Trade Preferences in the EU Sugar Sector: Winners and Losers

Leena Kerkelä[1]*

Ellen Huan-Niemi[2]*

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Abstract

The ongoing trade negotiations, unilateral trade concessions and obligations under the WTO are pushing the EU sugar regime to undertake reforms. These reforms will alter the positions of developing countries in the global sugar markets. Gradual changes within the tariff rate quotas in the EU sugar regime would have a very marginal impact on the flow of sugar exports to the EU and world sugar markets as well. The simulation results showed that the scheduled changes in tariff rate quotas and transition period are stalling the impacts of tariff liberalisation granted by the EBA concession. Small concessions will not threaten the EU internal market, but total liberalisation of sugar imports from the LDCs will be a major threat to the EU sugar regime. Conversely, the EU would gain from the liberalisation scenarios in welfare terms due to cheaper imports of sugar. The current regime limits sugar imports from all developing countries or some efficient producers, if the cost data is a right estimate of the potential supply response from developing countries. The supply responses, which strongly affect the outcomes, are dependent on both the nature of substitution for sugar as well as on the efficiency of sugar production in different countries. The LDCs would be the major winners under the EBA concession supported by the unchanged EU sugar regime, but if the current regime is entirely liberalised, much of the gains are diluted due to the deterioration in the terms of trade and a few efficient sugar producers would be the winners. The multi-region general equilibrium framework (GTAP) is used for this analysis.

JEL classification: E17, F17, Q18

1. Introduction

The EU's leading position in the world sugar market is a result of domestic policy, not because of having a comparative advantage in sugar production. For a group of countries, access to the European market has been granted by preferences. Current policy plans, where trade preferences may be substantially eroded or even removed, may harm current beneficiaries by weakening their export performance and thus causing further difficulties in the process of integration into the world economy. This is especially true for small developing countries whereby sugar is the main export item and constitutes a large share of the national income. Full liberalisation of the EU sugar sector will most probably improve the market access for sugar exports of both developing and developed countries, but which countries are the winners is still an open question.

This paper will analyse the EU preferential market access for sugar and how changes in the EU sugar regime will affect the developing countries that are currently under preferential treatment. Sugar imports into the EU from the Least Developed Countries (LDCs) are expected to be totally liberalised from year 2009 onwards because of the "Everything But Arms" (EBA) concession. During the transition period until year 2009, the EBA concession is gradually granting quota preferences and partial duty-free access to sugar imports from the LDCs. Simultaneously, the temporary import quotas (Special Preferential Sugar/SPS sugar) given to the African, Caribbean and Pacific (ACP) countries are decreasing during the transition period.

The multi-region computable general equilibrium model (GTAP) is used for studying the changes in the global sugar markets. Partial equilibrium models are commonly used in the analysis of sugar policies [see e.g Devadoss and Kropf (1996), Borrell and Pearce (1999), Poonyth et al. (2000), and OECD (2003)]. This study is focusing on the unilateral trade liberalisation of the EU sugar sector. By using actual available data detailing the preferences

