The Impact of Economic Partnership Agreements between ECOWAS and the EU on Niger

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Contents

List of Tables

List of Figures

Abbreviations and Acronyms

ACP	African Caribbean Pacific		Progarmme
BCEAO	Central Bank of the States of West Africa	EU	European Union
		FTA	Free Trade Area
CAPED	Analysis and Economic Development Forecast Unit	GDP	Gross Domestic Product
		HS	Harmonized System
CEMAC	Central African Economic and Monetary Community	MFN	Most Favoured Nation
		LDC	Least Developed Countries
CET	Common External Tariff	NEPAD	New Partnership for the Development of Africa
CFAF	African Financial Community Franc		
		VAT	Value Added Tax
ECOWAS	Economic Community of West African States	WAEMU	West African Economic and Monetary Union
EPAs	Economic Partnership	WTO	World Trade Organizations
EPADP	EPA Development		

Acknowledgments

Abstract

The aim of this study was to assess the economic impact on Niger of the trade component of the Economic Partnership Agreements (EPAs) between the Economic Community of West African States (ECOWAS) and the European Union. The study used a partial equilibrium WITS/SMART model. Several scenarios of trade liberalization were simulated, but the interpretation of the results focused on the most realistic scenario; that is the one concerned with trade liberalization of Group A, B and C products. In this scenario, imports from the EU would increase by US$ 22 million. For the whole of the EU, this represents a gain in its exports to Niger of about 16.58%. Conversely, the producers from the rest of the world will see their exports to Niger reduce by about US$ 2 million. Such a reduction would result from increased competition from EU products. Niger would also suffer a loss in customs revenues of close to US$ 24 million. Therefore, while liberalization of Group A, B and C products would record a slight increase in receipts, the same liberalization would lead to a relatively bigger loss in revenues.

Keywords: *EPA, impact, Niger, ECOWAS, EU*

Classification JEL: *F 13*

1. Introduction

Niger is party to two major trade negotiation processes: a multilateral process involving the World Trade Organization (WTO), and another one concerning the trade agreements, namely the Lomé agreements and their predecessors, between the EU and the African Carribbean Pacific (ACP) countries.

The Economic Partnership Agreements (EPAs) deal with the obstacles to trade, the supply constraints on the part of the ACP countries, and the issue of accounting using the WTO regulations (Ben Hammouda et al., 2005). The goal of the EPAs is to set up free trade areas (FTAs) in order to replace the non-reciprocal trade preferences currently in force, and which have been accorded by the EU to the ACP countries within the framework of the Lomé Agreement.

There are two fundamental justifications for the necessity for EPAs: on the one hand, the advantages accorded to the ACP countries did not meet expectations and, on the other hand, the new WTO rules governing international trade forbid any form of discrimination between countries.

The EPAs between the EU and the ACP countries are negotiated between regional economic blocs. Since Niger belongs to the West African bloc, it is party to the negotiations involving the Economic Community of West African States (ECOWAS) and the EU. West Africa is the main ACP region in view of the significance of its exports to, and imports from, the EU (about 40% of the EU-ACP trade). Because of this, a change in the trade regime between West Africa and the EU is of strategic importance for the future of West African economies in general, and that of Niger in particular.

As part of their negotiations, ECOWAS and the EU have set up a liberalization scheme that distinguishes between four groups of products. The Group D products are excluded from trade liberalization. Liberalization of Group C products has been delayed; it will start in 2018 and will span 15 years. The liberalization of Group B products started in 2013 and will span 15 years as well. The liberalization started immediately for Group A products, on 1st January 2011.

The proposed liberalization scheme triggered tariff dismantling for the least sensitive products (Group A products) in January 2011. The complete tariff dismantling has been planned to last 23 years, starting in 2009. Trade in all the products that are subject to liberalization, which represent 65% of the imports from the EU, must have been liberalized by January 2032. The bulk of the tariff dismantling has been planned to take place over a period of 17 years, from 1st January 2011 to 1st January 2028.

When the ECOWAS Common External Tariff (CET) was adopted, there was a provision for a 5th band on sensitive products so as to protect the agribusiness fabric of ECOWAS member states and strengthen regional integration.

The first regional list has been drawn up and there has been some provisional consensus on it. At this stage, the need has arisen to devise a regional reference framework for the selection of the products that are eligible to be included in the 5th band, and to guide arbitration at the national and regional levels. In the case of Niger, the following products have been included in the 5th band: meat and edible offal (whether fresh, chilled or frozen) from bovine animals, sheep or goats, horses or asses; onions, etc.

Niger exports agricultural products to the EU, as well as uranium and gold. For Niger, the key issue in EPA negotiations is the competition from the products imported from the EU against those imported from ECOWAS countries and the rest of the world. An analysis has shown that about 10 products that Niger imports from the ECOWAS area and 15 it imports from the rest of the world are in competition with products of the same kind imported from the EU. The figures (in Annex A2 and A3) give a list of the products that Niger imports from the EU, the ECOWAS area, and the rest of the world.

The aim of this study was to assess the economic impact, on Niger, of the trade component of the EPA negotiated between ECOWAS and the EU. The study's specific objectives are the following:

1) To identify the potential trade effects of an EPA on Niger in terms of trade creation and diversion by identifying the products and countries concerned;

2) To assess the impact of EPAs on tariff revenues and well-being by identifying the tariff lines that could lead to the biggest revenue losses, and the products that are likely to have the greatest effect on the people's well-being; and

3) To analyse the impact of EPAs on Niger's productive structures, as the WITS-SMART model enables a distinction between the products for which an increase in imports from the EU would be the highest.

The rest of this paper is structured as follows: Section 2 is an overview of the main issues in the EPA negotiations between ECOWAS and the EU. Section 3 presents the literature review on the consequences for Niger of the signing of an EPA between ECOWAS and the EU. Section 4 describes the state of Niger's economy. Section 5 describes the research methodology. Section 6 reports on the empirical results on the partial liberalization of Group A, B and C products, while the last section presents the study's conclusions and recommendations.

2. An Overview of the Main Issues in the EPA Negotiations between the EU and ECOWAS

The ECOWAS countries are aware of the significance of the process of regional integration even without the issues related to the signing of EPAs. This is all the more reason for them to reach a conclusion on a comprehensive regional EPA, which would prevent the interim agreement signed by Ghana and that signed by Côte d'Ivoire from jeopardizing the integration process in the region.

Parallel discussions with the EU have ended in the latter's commitment to participate in the financing of the EPA Development Programme (EPADP) to the tune of Euros 6.5 billion. This programme is built on five pillars: (i) diversifying and increasing the production capacity; (ii) promoting intra-regional trade and facilitating access to international markets; (iii) improving and strengthening trade-related infrastructure; (iv) achieving the required adjustments and taking into account the other trade-related needs; and (v) implementing and evaluating the EPAs. In line with the initiative of the New Partnership for the Development of Africa (NEPAD) to strengthen production capacity, and in relation to the specified sensitive products, the EPADP lays emphasis on three main value chains: agribusiness, textile cotton, and tourism.

To measure the significance and real value of the financing of the EPADP, West African countries have devised EPADP national operational plans, which are accompanied by framework documents giving adequate information on priority areas for the EPADP.

According to Melissa (2009), the ECOWAS countries have submitted a new offer of access to the goods markets. After much reflection, these countries decided to remove a large number of products (especially of animal, vegetable and mineral origin, as well as chemical products and timber-based ones) from the list of those that are excluded from liberalization. This decision will have consequences on Niger's external trade, since products of animal origin represented about 23.74% of Niger's exports in 2008.

Better still, according to Melissa (2010), ECOWAS has made an offer for the liberalization of markets at the rate of 69.69% in volume and 69.75% of the tariff lines over a period of 25 years, but the EU believes that this offer could be improved in order to maximize its favourable effects in terms of development. The two parties have also recognized the importance of regional taxes for the good functioning of West African Economic and Monetary Union (WAEMU) and ECOWAS and have agreed on the necessity to preserve these resources.

The divergences relating to the non-execution clause, as well as the Most-Favoured

Nation (MFN) should be resolved at the political level. West Africa has accepted the inclusion of the MFN clause in EPAs but on condition that it is applied to Europe in conformity with the WTO rules. This condition is a rejection by the West African region of the EU's proposal aimed at introducing the concept of "major trading partner".

