | Beverages, spirits and vinegar | 0 | 0 | 33 | 11 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | Residues & food industry waste | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | Tobacco and manufactured tobacco | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 33 | 33 | 33 | 33 | 0 | 33 |
| 25 | Salt, sulphur, earth & stone | 3 | 7 | 3 | 3 | 0 | 13 | 7 | 7 | 3 | 7 | 3 | 3 | 3 |
| 26 | Ores, slag and ash | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | Mineral fuels, oils | 6 | 6 | 6 | 6 | 13 | 6 | 0 | 6 | 6 | 6 | 6 | 13 | 6 |
| 28 | Inorganic chemicals | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | Organic chemicals | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | Pharmaceutical products | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 |
| 31 | Fertilisers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 32 | Tanning/dyeing extract, tannins | 0 | 20 | 13 | 0 | 20 | 7 | 13 | 7 | 0 | 20 | 7 | 0 | 7 |
| 33 | Essential oils & resinoids | 43 | 0 | 43 | 14 | 57 | 0 | 14 | 29 | 29 | 43 | 29 | 0 | 29 |
| 34 | Soap, organic surface-active agents | 14 | 29 | 29 | 0 | 14 | 0 | 57 | 0 | 0 | 43 | 29 | 14 | 43 |
| 35 | Albuminoidal substances | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 36 | Explosives, pyrotechnic products | 0 | 17 | 0 | 17 | 17 | 0 | 17 | 0 | 33 | 17 | 17 | 0 | 17 |
| 37 | Photographic plates, films and rolls | 0 | 0 | 0 | 14 | 14 | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 38 | Miscellaneous chemical products | 4 | 4 | 0 | 4 | 4 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 4 |
| 39 | Plastics and articles thereof | 15 | 12 | 12 | 4 | 12 | 31 | 15 | 15 | 15 | 19 | 15 | 8 | 4 |
| 40 | Rubber and articles thereof | 6 | 0 | 18 | 6 | 0 | 12 | 0 | 6 | 12 | 6 | 18 | 0 | 0 |
| 41 | Raw hides and skins | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 42 | Articles of leather, saddlery, etc. | 17 | 0 | 17 | 17 | 33 | 17 | 17 | 33 | 17 | 0 | 17 | 17 | 17 |
| 43 | Furskins and artificial fur | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 44 | Wood and articles of wood | 5 | 5 | 14 | 0 | 19 | 5 | 5 | 5 | 10 | 5 | 0 | 10 | 5 |
| 45 | Cork and articles of cork | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 46 | Manufactures of straw, esparto/other | 0 | 50 | 0 | 50 | 0 | 0 | 0 | 0 | 50 | 0 | 50 | 50 | 0 |
| 47 | Pulp of wood, fibrous cellulose | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 48 | Paper & paperboard, art. of paper | 13 | 17 | 0 | 17 | 4 | 0 | 9 | 9 | 9 | 9 | 4 | 4 | 4 |

Table 8, Cont'd.