granted to developing countries under the EU sugar regime, gradual changes in the tariff rate quotas are analysed in a framework that takes into account the non-linearities in the tariff rate quota regimes [see also Mensbrugghe et al. (2003)]. The GTAP model is also used by Frandsen et al. (2003) to analyse the production quotas under the EU sugar regime and the impact of EU sugar policy reform on the EU-15 member states.
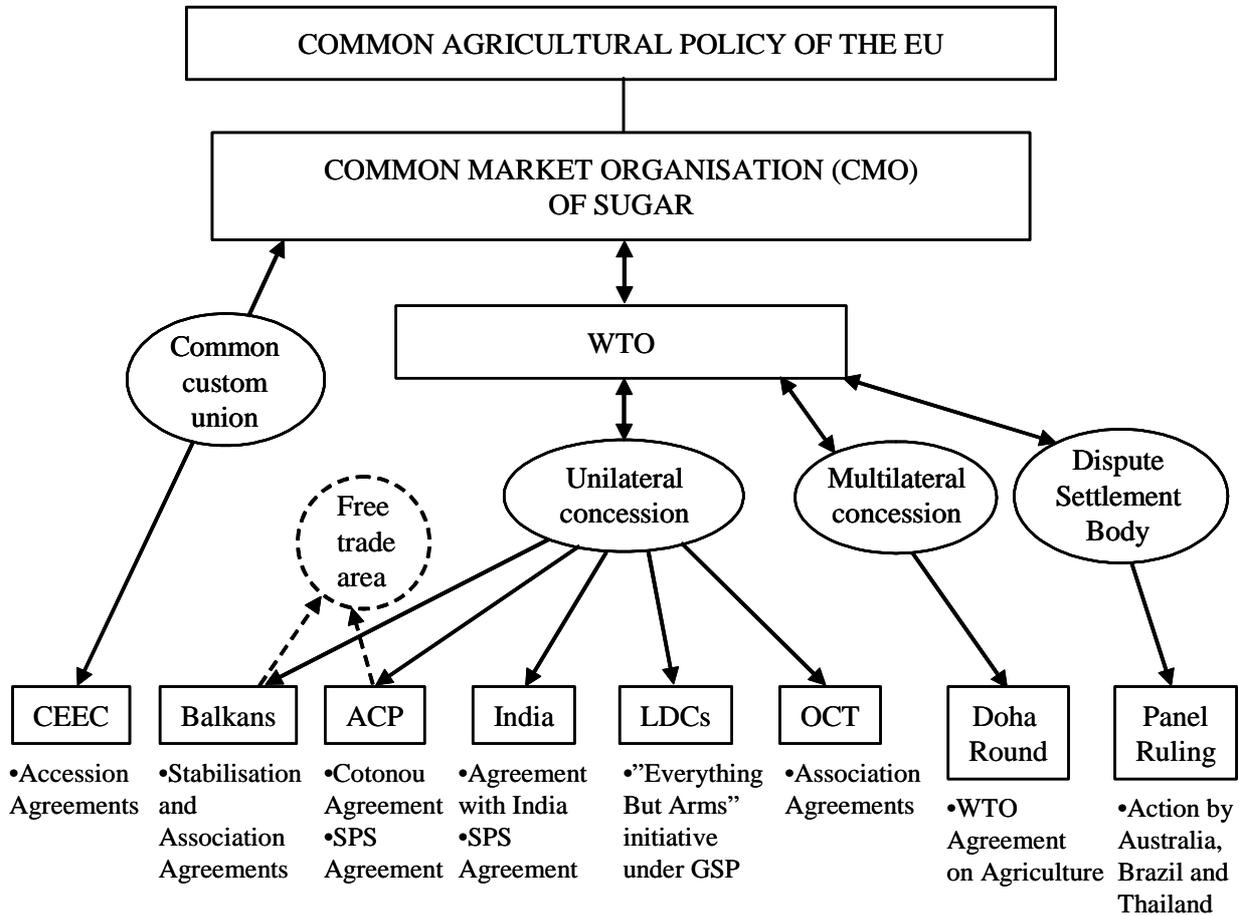
The distortions caused by tariff and non-tariff barriers can be shown by simulating a complete unilateral liberalisation of the EU sugar sector. The supply responses, which strongly affect the outcomes, are dependent on both the degree of substitution for sugar as well as on the efficiency of sugar production in different countries. This simulation will depict the winners and losers in the global sugar markets due to the complete liberalisation of the EU sugar regime.

2. The EU Sugar Sector, World Sugar Market and Trade Preferences

The EU is a major trader in the world sugar market being in the top three ranking of major producers, exporters and importers in the world (Appendix 1). The EU, Brazil, Australia, Thailand, and Cuba accounted for about 60% of world exports. The EU and Brazil are the dominators in the world sugar trade being the top producers and exporters in the world. However, the EU is also a major importer of sugar, but sugar imports in Brazil is negligible. The EU is unique in being both a major exporter of white sugar and importer of raw sugar in the world market.

Over the years, the EU has established a complex system of trade arrangements, which is reflected in the complex network of discriminatory tariffs through generalised and country-specific or region-specific trade preferences. The EU is applying different policies to different regions and trading blocs. The cobweb of trade arrangements in the EU sugar sector in regard to the unilateral, bilateral, regional, and multilateral trade agreements in concurrence with the EU enlargement is illustrated in Diagram 1.