The discussions have continued over agricultural subsidies, services, rules of origin, and the proposed *rendez-vous* clauses as well as the topics that these are supposed to cover.

In relation to the ECOWAS Common External Tariff (CET), there was some flexibility on the part of the EU in its implementation until December 2011. ECOWAS has continued to work on the CET. This tariff had to have a 5th component, corresponding to 35%, which was supposed to protect certain sensitive products in the ECOWAS area.

But the divergences bear also on the opening of the European market. Until now, the Europeans have remained silent on the reform of the sectoral policies concerning the competing products, as well as on the non-tariff and other obstacles to the penetration of this market, such as the sanitary and phytosanitary measures and other technical obstacles.

3. Review of the Literature

There is very little research that has been done on the issue of Economic Partnership Agreements (EPAs) to which Niger is party. Blein et al. (2004) studied the impact of EPAs on Niger's economy. From this study transpired five major issues that Niger had to deal with in relation to signing an EPA: a reduction in customs revenues; access to the European market for the products from Niger; the competitiveness of enterprises from Niger; the competition of imports from Europe on products from Niger on the domestic market; and competition from imports from Europe against products from Niger on the regional market. The study analysed each one of these issues succinctly. Based on this analysis, the authors stated that the first impact should be the creation of a West African Customs Union and not the changes in the trade regime with the EU, and that the impact on public finances was variable.

But even though this research gives a clear picture of the possible repercussions of EPAs on the economy, it has a major limitation related to its methodology of analysis; it used simple statistical tools, which do not enable one to determine the indirect effects of the reform. For instance, the forecast of economic variables (imports, tax receipts, etc) over the 2004-2007 period was based on the following three methods: the average growth rate method; the weighted compound average rate method; and a method of choice of the economy's growth rate required by WAEMU. However, statistics of this kind have generally shown their limits because, with the economic future being uncertain, it is highly unlikely that the same past trends would be observed in the future. Moreover, an analysis done in a scattered manner does not always enable one to capture the interaction between different variables.

A more recent study on the impact of EPAs on the economy was done in 2006 by the Analysis and Economic Development Forecast Unit *(CAPED).* The study carried out two types of analysis: an analysis of the effects of the application, in 2000, of the common external tariff in the UEMOA region on Niger's economy, and an analysis that determined the different mechanisms of disseminating the impact of EPAs based on the elasticity approach. The study found that the mechanisms in question were the loss in tax receipts, the changes in trade flows, and the possible increase in foreign direct investment. The main limitation of this research has to do with the fact that while it identifies the variables, it does not offer complete information on those that would be the most affected by EPAs, as well as on the likely interaction between the different economic variables. Using a general equilibrium or a partial equilibrium model enables one to solve this problem. No study has yet used such a model on data from Niger; that is why the present study aims to do that.

Busse et al. (2004) conducted research on the trade and budget effects that are likely to arise from the ECOWAS countries' opening of the markets to products from the EU

within the framework of EPAs. This research was carried out at the regional level using a partial computable general equilibrium model by way of methodology. Its conclusions are not any more optimistic than those of the impact studies done in the majority of countries. On the one hand, EPAs were found to constitute a major external constraint on the economy's productive sectors in the region, especially the textile, automobile and agricultural sectors. On the other hand, the effects of trade creation were found to prevail over those of trade diversion in general, except in Ghana where the two situations were almost identical. These results suggest that there was an improvement in the overall levels of well-being in the ECOWAS countries and Mauritania. Finally, concerning the negative effects on budget receipts, they were found to vary according to countries.

Karingi et al. (2005) used the general and partial equilibrium models to assess the effects of the EPAs between ECOWAS and the EU. Their research sought to identify the vulnerable products that occasioned the biggest losses in export revenues for the countries concerned. Since 2008, debate has been about sensitive products, the creation of the 5th band, and the reclassification of certain products in this band. The latter are products that really have a predominant place in the countries' export revenues; they are also products for which a not-well-thought-out abolition of taxes would lead to a significant shortfall in public finances.

The assumptions on which the two studies (referred to in the two preceding paragraphs) were based are not the same. In addition, they both used a simulation that hinged on the signing of an overall EPA. For its part, this study looked at three scenarios relating to liberalization of trade in Group A, B, and C products. Furthermore, the two studies do not provide an exact idea of the amount of financial support that the different countries, among them Niger, would need during the period of the partial implementation of the agreement within the framework of the EPADP in order to better build their economic fabric.

At the regional level, the conclusions of research by Itaqa (2008) on the impact of the EU-ECOWAS EPA clearly suggest that on all the economic aspects that the study looked at, the signing of EPAs, with an immediate or delayed liberalization, did no more than increase the ECOWAS countries' dependence on the European economy.

Itaqa's study stressed that if ECOWAS countries do not get a good deal from the EPA negotiations with the EU, which is West Africa's first trading partner, implementation of EPAs is likely to slow down the speed of the burgeoning regional integration. This clearly means that it is the intra-regional trade that will be the most affected, hence the need to adopt the ECOWAS Common External Tariff before signing the EPA.

In terms of tax losses, Itaqa's study also observed that as of 2019, the customs tax losses would significantly increase: by about 37% for Mali and Burkina Faso and 28% for Senegal. In 2024, the most affected countries will have lost about 40% of the customs tax receipts.

Ben Hammouda et al. (2005) reported the results of a study about the assessment of the economic partnership between the EU and Mali. The study used a partial equilibrium approach using the WITS/SMART model. It concluded that imports from the EU would increase by US$ 60 million. For the whole of the EU, this represented a gain of about 20% on their exports to Mali. Conversely, producers from the rest of the world saw their exports to Mali reduce by about US$ 4.4 million, a reduction

due to increased competition from European products. For the rest of the world, this represented a reduction of about 5% relative to the initial exports to Mali. The authors' simulation predicted a loss in tariff revenues of more than US$ 33 million for Mali, which would lose more than 28% of its customs revenue in case EPAs were signed; that is close to 6% of its total budget for 2003.

Adjovi E. (2006) analysed the effects of implementation of EPAs on income distribution and poverty in Benin using a micro-simulated computable general equilibrium model. Adjovi's study analysed the effects of the changes effected in the productive sectors, the economic agents' incomes, well-being and poverty in Benin. It transpired that the impact of complete abolition of duties and taxes on imports varied starkly according to the mode of adjustment used to compensate for the losses in revenues. While the institution of a compensatory tax was beneficial for the households outside the city of Cotonou, the reduction in public spending was beneficial for those living within it. However, Adjovi pointed out that the abolition measure, irrespective of the adjustment mode, had little effect on income, because the effect on well-being and the poverty situation were rather due to price fluctuations.

Using a computable general equilibrium model, Ndir et al. (2007) studied the impact of EPAs on Senegal's economy. They assessed the effects of trade liberalization policies on real income, bilateral trade and sectoral dynamics. These effects were found to be negative on real income, the exchange value, the balance of payments and customs receipts; they were found to be positive only on the growth of external trade and the trade openness policies. The authors stressed the necessity to take into account the accompanying measures, among them compensation for losses in customs receipts and the setting-up of conditions that are conducive to economic development.

Using the WITS-SMART model, Stephen et al. (2004) assessed the impact of the EPA between the CEMAC countries and the EU. Several observations transpired from the research: first, the analysis of the characteristics of the Central African countries highlighted the latter's dependence on trade and the vulnerability of their economies to external shocks. The study suggested that the CEMAC countries had experienced a substantial expansion in imports from the EU. The study also found that a non-negligible part of these imports had been diverted to the detriment of other partners, most of them CEMAC countries themselves. The very fact that intra-CEMAC trade could be negatively affected is an issue to deal with as a matter of priority.

Finally, the positive gains that consumers in the CEMAC countries got as a consequence of the dismantling of the trade barriers are to be balanced against the losses incurred by the local enterprises that were pushed out of the market by the new imports from the more competitive European enterprises, and against the significant losses in customs revenues. Given that such losses can be compensated instantly, concrete measures that would ensure fiscal sustainability are therefore necessary and critical.

4.   Presentation of Niger's Economy

Niger's economy has improved markedly over the recent years, thanks to a combination of several phenomena, among them sufficient rainfall and the rise in the price of uranium. For instance, in 2008, economic growth rate was 9.5% while it was only 3.3% in 2007. The strong acceleration of economic growth was essentially due to agricultural production.