| HS no. | HS chapters | Benin | Burkina Faso | Cape Verde | Côte d'Ivoire | Ghana[1] | Guinea | Guinea-Bissau | Mali | Mauritania | Niger | Nigeria[1] | Senegal | Togo |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | Printed books, newspapers, pictures | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| 50 | Silk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 14 | 0 |
| 51 | Wool, fine/coarse animal hair | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 52 | Cotton | 25 | 33 | 0 | 33 | 8 | 0 | 8 | 17 | 42 | 25 | 50 | 33 | 25 |
| 53 | Other vegetable textile fibres | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 9 | 0 |
| 54 | Man-made filaments | 13 | 13 | 13 | 13 | 13 | 13 | 0 | 0 | 13 | 0 | 25 | 25 | 13 |
| 55 | Man-made staple fibres | 25 | 25 | 6 | 31 | 25 | 19 | 6 | 0 | 25 | 13 | 19 | 13 | 19 |
| 56 | Wadding, felt & non-woven, yarns | 0 | 11 | 11 | 11 | 0 | 33 | 11 | 0 | 0 | 0 | 0 | 0 | 11 |
| 57 | Carpets and other textile floor cover. | 20 | 0 | 40 | 20 | 0 | 0 | 0 | 20 | 0 | 40 | 0 | 0 | 0 |
| 58 | Woven fabrics, tufted textile fabrics | 27 | 27 | 0 | 18 | 27 | 9 | 0 | 0 | 18 | 9 | 18 | 45 | 0 |
| 59 | Impregnated, coated, cover/laminate | 9 | 9 | 0 | 18 | 18 | 9 | 9 | 18 | 0 | 18 | 0 | 18 | 9 |
| 60 | Knitted or crocheted fabrics | 0 | 50 | 0 | 100 | 50 | 0 | 0 | 50 | 0 | 0 | 100 | 0 | 0 |
| 61 | Articles of apparel & clothing | 71 | 41 | 0 | 41 | 94 | 65 | 12 | 29 | 47 | 29 | 53 | 47 | 71 |
| 62 | Articles of apparel & clothing accessories, not knitted or crocheted | 59 | 29 | 82 | 35 | 94 | 53 | 35 | 12 | 47 | 53 | 47 | 59 | 59 |
| 63 | Other made up textile articles | 50 | 30 | 0 | 30 | 10 | 30 | 40 | 60 | 60 | 60 | 10 | 40 | 50 |
| 64 | Footwear, gaiters and the like | 50 | 50 | 83 | 33 | 17 | 0 | 50 | 83 | 83 | 33 | 0 | 50 | 83 |
| 65 | Headgear and parts thereof | 14 | 0 | 14 | 14 | 57 | 14 | 0 | 14 | 0 | 0 | 0 | 0 | 14 |
| 66 | Umbrellas, walking-sticks | 0 | 0 | 0 | 33 | 33 | 0 | 33 | 33 | 0 | 0 | 0 | 33 | 33 |
| 67 | Feather Preparations, artificial flowers | 25 | 0 | 25 | 0 | 50 | 25 | 0 | 0 | 0 | 0 | 75 | 25 | 25 |
| 68 | Articles of stone, plaster, cement | 7 | 20 | 0 | 7 | 0 | 7 | 13 | 7 | 7 | 7 | 7 | 0 | 7 |
| 69 | Ceramic products | 14 | 14 | 21 | 14 | 0 | 14 | 14 | 29 | 36 | 21 | 29 | 14 | 7 |
| 70 | Glass and glassware | 20 | 10 | 15 | 15 | 5 | 10 | 10 | 5 | 5 | 5 | 15 | 15 | 15 |
| 71 | Natural/cultured pearls, stones | 0 | 6 | 6 | 6 | 0 | 0 | 0 | 6 | 0 | 6 | 6 | 17 | 0 |
| 72 | Iron and steel | 7 | 7 | 0 | 7 | 0 | 3 | 3 | 10 | 14 | 10 | 7 | 0 | 10 |
| 73 | Articles of iron or steel | 15 | 15 | 8 | 12 | 8 | 8 | 31 | 35 | 15 | 19 | 15 | 12 | 12 |
| 74 | Copper and articles thereof | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 5 |
| 75 | Nickel and articles thereof | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 76 | Aluminium and articles thereof | 6 | 6 | 0 | 0 | 0 | 13 | 0 | 0 | 6 | 13 | 0 | 19 | 19 |
| 78 | Lead and articles thereof | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 |
| 79 | Zinc and articles thereof | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 14 | 0 |
| 80 | Tin and articles thereof | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 |
| 81 | Other base metals, cermets | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 82 | Tool, implement, cutlery, spoons | 7 | 27 | 0 | 0 | 20 | 13 | 20 | 0 | 0 | 7 | 20 | 0 | 0 |
| 83 | Miscellaneous articles of base metal | 9 | 0 | 0 | 9 | 9 | 18 | 18 | 0 | 0 | 0 | 0 | 0 | 9 |
| 84 | Machinery, boilers | 1 | 1 | 4 | 4 | 0 | 8 | 5 | 6 | 7 | 5 | 5 | 1 | 1 |
| 85 | Electrical machinery equipment | 8 | 15 | 23 | 27 | 0 | 13 | 25 | 15 | 15 | 13 | 8 | 13 | 21 |
| 86 | Railway/tramway locomotives | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 0 |
| 87 | Cars, trucks, motorbikes, bikes, etc. | 13 | 38 | 31 | 25 | 6 | 31 | 31 | 31 | 31 | 13 | 25 | 25 | 6 |
| 88 | Aircraft, spacecraft, parts thereof | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 89 | Ships, boats and floating structure | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 |
| 90 | Optical & photo instruments | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 3 |
| 91 | Clocks and watches, parts thereof | 21 | 21 | 7 | 0 | 7 | 14 | 7 | 29 | 0 | 14 | 0 | 29 | 14 |
| 92 | Musical instruments | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 11 | 11 |
| 93 | Arms and ammunition | 14 | 0 | 14 | 0 | 14 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 |
| 94 | Furniture, bedding, mattress | 0 | 17 | 67 | 33 | 33 | 0 | 33 | 50 | 33 | 50 | 33 | 33 | 17 |
| 95 | Toys, games & sports requisites | 25 | 38 | 50 | 13 | 0 | 13 | 38 | 25 | 25 | 13 | 13 | 13 | 13 |
| 96 | Miscellaneous manufactured articles | 11 | 17 | 17 | 17 | 33 | 6 | 6 | 11 | 0 | 11 | 6 | 17 | 11 |
| 97 | Works of art, collectors' pieces | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 17 | 0 |

Source: Own calculations. Note: [1]2000.