Diagram 1. The EU sugar regime and trade agreements

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                    │     COMMON AGRICULTURAL POLICY OF THE EU       │
                    └──────────────────────────────────────────────┘
                                         │
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                    │        COMMON MARKET ORGANISATION (CMO)        │
                    │                  OF SUGAR                      │
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Common custom union

Free trade area

WTO

Unilateral concession

Multilateral concession

Dispute Settlement Body

CEEC	Balkans	ACP	India	LDCs	OCT	Doha Round	Panel Ruling
•Accession Agreements	•Stabilisation and Association Agreements	•Cotonou Agreement •SPS Agreement	•Agreement with India •SPS Agreement	•"Everything But Arms" initiative under GSP	•Association Agreements	•WTO Agreement on Agriculture	•Action by Australia, Brazil and Thailand

While the common market organisation (CMO) of sugar exhibits a high degree of protectionism,[3] the EU has granted a whole array of trade preferences for developing countries in sugar imports. Along with forming free trade areas, the EU is granting unilateral trade concessions to the Balkan countries and African, Caribbean, & Pacific (ACP) countries. Concessions are granted also to the Overseas Countries & Territories (OCT), Least Developed Countries (LDCs) and India. The EU is also actively engaging in the enlargement process with the Central and Eastern European Countries (CEEC) by forming a common custom union. The

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[3] Sugar is categorised as a sensitive product and has the highest tariff peaks for the imports of agricultural products into the EU market.

non-reciprocal trade preferences applied to the ACP countries are sanctioned by a waiver[4] obtained at the WTO during the Ministerial Conference in Doha and discrimination in favour of the LDCs is permitted. Trade preferences are at the heart of the EU sugar regime. Therefore, the EU sugar regime has been distorting the world sugar market for decades through its trade preferences and internal policies.

The EU sugar market is insulated from the world sugar market through a system of import duties and export refunds. The CMO of sugar supports producer prices at high levels above world market prices, stimulating production in the EU and resulting in exportable surpluses of sugar. Consequently, the EU has been distorting trade flows by disposing the sugar surpluses to the world market with export subsidies and indirect cross subsidies through a complex system of production quotas.

The EU is under increasing pressure and attack from low cost and efficient sugar producers for distorting world sugar trade. Australia, Brazil, and Thailand launched action in the WTO against the EU sugar regime on July 2003. These countries have claimed that EU exporters of "C sugar" (unsubsidised by export refunds) are able to export "C sugar" at prices below their production cost due to the cross-subsidy from the main "A and B" quota sugar with a high domestic price. Moreover, EU preferential imports of sugar from the ACP countries are re-exported with the help of export subsidies. On September 2004, a ruling was made at the WTO that "C sugar" exports are in contravention of the EU commitments on the amount of subsidised sugar exports allowed under the WTO. The WTO panel suggested that the EU should consider measures to bring its production of sugar more in line with its domestic consumption while fully respecting its international commitments with respect to the existing sugar imports from developing countries. Even though the EU made an appeal on this ruling at the WTO, this ruling was upheld by the Appellate Body of the WTO on April 2005.

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[4] The WTO waiver will lapse by 1 January 2008.

There is also pressure coming from the on-going WTO negotiations for further reduction in export subsidies, import tariffs and domestic support. The EU sugar regime has to conform to the new commitments made under the Doha Round in the future. As a result, future reforms made to the EU sugar regime should be able to meet the future commitments agreed under the Doha Round.

The EBA concession that allows quota and duty free imports from the LDCs is considered a threat to the EU's domestic sugar production. Therefore, the EU Commission made a formal proposal to reform the EU sugar sector in June 2005 (CEC, 2005). In the proposal, the intervention system for sugar will be abolished and replaced by a reference price set at 39 percent lower than the prevailing intervention price. EU farmers will be granted 60 percent of the estimated revenue loss for the price cut. The EU production quotas for sugar will remain and extend until 2014/2015. The existing "A" and "B" quotas will be merged. An additional amount of 1 million tonnes of quota will be made available to the current "C" sugar producing EU member states. Meanwhile, a voluntary and temporary restructuring scheme for the EU sugar industry will be implemented over a four-year period. The scheme will provide a high, degressive per-tonne restructuring aid, available to EU sugar factories which will be granted for factory closure and renunciation of their production quotas. Preferential imports from developing countries will continue, but the guaranteed price paid for preferential imports will drop significantly. This proposal is an indication that the EU is not willing to liberalise the EU sugar regime because the protection mechanism will remain intact without any proposal to change the prohibitive tariffs imposed on sugar imports.