In terms of production, the primary sector recorded a 16.7% increase in 2008 against only 4.0% in 2007. The secondary sector has been the weak link in Niger's economy. It represents only 12.0% of GDP. In this sector, extraction activities, especially uranium extraction, make up more than a third of the value added. In 2008, the sector recorded a slight recovery, with a 1.0% growth rate, compared to a 1.1% drop in 2007. The tertiary sector recorded a 4.2% growth rate in 2008 against 3.9% in 2007. This good performance can be accounted for by that of its sub-sector of transport and communications and that of services, which recorded growth rates of 5.0% and 5.5%, respectively. The proportion of the informal sub-sector in this sector represented 85.6% of the value added in 2008.

With regard to the country's public finances, the share of receipts from entry tax has remained high in spite of the measures taken by the government to dismantle tariffs and duties on certain staple commodities within the ECOWAS framework. In 2009, budgetary receipts fell by 29.4%, which represented 12.4% of GDP, mainly due to the low level of non-tax receipts that had been forecast.

Regarding external trade, balance of payments is not only in chronic deficit, but it has also led to a structural dependence on the outside world. The volume of imports is much higher than that of exports, with the latter essentially consisting of uranium. As for external accounts, the total deficit of the balance of payments was 58.4 billion against 68.2 billion CFAF in 2007, in relation to the deterioration of the current account (Central Bank of the States of West Africa – BCEAO, 2007).

An analysis of the destinations of exports from Niger showed that an increasing volume of them were exported to European and African countries. But the volume exported to the EU countries was slightly larger than that exported to the ECOWAS countries in 2003. This means that the EU was a preferred destination for Niger. The 2003 figures showed that the EU was the third destination for exports from Niger, behind ECOWAS and other partners.

An analysis of imports revealed Niger's dependence on manufactured products. The analysis showed that the bulk of imports were food products. Niger remains very dependent on the outside world for its supply of staple foodstuffs, energy and industrial products.

Within the ECOWAS area, Nigeria is Niger's first trade partner. It is also the main destination for Niger's exports of animal products and fresh vegetables. On the

other hand, Niger's imports from Nigeria are essentially composed of fuels, electricity, fertilizers and cereals. But the volume of cereals imported varies according to the amount harvested in Niger itself.

Niger's trade policy within the ECOWAS area

Created in 1975, ECOWAS set itself the goal of setting up a customs union between its 15 member states within a period of ten years. This union would naturally be characterized by the complete abolition, by the end of this period, of customs duties and any other tax that had an equivalent effect on the import of products from the Community by a member state. The same provision applied to non-tariff barriers such as quantitative restrictions, limits on quotas, and other administrative obstacles to trade between the member states.

The ECOWAS customs union is also composed of a single market within the Community, where the principle of free trade area is observed and, 1st January 2015 a CET will be applied at the borders of the member countries of ECOWAS.

Given the imbalance in the level of development between the ECOWAS member states, and given also the fragile nature of their economies and the uncertain nature of their financial resources, the founding treaty allows the member states to take safeguard measures under certain conditions.

By way of accompanying measures, ECOWAS has planned for financial compensation for the losses in customs receipts and for development actions and programmes. To this effect, the Community created, from the very beginning, the Fund for Cooperation, Compensation and Development, whose capital and intervention fund were funded by member states from their budgets before the ECOWAS Community Levy is instituted.

Generally speaking, Niger's trade policy within ECOWAS is marked by points of agreement, and points still to be negotiated between ECOWAS and the EU.

5. Methodology

In line with its objectives, this study used a partial equilibrium WITS/SMART model in order to measure the effects on Niger in the form of trade creation and diversion after the liberalization of Group A, B and C products as well as the effects on the drop in the country's tariff revenue and its population's well-being.

Laird and Yeats (1986) derived the equation that can be used to estimate the effects of trade creation. They assumed a model of basic trade composed of simplified functions of import demand and export supply, and an identity that enables equilibrium. The function for country j's demand in imports of commodity i from country k can be written as:

$$M_{ijk} = f\left(Y_j, P_j, P_k\right) \tag{1}$$

The function for the supply of exports of commodity i from country k can be written as:

$$X_{ijk} = f\left(P_{ikj}\right) \tag{2}$$

The trade equilibrium between the two countries is the standard equation for partial equilibrium:

$$M_{ijk} = X_{ikj} \tag{3}$$

Within a free-trade environment, the domestic price, in country j, of commodity i imported from country k, should vary with the variation in the customs tariff as follows:

$$P_{ijk} = P_{ikj}\left(1 + t_{ijk}\right) \tag{4}$$

To obtain the formula for trade creation, Laird and Yeats (1986) differentiated the price equation (4):

$$dP_{ijk} = P_{ikj}dt_{ijk} + \left(1+t_{ijk}\right)dp_{ikj} \tag{5}$$

Equations (4) and (5) can then get substituted in the elasticity for the import demand equation to get the following equation:

$$\frac{dM_{ijk}}{M_{ijk}} = \eta_i^m \left(\frac{dt_{ijk}}{1+t_{ijk}} + \frac{dpijk}{P_{ikj}} \right) \tag{6}$$

From the identity in equation (3), $\dfrac{dM_{ijk}}{M_{ijk}} = \dfrac{dX_{ikj}}{X_{ikj}}$

we obtain the following expression for the export supply elasticity:

$$\frac{dP_{ikj}}{P_{ikj}} = \frac{1}{\gamma_i^e}\frac{dM_{ijk}}{M_{ijk}}$$

which, once used in equation (6), enables us to measure the effect of trade creation, which in equation (3) is equivalent to the growth in exports of commodity i from country k to country j:

$$TC_{ijk} = M_{ijk}\eta_i^m \frac{dt_{ijk}}{\left(1+t_{ijk}\right)\left(1-\dfrac{\eta_i^m}{\gamma_i^e}\right)} \tag{7}$$

Si $\gamma_i^e \to \infty$, while equation (7) can be simplified as follows:

$$TC_{ijk} = \eta_i^m M_{ijk} \frac{\left(1+t_{ijk}^1\right)-\left(1+t_{ijk}^0\right)}{\left(1+t_{ijk}^0\right)} \tag{8}$$

where TC_{ijk} is the sum of the trade created, in millions of dollars, for products i affected by the tariff changes, and η_i^m is the elasticity for the demand for the import of product i into the importing country. M_{ijk} is the current level of the demand for the product in question, with t_{ijk}^0 and t_{ijk}^1 representing the rates for the tariff for product i at the initial and final periods. Trade creation thus depends upon the level of imports, the elasticity for the import demand and the relative change in tariffs.

The theory that underlies SMART enables us to measure trade diversion. The substitution elasticity can be expressed as the variation in the percentage of the relative proportions of imports from two different sources, variation due to a 1% change in the relative prices of the same product from the two sources:

$$\sigma_M = \frac{\Delta\left(\sum_k M_{ijk} / \sum_K M_{ijK}\right) / \left(\sum_k M_{ijk} / \sum_K M_{ijK}\right)}{\Delta\left(P_{ijk} / P_{ijK}\right) / \left(P_{ijk} / P_{ijK}\right)} \tag{9}$$

where k represents imports from the EU and K the imports from the rest of world.

Equation (9) can be transformed to obtain the equation for trade diversion:

$$TD_{ijk} = \frac{M_{ijk}}{\sum_k M_{ijk}} \frac{\sum_k M_{ijk} \sum_K M_{ijK} \frac{\Delta\left(P_{ijk} / P_{ijK}\right)}{P_{ijk} / P_{ijK}} \sigma_M}{\sum_k M_{ijk} + \sum_K M_{ijK} + \sum_k M_{ijk} \frac{\Delta\left(P_{ijk} / P_{ijK}\right)}{P_{ijk} / P_{ijK}} \sigma_M} \tag{10}$$

Equation (10) can be simplified in the case of an EPA. As a result, the trade diverted in favour of the EU, represented by TD^{APE}, can be described by rewriting equation (10) above as:

$$TD^{APE} = \frac{M^{UE} M^{RDM} \left(\frac{1+t_{UE}^1}{1+t_{UE}^0} - 1\right) \sigma_M}{M^{UE} + M^{RDM} + M^{UE} \left(\frac{1+t_{UE}^1}{1+t_{UE}^0} - 1\right) \sigma_M} \tag{11}$$

where M^{UE} and M^{RDM} are the current imports, for a given region, from the EU and the rest of the world, respectively; t_{UE}^1 and t_{UE}^0 are the customs duties on products from the EU at the beginning and the end of the period, with $t_{UE}^1 < t_{UE}^0$. The term σ_M represents the substitution elasticity between the imports from the EU and those from the rest of the world, in a given region.