Looking at these product categories, we have to keep the limitations of our approach in mind, that is, we excluded domestically produced goods. Therefore, the identification of the most affected product categories is related only to changes in total imports. Domestically produced goods will, thus, not automatically be displaced to the same extent. In general, the trade-creation effect consists of two effects: the consumption and the production effect. The latter relates to the displacement of domestically produced goods by more competitive preferred imports, whereas the former gives information on the change in total consumption, since import prices will decline due to the EPA. As there is no or very little domestic production in ECOWAS countries for a number of EU imports, the production effect is zero or very close to zero for numerous manufactured goods, such as cars or electrical machinery. For the identification of the most sensitive products regarding domestically produced goods, one has to compare the production structure in each West African country with the list of changes in total imports.

## 4.      Policy Implications and Concluding Remarks

With regard to the arrangement of future trade relations with the EU, West African countries have to choose between two options that are WTO compatible. One option is to enter into an EPA and set up an FTA with the EU. The other option is to export under the EU's GSP scheme. The present paper has focused on the proposed reciprocity of EPAs. It has examined how West African countries will be affected by opening up their domestic markets for almost all products from the EU. A different question is whether participating in an EPA would be a better or a worse option for West African countries than a replacement of the current trade regime by the EU's GSP scheme. In order to answer this question, one would have to look at the EU's GSP scheme in more detail, which is beyond the scope of this paper.[17]

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[17] For two reasons, we have refrained from computing the effects of a switch from ACP to GSP treatment. First, the resulting change in tariff preferences would harm only the three non-LDCs: Côte d'Ivoire, Ghana and Nigeria. Also, rather than having an impact on the majority of their exports, only very specific products would be affected. At the highly disaggregated product level, however, the impact could be considerably large. Second, the more restrictive rules of origin in the EU's GSP scheme have the potential to harm West African exporters both from LDCs and non-LDCs considerably. Yet the computation of changes in the rules of origin is somewhat arbitrary, as it requires assumptions on how importers and exporters will react to differences in the rules of origin. See Brenton and Manchin (2003) for a (verbal) analysis of the impact of EU rules of origin within the GSP system of preferences for imports from Eastern and Central Europe.

Yet the present paper gives some information about the trade and budget effects of EPAs due to import liberalisation vis-à-vis EU products. The results can be summarised as follows: (1) The (static) trade effects of the EPAs for some of the ECOWAS countries are relatively high, with increases in preferred imports from the EU of up to some 21 per cent; (2) trade creation dominates trade diversion in all West African countries; and (3) due to the preferential tariff elimination, government revenue will decline by 4 to 9 per cent in most West African countries, but a few countries, such as Cape Verde and Gambia, will face much higher revenue losses and seem to be most affected by the EPAs.

Since trade creation exceeds trade diversion, it is quite possible that West African countries will benefit from participating in an EPA. Following Viner (1950), trade creation is associated with a welfare gain, as it means a shift from an inefficient to an efficient source of supply. Trade diversion, on the other hand, is associated with a welfare loss, as it means a shift in imports from an efficient to an inefficient source of supply. In general, however, we cannot conclude from the relative magnitudes of trade creation and trade diversion alone that an EPA will definitely lead to an increase in welfare of West African countries. Of course, consumers only stand to gain from an EPA, but for the economy as a whole, it is not clear whether the increase in consumer surplus will outweigh the loss in tariff revenue resulting from trade liberalisation.

Importantly, the projected trade effects of EPAs will occur only if EU exporters reduce their export prices due to the tariff elimination. However, that will not necessarily be true if the dismantling of trade barriers puts large European firms in a position to exercise market power in West African countries, either individually or collectively. If European firms leave market prices unchanged and increase their profits instead, ECOWAS countries will merely lose customs revenue and, hence, economic welfare will certainly decline. Such anti-competitive behaviour will be less likely, of course, if European exporters have to compete on equal terms with exporters from other industrial countries. In this respect, a better course of action for West African countries would be not to discriminate between European and other foreign suppliers. For instance, to minimise trade diversion and to increase competition from non-EU firms, ECOWAS may consider reducing tariff rates for non-EU imports as an appropriate policy option.