2.1. EU preferential agreement with the African, Caribbean, and Pacific countries

In order to enhance trade's contribution to development, the ACP States and the EU decided to completely overhaul their previous trade relations. Whereas previous trade relations have been

primarily based on non-reciprocal trade preferences granted by the EU to ACP exports, both parties have agreed now to enter into economic integration agreements (new WTO compatible trading arrangements), progressively remove barriers to trade between them and enhance co-operation in all areas related to trade. Thus, formal negotiations of the Economic Partnership Agreements (EPAs) started in September 2002 and the EPAs will enter into force by 1 January 2008. The unilateral trade preferences will continue to be applied during the interim period of year 2000 to 2007.

Presently, 78 ACP countries are signatories to the Cotonou Agreement signed in June 2000: 48 African states, covering all sub-Saharan Africa, 15 states in the Caribbean and 15 states in the Pacific. Yet, only 19 ACP countries are signatories to the ACP/EU Sugar Protocol (Appendix 2). In the Sugar Protocol, the EU has pledged to import 1.3 million tons of sugar based on quotas from ACP countries at guaranteed prices on a duty-free basis. In addition, further market access is given through the temporary import quotas from the Agreement on Special Preferential Sugar[5] (SPS) with 17 ACP countries.

2.2. EU preferential agreement with the Least Developed Countries (LDCs)

The "Everything But Arms" (EBA) unilateral trade concession from the EU is intended to improve trading opportunities for the LDCs. All agricultural products are included in the concession. The EBA concession took effect on March 2001. The full liberalisation of sugar, rice

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[5] The SPS agreement with ACP countries was reached on 1 June 1995, and, like the ACP/EU Sugar Protocol, it is a government-to-government agreement, but unlike the Protocol, it is of a fixed duration and the ACP countries are jointly supplying the quantities of sugar covered by the SPS agreement. The current SPS agreement is for an initial period of six years, matching the duration of the new sugar regime (ending in June 2006) and the refiners' rights to refine raw sugar. The SPS sugar imports have been ranging from 344,000 tons in 1995/1996 to 217,000 tons in 2002/2003.

and bananas are phased in with a transition period.[6] The "duty and quota free" market access for sugar will only begin in year 2009. Nonetheless, in order to compensate for the delay in the full liberalisation of sugar, raw sugar[7] can be exported duty-free by the LDCs to the EU market within the limits of a tariff quota, which will be increased each year by 15% from 74,185 tons (white-sugar equivalent) in 2001/2002 to 197,355 tons in 2008/2009[8]. Only countries that have signed the Framework Agreement with the EU are eligible to receive these quotas during the transition period (Appendix 3). Though, this is not an indication that there will be additional imports flowing into the EU sugar market. The increase in sugar imports from the LDCs through this tariff quota will simultaneously decrease the imports of Special Preferential Sugar (SPS) from the ACP countries.

The EU Commission initially estimated that 2.7 million tons of sugar exports from the LDCs may enter the EU market by year 2009 (EBA 2000). From this total, 1.4 million tons would be from the substitution of domestic consumption from world sugar imports, while the domestic production of sugar is exported to the more lucrative EU market. Meanwhile, 1.3 million tons would come from the medium term enhancement of the LDCs production capacity in sugar. Later, the EU Commission gave a second estimation that sugar imports from the LDCs would gradually increase to 900,000 tons in the medium term (EBA 2001). The lower estimation is due to the infrastructure costs, constraints (in particular for land-locked producers), and unfavourable investment climate (including political stability) facing the LDCs at the moment. Most probably,

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[6] Duties on sugar will be reduced by 20% on 1 July 2006, by 50% on 1 July 2007 and by 80% on 1 July 2008 and eliminated by 1 July 2009. Duties on rice will be reduced by 20% on 1 September 2006, by 50% on 1 September 2007 and by 80% on 1 September 2008 and eliminated by 1 September 2009. Duties on fresh bananas will be reduced by 20% annually starting on 1 January 2002 and eliminated on 1 January 2006.