The WITS database comes from different sources, the main one being COMTRADE and TRAINS. It has been complemented by EUROSTAT data and, where possible, by national data.

The WITS-SMART model does not enable an assessment of the impact of social well-being because it does not measure the producers' well-being. In relation to the increase in imports in goods from the EU, certain goods are intermediate goods; that

is, those that can be used at a lower cost in the production system. In such a situation, the benefit will go to the producers from Niger, who will record a significant drop in their costs. Unfortunately, the WITS-SMART model does not enable us to measure the benefit that producers get.

All in all, these statistical models have limitations. In particular, they do not take into account the dynamic effects arising from a change in trade policy. Therefore, the limitation of the modelling based on partial equilibrium does not enable us to capture the "second round" effects (the details of this model concerning the tariff revenue and the effect on well-being appear in Annex A8.

6. Empirical Results

The significance of the results and the relevance of the analysis that ensues when the WITS-SMART model has been used depends on many things, among them trade liberalization, the parameters used to determine the elasticity for import demand, the substitution elasticity, and the supply elasticity.

Calibrating the Elasticity Parameters

The WITS/SMART software contains elasticity values by default, which can be replaced by the values of the new user. In analyzing trade between ECOWAS and the EU, this study used the SMART default values. Thus, the values of the elasticity for the import demand of default values in SMART are the same for everybody, but can vary depending on the product. The current set comprises more than 100 distinct values that can be changed, but the elasticity value is unique for a given product irrespective of who the partner is.

The default elasticity for export supply used in this study has the value of 99 and is the same for all the partners. The default substitution elasticity in SMART is set at 1.5. This value can be modified, but it is unique for a given product (that is, the substitution elasticity is the same irrespective of who the partner is).

The main results that are analyzed in this study came from scenarios of the liberalization of Group A, B and C products. These scenarios were chosen because they were the most likely, unlike the scenario of total liberalization. This is because liberalization will never be total, and a schedule has already been set for liberalization to be effective for the products of Groups A, B, and C from 2011 until 2032.

Trade Creation and Diversion

The issue here was to identify the effects, in terms of trade flows, of an EPA on Niger. The WITS-SMART model enabled this study to distinguish the variations in import flows into Niger, country by country. The analysis showed that increase in imports from the EU varied depending on whether the liberalization concerned Group A products, Group B products, or the Group C ones. Table 1 indicates the level of trade creation and diversion as a function of type of trade liberalization.

Table 1: Trade creation and diversion in Niger when EPAs have been signed (US$ thousands)

	Net trade created	Diverted trade	Losses for African countries	Total gains for the EU
Liberalization of Group A, B, C products	22,590.92	-2,000.03	-10,148.881	34,739.828
Liberalization of Group A, B products	21,043.22	-1,891.91	-10,292.734	33,227.868
Liberalization of Group A products	12,305.27	-842.931	-4,888.063	18,036.267

Source: WITS-SMART simulations

The table shows that in the scenario of trade liberalization of Group A, B and C products, the increase would be US$ 34 million. For the EU as a whole, this corresponds to an increase of about 16% in its exports to Niger. These results are on the whole not so catastrophic, since they concern a more realistic scenario.

Changes in Trade Flows by Country

For Niger, it is important to know the different countries in the EU that would benefit most from EPAs. This kind of information can be useful in defining the negotiation strategy, since Niger must take into account the situation of its partners in the ECOWAS area in order to assess the gains deriving from the EPAs signed with the EU.

As Annex A4 shows, France is largely ahead of the other countries that will benefit from the opening of the Niger market, with a gain of close to US$ 20 million; that is, more than 57% of export gains for the entire EU. France is followed by Belgium, Germany, Italy, with export gains of 9.62%, 9.25% and 8.26%, respectively.

Impact of EPAs on Tariff Revenues

One of the key challenges related to Niger's signing the EPAs is the predictable fall in tariff revenues. This is because for Niger, the EU is a prime trading partner. Therefore, if there is no compensation for a significant drop in tariff revenues, this could negatively affect the financing of Niger's fight against poverty.

The simulations done in this study point to a revenue loss of US$ 24 million, resulting from liberalization of Group A, B and C products (a realistic scenario). The customs receipts in Niger amounted to CFAF 110.7 billion in 2008, that is about US$ 246 million at the time (National Institute of Statistics, 2009). A progressive liberalization would produce a revenue loss of US$ 12,367,100 on Group A products, US$ 23,466,870 on Group A and B products, and US$ 24,338,580 on Groups A, B and C products.

Revenue Losses by Group of Products

Using the WITS-SMART model, it is possible to identify the products that will suffer the heaviest loss in customs revenues when EPAs have been signed.

A first analysis of the Harmonized System 2 (HS.2), shows that revenue loss would mainly affect some industrial products. Annex A5 shows the products for which there

would be a significant revenue loss if tariffs on imports from the EU were abolished. In the figure, the products are identified for the HS. 2, a level that is little disaggregated. It would be interesting to disaggregate these results to the HS. 4 level so as to know more specifically the products for which trade liberalization would lead to a strong fall in tariff revenues.

The products in Chapter 63 of the HS (dust cloth and pieces of string made of textile material) seem to cause the biggest fall in tariff revenues (more than 22%). The other categories of products (those in the HS 84) for which there would be substantial losses in tariff revenues include nuclear reactors, boilers, electrical machinery and equipment, computers, telecommunications equipment (in the HS. 85), vehicles other than railway or tramway rolling stock (in the HS. 87), and articles of iron or steel (in the HS. 73).

In some cases, and for vehicles in particular, the revenue losses resulting from abolition of customs duties could be easily replaced by excise duties. For other goods, compensation for the revenue losses will have to take other forms (value added tax and consumer tax).

Impact of EPAs on Well-being in Niger

A description will be made here of the potential impact of EPAs on consumer well-being. Details will be given of the composition of the consumer well-being surplus. In theory, consumer surplus varies according to the level of initial tariffs and the demand elasticity for imported goods, especially those imported to substitute for those locally produced. The results of the simulations show that consumer surplus in Niger would increase by some US$ 2 million, a gain that is more than 12 times lower than the loss in tariff revenues (Annex A6).

Potential impact on Niger's production structures

This impact is analyzed through two main vectors, namely the fluctuations in the European exports to Niger and the fluctuations in Niger's exports to the rest of the ECOWAS countries.

Trade creation and production structures in Niger

The simulations done in this study enabled it to identify the products the imports of which from the EU would increase the most. It is possible that imports from the EU could have negative repercussions for the possible producers of the same products from Niger, to the extent that producers concerned could see their markets submerged by competition from Europe all of a sudden. While increased competition and a drop in prices are undeniably beneficial to the consumers, Niger could find it desirable to plan for transition spells for its domestic producers to enable them to modernize their production equipment and to better prepare for stiffer competition. This is a concern that has already been taken into account by ECOWAS, since this liberalization will be progressive. It is therefore useful to identify the categories of products that will suffer the heaviest import losses when EPAs have been signed.