The partial-equilibrium analysis conducted in this paper largely ignores that there may be changes in income caused by trade liberalisation. In fact, some West African producers competing with the imports will be compelled to cut production and employment, while other domestic firms, whose international competitiveness is increased by the purchase of cheap investment and intermediate goods, will be enabled to increase production and employment. If we assume that there are no distortions on domestic factor markets, i.e. factors of production can move among industries within a country at no or very low costs and factor returns adjust to ensure full employment of all factors, a positive income effect that leads to a higher consumer surplus will likely occur.

However, the opening up of domestic markets not only increases the gains from trade but also entails higher adjustment costs. Workers who are displaced from import-competing sectors and thus forced to move to other sectors of the economy may have to forego income and incur other costs while they search for employment elsewhere and/or undergo retraining. Moreover, trade liberalisation may lead to the destruction of much of the productive capacity, as investments of capital may have been sunk into certain economic activities and cannot easily be transferred to other activities. If adjustment costs of reallocating resources from import-competing industries to other domestic industries are taken into account, the presence of a negative income effect which reduces consumer surplus will be more likely, at least in the short to medium run. It is widely accepted that the existence of adjustment costs justifies a "gradualist" approach to reductions in trade-protection measures. However, the empirical analysis points out that it will not be an easy task for West African countries to reach an agreement on a common timetable and the final product coverage of trade liberalisation, as their particular interests differ.

A "gradualist" approach to trade liberalisation is also needed because it takes time to implement the complementary policy measures that are required to ease the inter-sectoral adjustment process. Adjustment policies typically involve labour-market reforms to enhance the mobility of the workforce both between and within industries, training programmes to provide qualified employees for export-oriented companies, and technological support programmes to improve the ability of firms to compete against imports. There is also a need for establishing social welfare nets that compensate displaced workers and provide the poor with a minimal level of subsistence below which they should not fall. As the role of governments is certainly not diminished by the need to mainstream trade into the national

development strategy, it is important to ensure that participating in an EPA does not lead to a significant loss of government revenue.

The empirical analysis of the budget effects shows that tariff revenue is a significant source of financing government expenditures in most of the West African countries. Therefore, the most urgent task for West African governments will be to take measures to offset the decline in tariff revenue resulting from trade liberalisation. In theory, a replacement of foreign trade taxes by domestic taxes can easily be made. An import duty, for instance, is conceptually equivalent to an ad valorem tax on the domestic consumption and an ad valorem subsidy on the domestic production of that product (Tanzi, 1995). In practice, however, it may be extremely difficult to collect domestic taxes for financing public expenditure programmes, as the ability of developing countries to collect domestic taxes will depend not only on the enactment of an appropriate tax legislation but, more important, on the enforcement of compliance (Todaro and Smith, 2003). Given the serious problems of tax evasion and avoidance, the costs of tax administration have to be taken into account when countries are forced to modify their tax structure.

To sum up, negotiations on EPAs pose a major challenge to West African countries. While there is little doubt that West African countries would benefit from improved or more secured access to EU markets, it is not clear whether it is in the interest of West African countries to eliminate customs duties for almost all EU products until 2020. The empirical analysis shows that the West African countries' concerns about the trade and fiscal effects of EPAs are quite plausible. In order to help the economy to adjust to increased competition from the EU with a minimum of economic and social unrest, the opening up of domestic markets needs to be well designed, with special attention given to country specifics and capabilities. Moreover, complementary reforms beyond the reduction of tariff and non-tariff barriers must be tackled domestically before trade is liberalised. However, it will not be an easy task for West African countries to balance their need for government revenue with efficiency consideration.

**Appendix: Definition of Variables and Data Sources**

| Variable | Source |
|---|---|
| Trade ($Q_1$, $Q_2$) | Imports: TRAINS (UNCTAD, 2004) |
| | Imports and exports: COMTRADE (ITC 2004) |
| Tariff ($t$) | UNCTAD (2004), WTO (2004) |
| Customs revenue (CR) | IMF (2004) |
| Government revenue | IMF (2004) |
| GDP | World Bank (2004a) |
| Import demand elasticity ($\varepsilon$) | See Tables 2 and 3 |
| Substitution elasticity ($\sigma$) | See Tables 2 and 3 |

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