[7] The EU's minimum purchase price for the raw sugar from the LDCs is EUR 496.8 per ton.

[8] The current quota system guarantees both the volume imported as well as the price paid for the imported sugar to be above world market price, close to the EU intervention price.

it would take time before the LDCs would be able to overcome the existing infrastructure, logistic, marketing, quality, and other constraints, not to mention political instability (civil war or unrest) and economic mismanagement.

Preferential market access is very lucrative due to the current high price for EU domestic sugar, which is the guaranteed price paid to the LDCs sugar exporters. However, the forthcoming reforms on the EU sugar regime may have a major impact on the imports of sugar into the EU coming from the LDCs. A reduction in the price of EU domestic sugar will lead to lower export earnings for the LDCs. According to the EU Commission, one of the driving forces to reduce the EU domestic sugar price is to curb the influx of sugar coming from the LDCs. In order to avoid a major decline in the guaranteed price, the LDCs have offered to postpone the quota and duty free concession in the sugar sector in exchange for a significant increase in the sugar preferential quotas granted to the LDCs, thus extending the transition period to year 2019.[9]

3. Studying the changes in the EU sugar preferences by using the GTAP model

The multi-region and multi-sector general equilibrium model (GTAP) is used to analyse the changes made to the EU sugar preferences. The GTAP model and database are standard tools for analysis in the changing world of commodity markets.[10] The standard model assumes competitive environment where consumers and firms take prices of goods and factors as given. Different trade policies as well as domestic policies are implemented to the model and database as price wedges between different prices, e.g. the domestic and world market price. Exogenous changes like trade liberalisation affect the relative prices between regions and commodities and

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[9] Details of the proposal are available at the LDC Sugar Group website (http://www.ldcsugar.org).

[10] Applications and references to the model structure can be found at the GTAP project webpage; http://www.agecon.purdue.edu/gtap. Hertel and Tsigas (1997) describe the model. Dimaranan and McDougall (2002) describe the GTAP Database.

the behaviour of consumers and producers within economies to produce a new equilibrium to the economy. Different regions in the model are combined by bilateral trade flows in each commodity and the demand structure in foreign trade differentiates between commodities imported from different sources. This enables the equilibrium remain in non-specialized pattern of trade where substitution possibilities play a central role.

The GTAP Data Base 5.4[11] consists of 78 regions and 57 industries and can be aggregated to larger entities. In the simulations, the regions have been aggregated to 20 new regions by outlining the LDCs and ACP countries as detailed as possible (Table 1). The following are regions defined as ACP countries: Guyana/ Rest of South America (XSM), Central America & Caribbean (XCM), Zimbabwe (ZWE), Mauritius/Other Southern Africa (XSF), and Swaziland/Rest of South African Customs Union (XSC). The regions defined as the LDCs are Mozambique (MOZ), Malawi (MWI), Tanzania (TZA), Uganda (UGA), Zambia (ZMB), Rest of Sub-Saharan Africa (XSS), Bangladesh (BGD) and Nepal/Rest of South Asia (XSA). Many regions are originally aggregates of several countries, but exports of preferential sugar to the EU could come only from a single country from the region. For example, Rest of South African Customs Union (XSC) consists of Swaziland, South Africa, Namibia, and Lesotho, but Swaziland is the only country exporting preferential sugar to the EU from this region. The regions are labelled according to the preferential sugar exporters to the EU market. Thus, the region XSC (Rest of South African Customs Union) as a whole is only representing Swaziland.

The industries are aggregated into four main groups: sugar, agriculture, manufacturing and services. Sugar is seen as a single commodity consisting of raw and white sugar. The base year for the database is 1997. For some trade figures, the values are not compatible with the current situation. Instead of concentrating on the exact absolute levels, the relative changes in export levels are analysed.

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[11] The version 5.4. increases the number of countries compared to version 5.