Table 2: Categories of products that would record the highest increase in imports (in US$ thousands) following the liberalization of Group A, B and C products

HS. Chapter	Categories of products	Imports before EPAs in imports (US$ thousand)	Increase in imports (US$ thousand)	Fluctuations in imports in %	Proportion of total increase.
HS.63	Dust cloth, pieces of string, etcin textile materials in the form of scrap or articles	61,067.592	4,023.108	6.59	17.81
HS.84	"Nuclear reactors, boilers, machinery, & mechanical appliances, computers"	122,127.493	3,564.573	2.92	15.78
HS.85	"Equipment-machinery and electrical parts, telecommunications equipment, sound recorders, TV recorders"	49,818.973	2,726.018	5.47	12.07
HS.87	Vehicles other than railway or tramway rolling stock	41,655.882	1,947.893	4.68	8.62
HS.73	Articles of iron or steel	22,115.152	1,252.538	5.66	5.54
HS.19	Preparations of cereals, flour, starch or milk	19,757.2	737.113	3.73	3.26
HS.25	Salt, sulphur, earth and stone, plastering material, lime & cement	17,806.798	691.475	3.88	3.06
HS.11	Industrial casting materials	14,651.24	676.631	4.62	3.00
HS.17	Sugars & sugar confectionery	28,153.454	566.234	2.01	2.51
HS.90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments & accessories	15,774.335	505.205	3.20	2.24
HS.21	Edible preparations	9,368.554	501.188	5.35	2.22
HS.39	Plastics and plastic articles	11,772.076	465.268	3.95	2.06
Grand Total		537,490.54	22,590.92	4.20	100.00

Source: WITS-SMART simulations

Table 2 shows the HS chapters for which increase in imports will be the highest when EPAs have been signed. The HS.63, HS.84, HS.85, HS.87 and HS.73 chapters alone represent more than 59% of the increase in import value. In the prospect of protecting Niger's production structures, it is the production system that faces competition from those imports that will have to be protected.

Trade diversion to the detriment of the rest of the world in Niger

Trade diversion, as opposed to trade creation, can increase or reduce the overall amount of trade. Trade diversion is a phenomenon which happens, for instance, when in a free-trade area (FTA) efficient producers who are not members of the FTA are replaced by

less efficient producers. If an EPA between ECOWAS and the EU is taken as an example, trade diversion would happen if, because of the EPA, more efficient suppliers from the rest of the world were replaced by less efficient European producers. If one assumes the signing of an EPA leads to reduction in tariffs on imports from the EU without any change in tariffs on products from the rest of the world, the theory that underlies the SMART system will enable us to capture trade diversion.

The analysis done in this study has enabled it to assess trade diversion that the exports to Niger from the rest of the world would suffer, and to present this information country by country and product by product.

The table in Annex A7 presents the 16 products for which reduction in exports to Niger from the rest of the world will be the most significant when EPAs have been signed. The last line in the table gives the total amount of trade diversion for Niger for all the products (including those that are not mentioned in Table 2).

The Table Annex A7 shows that about half of trade diversion would concern mineral fuels and mineral oils (HS. 27). The other products for which the rest of the world would see their exports to Niger significantly reduce are cotton, threads, cotton-woven fabrics (HS. 52), tobacco and manufactured tobacco substitutes (HS. 24), industrial casting products (HS. 11), and articles of iron or steel (HS. 73).

Impact of a progressive liberalization of Group A, B, and C products

In conformity with the legal texts under discussion between ECOWAS and the EU, trade liberalization between the two economic blocs will be progressive. Group A products will be the first to be liberalized; they will be followed by Group B and then Group C products. Group D products are referred to as sensitive products and have thus been excluded from trade liberalization. Table 3 shows the trend in the increase in imports, as well as the revenue gains and losses arising from this liberalization.

Table 3: Trends in imports and revenue gains and losses following liberalization

Products	Liberalization Products of Group A	Liberalization of Group A &B Products	Liberalization of Group A, B& C Products
Imports of EU products (in US$ 000)	377,506.94	539,046.72	547,490.54
Increase in imports (in US$ 000)	1230,527	21,043.22	22,590.92
Consumer surplus (in US$ 000)	842.931	1,891.91	2,000.03
Tariff revenue losses (in US$ 000)	-1,2367.1	-23,466.87	-24,338.58
VAT on increased imports	2,338	3,998.2118	4,292.27518
Total revenues	6,292.30018	5,890.1258	6,292.30018

Source: WITS-SMART simulations

Overall, the figures in the "imports of EU products" row increase as one moves to liberalization of products in the other groups as well. So do the figures in the "increase in imports" row. The "consumer surplus" row represents the economic agents' surplus consumption related to the fall in the prices of the products imported from the EU, while the loss in revenues represent the abolition of the entry tax. It can be observed

that this loss increases as liberalization extends to more products. On the other hand, though, thanks to the increase in imports, the country can collect additional revenue in the form of VAT on certain products such as fuels. The total revenue is composed of consumer surplus and additional revenue in the form of VAT. The figures in the table show that, overall, this surplus is lower than the loss in total revenue.

The products that contribute most to the mobilization of tax receipts in the form of VAT are the following: cereals (HS. 10); rubbers and articles thereof (HS. 40); animal or vegetable fats, oils and waxes (HS.15); sugars and sugar confectionery (HS. 17); tobacco and manufactured tobacco substitutes (HS. 24); salt, sulphur, earth and stone, lime and cement, industrial casting materials (HS. 25); mineral fuels, oils, waxes, and bituminous materials (HS. 27).

Impact of a 35% Common External Tariff on the sensitive products

EPAs are perceived by producers from ECOWAS countries as a source of worry arising from the risk of seeing the volume of imports in food products from Europe increase to the detriment of the local industries and regional suppliers (Gallezot, 2006).

One component of the negotiations between ECOWAS and the EU concerns the application, to the sensitive products from the EU, of a Common External Tariff that is sufficiently high to protect an agricultural, agribusiness and industrial sector that is still embryonic and not well structured to face competition from the EU.

It should always be borne in mind that with trade liberalization between ECOWAS and the EU, there will not only be a diversion of the flow of exports from the rest of the world to ECOWAS to the benefit of imports from the EU, but also an inter-community trade diversion between ECOWAS countries, still to the benefit of imports from the EU.

Determining the sensitive products is part of the liberalization scheme, which distinguishes between four groups of products:
- Group D: the sensitive products that have been excluded from liberalization;
- Group C: the products whose liberalization has been delayed and will start in 2018 and span 15 years;
- Group B: the products whose liberalization of which started in 2013 and will span 15 years;
- Group A: the products that were to be liberalized immediately, that is as of January 2011, so as to enable the customs services to set in motion the new set of regulations and to check the observance of the liberalization clauses (ECOWAS, 2008).

Three criteria were taken into account when this liberalization scheme was designed: (i) the level of the initial customs duties (20%, 10% or 5%); (ii) the necessary transition between the liberalization of external trade and the adjustment of the production sectors to competition; and (iii) simplification (reduction by 5 points every five years) that would allow a better understanding on the part of the operators and would facilitate implementation by the customs services.

By considering the three exclusion thresholds and assuming the idea, for a limited number of products, of transforming customs duties into excise duties, we get the results summarized in Table 4.

Table 4: Number of sensitive tariff lines

Lists	Number of sensitive tariff lines		
	25% threshold	30% threshold	35% threshold
List I	1,070	1,280	1,542
List II	1,262	1,515	1,858

Source: [ECOWAS-] Workshop (2008)

The List II rests on the idea of replacing, for 17 products, customs duties by excise duties. Such a modification would be neutral for both the governments and the consumers. On the other hand, it would enable the inclusion, in the group of sensitive products (Group D), 316 additional tariff lines to the same volume of imports and at the 35% threshold.

In order to appraise ECOWAS's protectionist policy, simulation was done about imposing a 35% CET on the sensitive products (determined by ECOWAS) imported from the EU. Figure 1 shows the intra-community trade between Niger and the other ECOWAS countries when trade has been liberalized and a 35% CET imposed.

Figure 1: Distribution of ECOWAS countries' export losses and gains following the liberalization of Group A, B and C products and the adoption of a 5th band for Niger
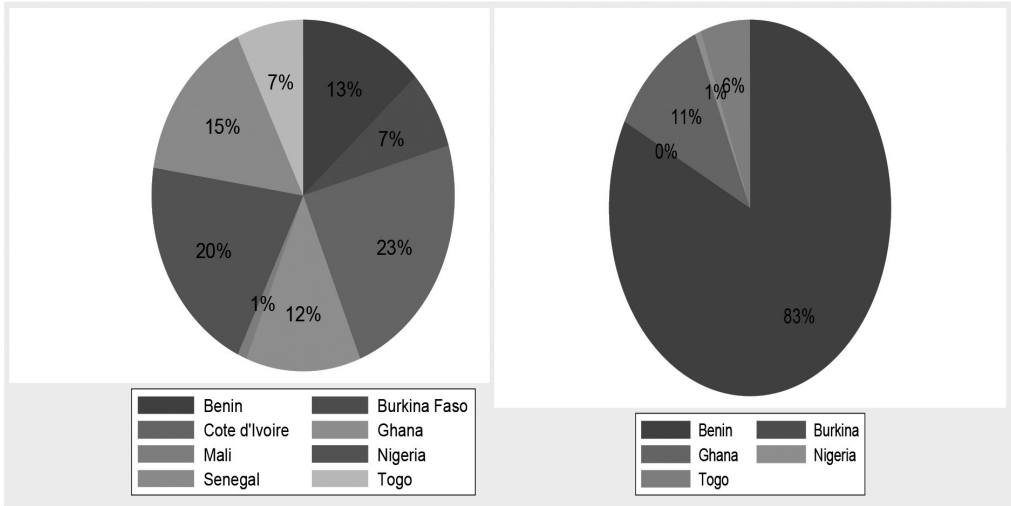
The figure shows that with liberalization of Group A, B and C products, Côte d'Ivoire will lose the largest share (23%) of its exports to Niger; the next big loser will be Nigeria (20%), and then Senegal (15%). After the institution of a 35% CET on sensitive products, Benin will gain the largest share (83%) of exports to Niger; the next big winner will be Ghana (11%).

7. Conclusions and Recommendations

The use of the partial equilibrium WITS-SMART model has enabled this study to analyze the consequences, for Niger, of the signing of EPAs between the EU and ECOWAS. They were analyzed in relation to trade creation and trade diversion, losses in tariff revenues, consumer well-being and Niger's production structures. The analysis has been possible because the WITS software allows one to determine the products for which the increase in imports is the most important in value.

With regard to trade creation, the first results indicate a net creation of trade of US$ 22.590 million in the scenario of liberalization of Group A, B, and C products. In this scenario, France would be by far the biggest beneficiary, with a 57% increase in trade; it would be followed by Belgium (9.62%) and Germany (9.25%). In this scenario, Niger can easily be encouraged to sign the EPAs and get the most of them, as the consequences on its public finances would be offset. However, the country would have to restructure its economic fabric using the support fund that would precede the signing.

In relation to the impact on tariff revenues and well-being, the study's analysis has shown that the net loss in revenues following liberalization of Group A products will be US$ 9,186,160. It will rise to US$ 17,576,744 with liberalization of Group A and Group B products, and to US$ 18,046,280 with the liberalization of Group A, Group B and Group C products. These results corroborate those found by Davenport (2003), Dupaigre et al. (2004), Faucheux et al. (2005), and PCI International Consulting (2004), in which the authors recommended that the EU should compensate the ECOWAS countries for their losses in tax revenues from customs duties. For Busse et al. (2004), this compensation should be higher for the least developed countries such as Niger than for the non-LDCs if the former are really to benefit from signing an EPA.

The impact on Niger of its signing of the EPAs between the EU and ECOWAS is relatively in favour of Niger's economy. This result corroborates the conclusions of Ben (2004).

Regarding the impact on production structures, a full analysis has been done of the products that would suffer the highest increase in import values following liberalization of Group A, B and C products. The results show that in the case of the protection of Niger's production structures, those that should be strongly protected are the textile producing factories, the companies producing milk and dairy products, and breweries. All these need to be protected because of the increase in imports in chapters HS.63 (dust cloth and pieces of string made of textile), HS.19 (preparations of cereals, flour, starch or milk), and HS.17 (sugars and sugar confectionery).
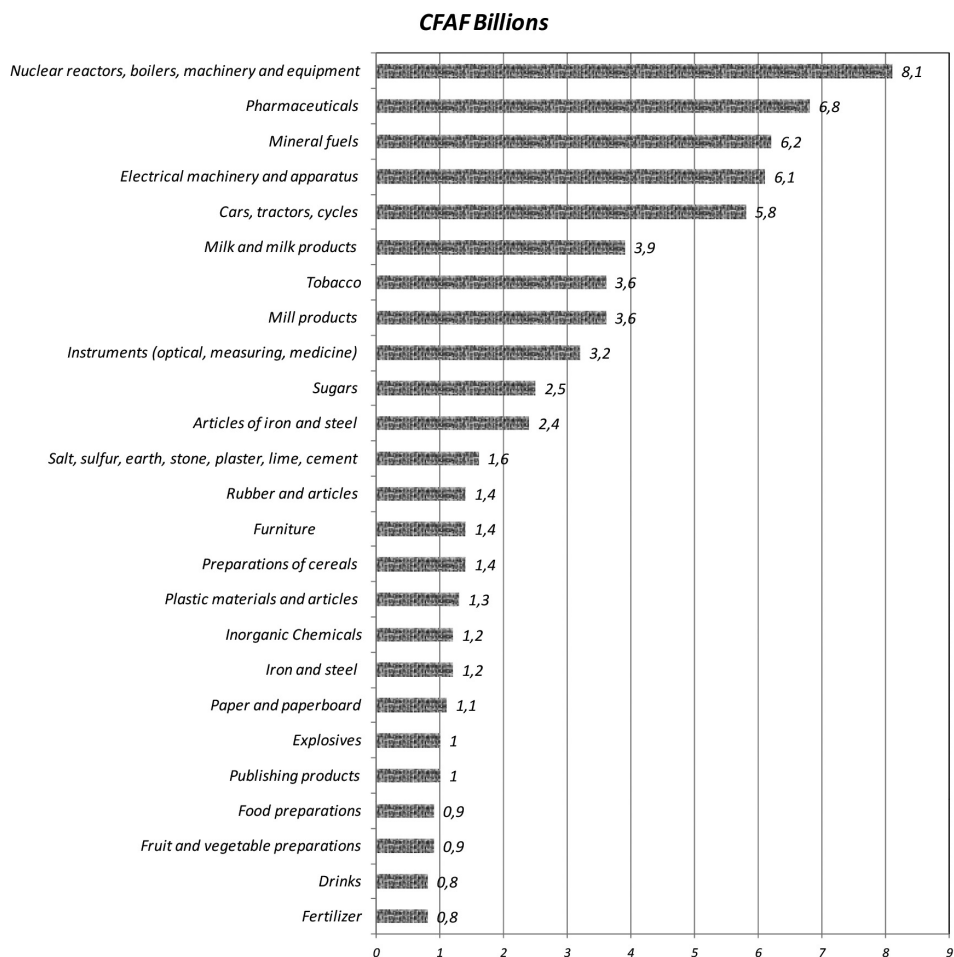
Therefore, when anticipating the future revenues from oil exploitation, it is essential for Niger to target the production sectors with a high value added, but which are not yet competitive owing to European competition. These sectors must be restructured so as to give a new boost to the country's export capacity to neighbouring countries.
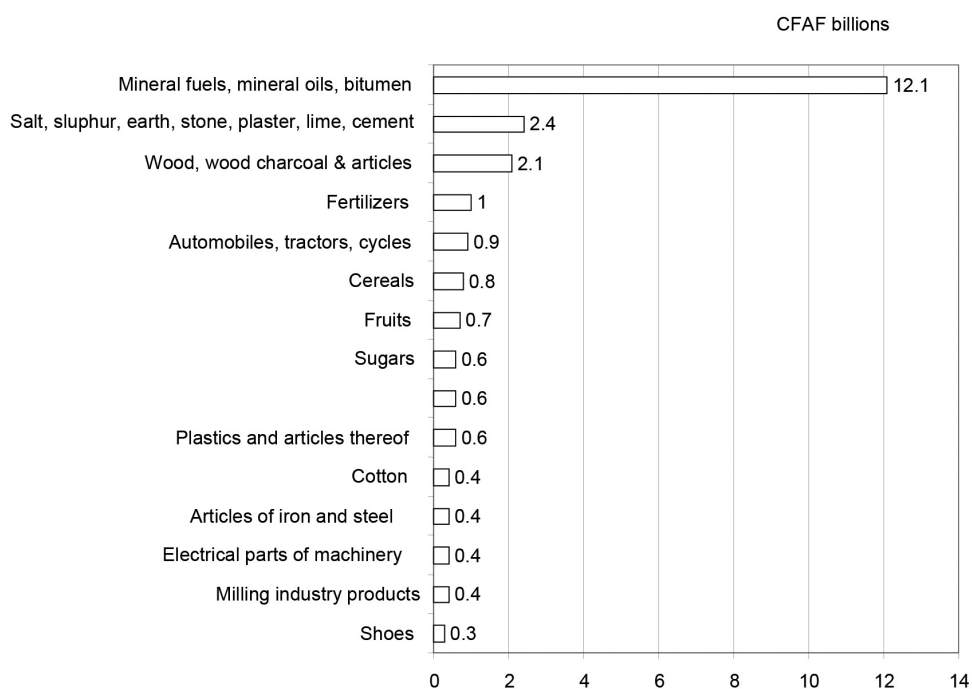
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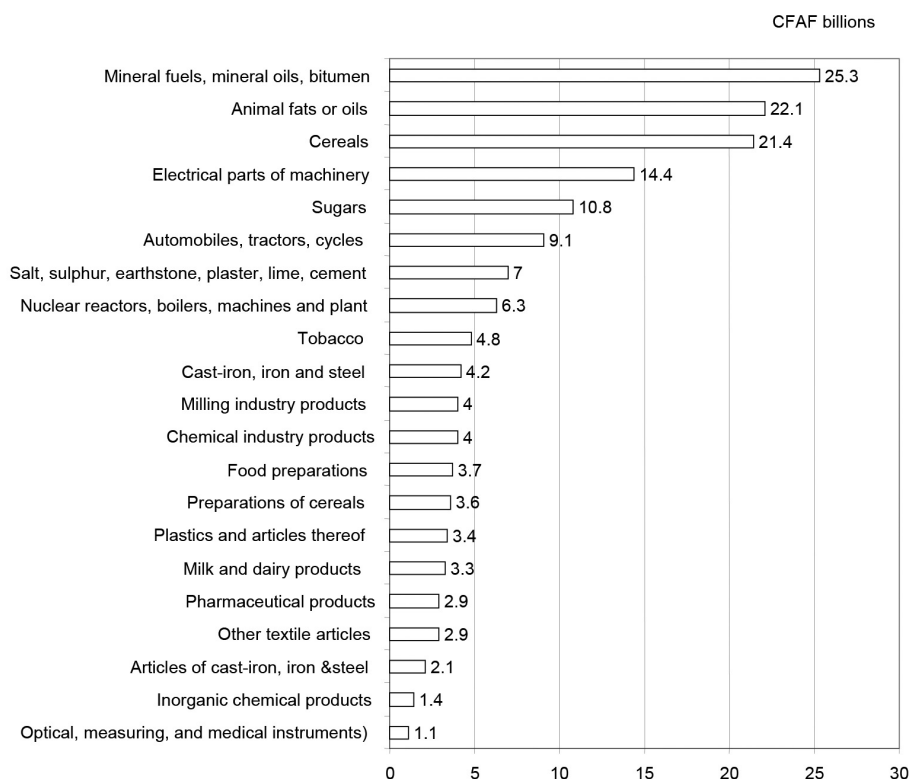
Annex A1: Distribution of Niger's main imports from the EU by chapter in 2003