Table 1. The regions in GTAP Data Base 5.4 have been aggregated to 20 new regions

No.	Code	Description	Group
1	EU	EU-15 members	Austria; Belgium; Denmark; Finland; France; Germany; United Kingdom; Greece; Ireland; Italy; Luxembourg; Netherlands; Portugal; Spain; Sweden.
2	EUE	EU-12 enlargement	Bulgaria; Czech Republic; Hungary; Malta; Poland; Romania; Slovakia; Slovenia; Estonia; Latvia; Lithuania; Cyprus.
3	XSM	Guyana/Rest of South America	Guyana; Paraguay; Surinam.
4	XCM	Central America, Caribbean	Anguila; Antigua & Barbuda; Aruba, Bahamas; Barbados; Belize; Cayman Islands;Costa Rica; Cuba; Dominica;Dominican Republic; El Salvador; Guatemala;Haiti; Honduras; Jamaica; Netherlands Antilles; Nicaragua; Panama; Saint Kitts & Nevis; Saint Lucia; Saint Vincent & the Grenadines;Trinidad & Tobago; Virgin Islands.
5	ZWE	Zimbabwe	
6	XSF	Mauritius/Other Southern Africa	Angola; Mauritius.
7	XSC	Swaziland/Rest of South African Customs Union	Lesotho; Namibia; South Africa; Swaziland.
8	IND	India	
9	MOZ	Mozambique	
10	MWI	Malawi	
11	TZA	Tanzania	
12	UGA	Uganda	
13	ZMB	Zambia	
14	XSS	Rest of Sub-Saharan Africa	Benin; Burkina Faso; Burundi; Cameroon; Cape Verde; Central African Republic; Cote d'Ivoire; Djibouti; Democratic Republic of Congo; Equatorial Guinea; Eritrea; Ethiopia; Gabon; Gambia;Ghana; Guinea; Guinea-Bissau; Kenya; Liberia; Madagascar; Mali; Mauritania; Mayotte; Niger; Nigeria; Rwanda; Sao Tome & Principe; Senegal; Seychelles; Sierra Leone; Somalia; Sudan; Togo.
15	BGD	Bangladesh	
16	XSA	Nepal/Rest of South Asia	Bhutan; Maldives; Nepal; Pakistan.
17	BRA	Brazil	
18	THA	Thailand	
19	AUS	Australia	
20	ROW	Rest of the World	Other countries in the world

Two different approaches are used to estimate the winners and losers in the changes made to the EU sugar trade preferences. The first approach is to look at the changes in trade flows into the EU. Trade flows give an intuitive picture of the effects on the producer side of the economy, especially when most of the production is allocated to exports. The second approach to indicate the winners and losers is an aggregate measure in regional welfare evaluated in US dollars. This regional equivalent variation (EV) is a traditional valuation for the consumption basket within the economies. The dollar values of current preferences are compared to these welfare gains /losses due to changing trade flows under different liberalisation scenarios. Often the change in gross domestic product (GDP) is used as an aggregate measure of gains or losses, but it is not applicable in this case because the data includes aggregates of several countries.

3.1. Tariff rate quotas in the EU sugar regime implemented to the GTAP model

The EU Sugar Protocol can be described as a tariff rate quota system. Tariff rate quota (TRQ) is a two-tiered tariff where lower in–quota tariff (t_{in}) is applied to the first Q units of imports and a higher over-quota tariff (t_{out}) to all subsequent imports (Figure 1, applied from Elbehri and Pearson 2000). The internal market price P_m is the world market price P_w plus the imposed tariff (t_{in}/t_{out}). The supply function S_t is a step function with two horizontal or increasing lines. The lower flat line represents the in-quota imports and extends from 0 to Q. The upper flat line represents the effective export supply function of over-quota imports and extends from Q to infinity. At the import volume Q there is a discontinuity: vertical line joins the in-quota and over-quota segments. Quota rent is the shadowed area below the demand curve (D_m). Lowering the higher over-quota tariff (t_{out}) may lead an exporting country to increase its exports beyond the given quota volume. The tariff rate quota is considered not binding when the over-quota tariff (t_{out}) is moving closer to the in–quota tariff (t_{in}). Hence, tariff rate quota is not a quantitative restriction compared to normal quotas (Skully 2001).