CFAF Billions

Chapter	CFAF Billions
Nuclear reactors, boilers, machinery and equipment	8,1
Pharmaceuticals	6,8
Mineral fuels	6,2
Electrical machinery and apparatus	6,1
Cars, tractors, cycles	5,8
Milk and milk products	3,9
Tobacco	3,6
Mill products	3,6
Instruments (optical, measuring, medicine)	3,2
Sugars	2,5
Articles of iron and steel	2,4
Salt, sulfur, earth, stone, plaster, lime, cement	1,6
Rubber and articles	1,4
Furniture	1,4
Preparations of cereals	1,4
Plastic materials and articles	1,3
Inorganic Chemicals	1,2
Iron and steel	1,2
Paper and paperboard	1,1
Explosives	1
Publishing products	1
Food preparations	0,9
Fruit and vegetable preparations	0,9
Drinks	0,8
Fertilizer	0,8

Annex A2: Distribution of Niger's main imports from ECOWAS by chapter in 2003

CFAF billions

Category	CFAF billions
Mineral fuels, mineral oils, bitumen	12.1
Salt, sluphur, earth, stone, plaster, lime, cement	2.4
Wood, wood charcoal & articles	2.1
Fertilizers	1
Automobiles, tractors, cycles	0.9
Cereals	0.8
Fruits	0.7
Sugars	0.6
	0.6
Plastics and articles thereof	0.6
Cotton	0.4
Articles of iron and steel	0.4
Electrical parts of machinery	0.4
Milling industry products	0.4
Shoes	0.3

Annex A3: Distribution of Niger's main imports from the rest of the world (outside ECOWAS and the EU) by chapter in 2003

CFAF billions
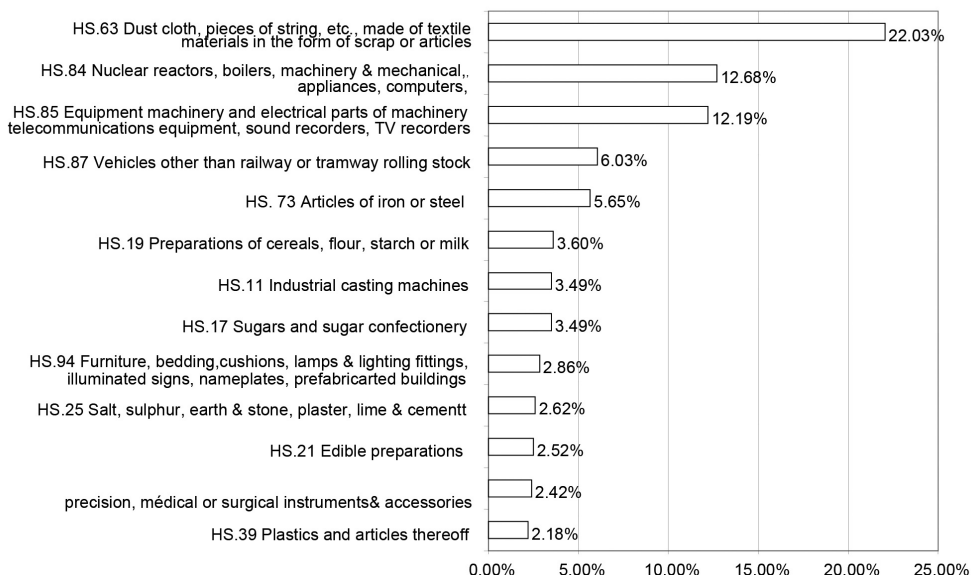
Category	CFAF billions
Mineral fuels, mineral oils, bitumen	25.3
Animal fats or oils	22.1
Cereals	21.4
Electrical parts of machinery	14.4
Sugars	10.8
Automobiles, tractors, cycles	9.1
Salt, sulphur, earthstone, plaster, lime, cement	7
Nuclear reactors, boilers, machines and plant	6.3
Tobacco	4.8
Cast-iron, iron and steel	4.2
Milling industry products	4
Chemical industry products	4
Food preparations	3.7
Preparations of cereals	3.6
Plastics and articles thereof	3.4
Milk and dairy products	3.3
Pharmaceutical products	2.9
Other textile articles	2.9
Articles of cast-iron, iron &steel	2.1
Inorganic chemical products	1.4
Optical, measuring, and medical instruments)	1.1

Annex A4: Distribution of the gains (in US$ thousands) which the EU will make from its exports to Niger following liberalization of Group A, B and C products

Exporter	Exports before EPAs	Exports after EPAs	Increase in exports	Proportion of the EU's total Increase %	Fluctuations In exports. in %
Austria	112.896	149.834	36.938	0.11	32.72
Belgium	16,184.77	19,526.81	3,342.05	9.62	20.65
Czech Republic	488.576	522.247	33.671	0.10	6.89
Denmark	3,178.69	3,661.72	483.032	1.39	15.20
Estonia	0.535	0.639	0.104	0.00	19.44
Finland	271.731	287.626	15.895	0.05	5.85
France	135,504.90	155,323.53	19,818.63	57.05	14.63
Germany	19,830.38	23,044.40	3,214.02	9.25	16.21
Greece	7.73	9.82	2.09	0.01	27.04
Hungary	227.215	267.83	40.615	0.12	17.88
Ireland	1,027.64	1,127.65	100.004	0.29	9.73
Italy	10,002.63	12,870.76	2,868.14	8.26	28.67
Lithuania	188.935	242.63	53.695	0.15	28.42
Luxemburg	177.248	241.375	64.127	0.18	36.18
Malta	440.462	520.065	79.603	0.23	18.07
Netherlands	4,059.21	5,031.95	972.735	2.80	23.96
Poland	608.03	724.063	116.033	0.33	19.08
Portugal	208.811	287.859	79.048	0.23	37.86
Slovakia	383.803	433.948	50.145	0.14	13.07
Spain	8,662.59	10,844.71	2,182.12	6.28	25.19
Sweden	2,283.03	2,686.37	403.342	1.16	17.67
United Kingdom	5,642.41	6,426.22	783.803	2.26	13.89
Total EU	**209,492.22**	**244,232.048**	**34,739.828**	100.00	16.58

Source: WITS-SMART simulations

Annex A5: Losses in tariff revenues following liberalization of Group A, B and C products

Product	%
HS.63 Dust cloth, pieces of string, etc., made of textile materials in the form of scrap or articles	22.03%
HS.84 Nuclear reactors, boilers, machinery & mechanical,. appliances, computers,	12.68%
HS.85 Equipment machinery and electrical parts of machinery telecommunications equipment, sound recorders, TV recorders	12.19%
HS.87 Vehicles other than railway or tramway rolling stock	6.03%
HS. 73 Articles of iron or steel	5.65%
HS.19 Preparations of cereals, flour, starch or milk	3.60%
HS.11 Industrial casting machines	3.49%
HS.17 Sugars and sugar confectionery	3.49%
HS.94 Furniture, bedding,cushions, lamps & lighting fittings, illuminated signs, nameplates, prefabricarted buildings	2.86%
HS.25 Salt, sulphur, earth & stone, plaster, lime & cementt	2.62%
HS.21 Edible preparations	2.52%
precision, médical or surgical instruments& accessories	2.42%
HS.39 Plastics and articles thereoff	2.18%

Annex A6: The products that will produce the highest consumer surplus when the EPAs have been signed

Products	Consumer surplus (in US$ thousands)	% of total surplus	Cumulative %
HS.11 Industrial casting machines	87.102	4.36	4.36%
HS.12 Grains / misc. cereals / med. plants / straw	24.139	1.21	5.56%
HS.18 Cocoa and preparations of cocoa	105.666	5.28	10.85%
HS.20 Preparations of vegetables, fruits, nuts, etc.	25.675	1.28	12.13%
HS.21 Miscellaneous food preparations	38.38	1.92	14.05%
HS.25 Salt, sulphur, earthstone, plaster, lime and cement	21.537	1.08	15.12%
HS.38 Miscellaneous chemical products	22.113	1.11	16.23%
HS.49 Printed books, newspapers, pictures, manuscript and typed texts, and plans	34.636	1.73	17.96%
HS.63 Dust cloth, pieces of string, etc., made from textile material, in the form of scrap or articles	595.798	29.79	47.75%
HS.72 Cast-iron, iron and steel	20.483	1.02	48.78%
HS.73 Articles of iron or steel	120.179	6.01	54.78%
HS.82 Metal tools and spoons	21.01	1.05	55.84%
HS.83 Miscellaneous articles of base metal	21.399	1.07	56.91%
HS.84 Nuclear reactors, boilers, machinery &mechanical appliances, computers	162.94	8.15	65.05%
HS.85 Equipment machinery andparts of electrical equipment, telecommunications. equipment, sound recorders, television recorders	205.346	10.27	75.32%
HS.87 Vehicles other than railway or tramway rolling stock	104.297	5.21%	80.53%
HS.90 Optical, photographic, cinématographic, measuring, checking, precision, medical or surgical Instruments or accessories	21.156	1.06%	81.59%
HS.93 Arms & ammunition, parts & accessoires	22.402	1.12%	82.71%
HS.94 Furniture,bedding, cushions, lamps & lighting fittings, illuminated signs, nameplates and the like,prefabricated buildings	46.992	2.35%	85.06%

Source: WITS-SMART simulations

Annex A7: Trade diversion to the detriment of the rest of the world in Niger following total liberalization

HS. Chapter	Categories of products	"Exports to ECOWAS before EPAs (US$ thousands)"	"Reduction in exports (US$ thousand"	Drop in exports si)nn %	Proportion of the total drop
HS.27	Mineral fuels, mineral oils, products of their distillation	41,069.078	-2042.557	-4.97%	48.02%
HS.52	52 Cotton, yarns, and woven fabrics thereof	6,053.445	-400.57	-6.62%	9.42%
HS.24	Mineral fuels, mineral oils, products of their distillation	20,087.02	-205.963	-1.03%	4.84%
HS.11	52 Cotton, yarns, and woven fabrics thereof Tobacco and manufactured tobacco substitutes Industrial casting products	2,027.88	-191.961	-9.47%	4.51%
HS.73	Articles of iron or steel	2,476.059	-169.976	-6.86%	4.00%
HS.72	Cast-iron, iron and steel	10,838.593	-98.723	-0.91%	2.32%
HS.63	Other articles of made textiles	911.308	-84.402	-9.26%	1.98%
HS.39	Plastics and articles thereof	3547.505	-74.934	-2.11%	1.76%
HS.19	Preparations of cereals, flour, starch or milk	2,992.665	-72.908	-2.44%	1.71%
HS.85	Machinery, electrical appliances and materials, and parts thereof	977.585	-72.399	-7.41%	1.70%
HS.94	Furniture,bedding, cushions, lamps & lighting fittings, illuminated signs,nameplates and the like, prefabricated buildings	1,119.162	-62.917	-5.62%	1.48%
HS.34	Soap,scouring products, lubricating preparations, artificial waxes, prepared waxes,	6587.045	-47.669	-0.72%	1.12%
HS.33	Oils &resinoids; perfumery, cosmetic or toilet products	647.515	-47.356	-7.31%	1.11%
HS.48	Paper & paperboard; articles of paper pulp or cardboard	1021.472	-37.594	-3.68%	0.88%
HS.84	Nuclear reactors, boilers, machinery and mechanical appliances, computers	679.858	-36.181	-5.32%	0.85%
HS.22	Beverages, alcohols and vinegar	922.755	-33.589	-3.64%	0.79%
Total		175,366.425	-4,253.44	-2.43%	100%

Source: WITS-SMART simulations

Annex A8: Trade effects

The overall trade effects can be calculated by adding up the effects on trade creation and those on trade diversion. As suggested by Laird & Yeats (1986), the sum of equations (8) and (10) for a given country can be done through products and/or sources. It is equally possible to compute the sum total for a group of importers of a given product or a group of products, as well as for a single supply source or a group of suppliers.

Effect on tariff revenues

Quantifying the effect on tariff revenues by using the WITS/SMART model is relatively easy. In theory, the tariff revenue is obtained by computing the product of the taxation rate (tariff rate in this case) and the tax base (the import value). Thus, before the variation in the ad valorem equivalent of the (tariff and non-tariff) trade barriers, the equation for the revenue is the following:

$$R_0 = \sum_i \sum_k t_{ijk}^0 P_{ijk} M_{ijk}$$

After the variation in tariffs, the new tariff receipts can be calculated using the following equation:

$$R_1 = \sum_i \sum_k t_{ijk}^1 P_{ijk} M_{ijk}$$

The revenue losses arising from implementation of an Economic Partnership Agreement correspond to the difference between the two values and can be calculated using the following equation:

$$R = \sum_i \sum_k \Delta t_{ijk} P_{ijk} M_{ijk}$$

(12)

Effect on well-being

As in the case of the effect on tariff revenues, computation of the effect on well-being is easy. This effect corresponds to the difference in variations that is equivalent to the variations in the general equilibrium. Basically, the effect on well-being mainly comes from the benefits that the consumers in the importing country get from lower import prices. In Mckay et al. (2005), the effect on well-being was measured by the increase in import consumption. This means that consumers replace the more expensive local or imported products by the cheaper imported ones, since the latter will have benefited from a tariff reduction. The increases in imports produce a net gain in well-being for the consumers, as measured by the following equation:

$$w_{ijk} = 0.5 \left(\Delta t_{ijk} \Delta M_{ijk} \right)$$

(13)

The 0.5 coefficient is the average of the effect of trade barriers before and after their elimination/reduction. Equation (13) assumes that the export supply elasticity is infinite. When this is not the case, the import prices in the importing countries will fall at a lower proportion than that of the fall in customs barriers. As a result, while the equation can be used to measure the effect on well-being, it is no longer only a representation of the consumer surplus but it also integrates some elements of the producer surplus (Laird and Yeats, 1986).

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