Figure 1. The tariff rate quota (TRQ) regime
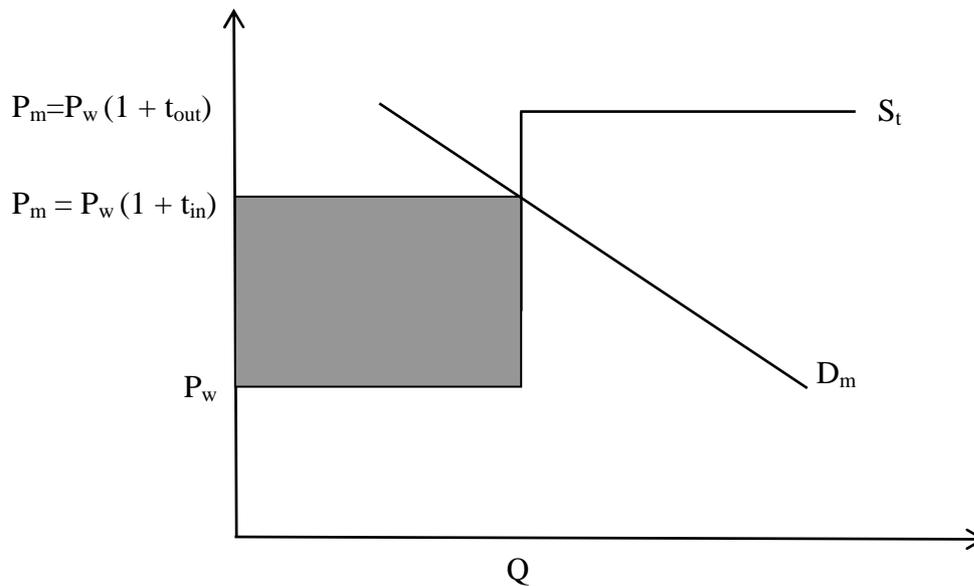
By using actual available data detailing the preferences granted to developing countries under the EU sugar regime, gradual changes in the tariff rate quotas are analysed in a framework that takes into account the non-linearities in the tariff rate quota regimes. The Elbehri and Pearson (2000) special software (TRQ software) tailored for analysing this kind of non-linearities in the supply responses is used for simulating the changes in tariff rate quotas.

All preferential sugar imports within quotas are duty-free, but the price paid for preferential sugar is either the EU intervention price for raw sugar or somewhat below. It is assumed that this higher price is treated as a quota rent accruing to the exporter. If the EU intervention price for raw sugar is EUR 523 per ton, the ACP countries received the intervention price for their exports, but the LDCs received a somewhat lower price – EUR 497 per ton. This implies a quota rent of 523 / 200 (= 161 ad valorem tariff) and 497 /200 (= 149 ad valorem tariff) respectively. The over-quota tariff rate is set at 169, which would be imposed on the additional exports beyond the tariff rate quotas of the exporting countries. Exports beyond the given tariff rate quotas do not receive the quota rents.

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Under the EU Sugar Protocol, the exporters receive the total quota rent because there is no in–quota tariff. Therefore, there is no incentive for additional exports beyond the quota because over-quota tariffs are very prohibitive. This system is very similar to the quantitative restriction of normal quotas. Can developing countries with high production costs currently adapt the structure of their sugar production when the preferential treatment and quotas are removed? Are these developing countries able to compete at world market prices without preferential treatment? The bias in the preferential system may have created sugar production in such countries where production is not profitable at world market prices.

Figure 2 depicts the quota rents under the EU Sugar Protocol for the 20 regions exporting sugar to the EU derived from the GTAP data with the assumptions above. The total quota rents amounted to USD 149.8 million. Under the current EU sugar regime, the largest quota rents accrued to Mauritius (USD 56 million), Central America/Caribbean (USD 39 million) and Guyana (USD 16 million). These quota rents can be regarded as an estimate of the accrued benefits due the current system or losses when the preferential system is removed. The benefits of the preferential quotas are the value differences between the high EU intervention price for the sugar exports to the EU market and the significantly lower world market price. These quota rents are compared to the expected welfare losses due to upcoming changes below.

The tariff rate quota system is applied to all preferential imports of sugar. Tariffs for non-preferential countries (Brasil, Thailand, Australia, Rest of the World) are set at 275 to include also the safeguard duties and other barriers to trade. For the new EU member states, tariffs between the EU-15 and new member states are removed and the external barriers for the new member states are adjusted to the same level as the EU-15.

Figure 2. Quota rents for the 20 regions totalling USD 149.8 million
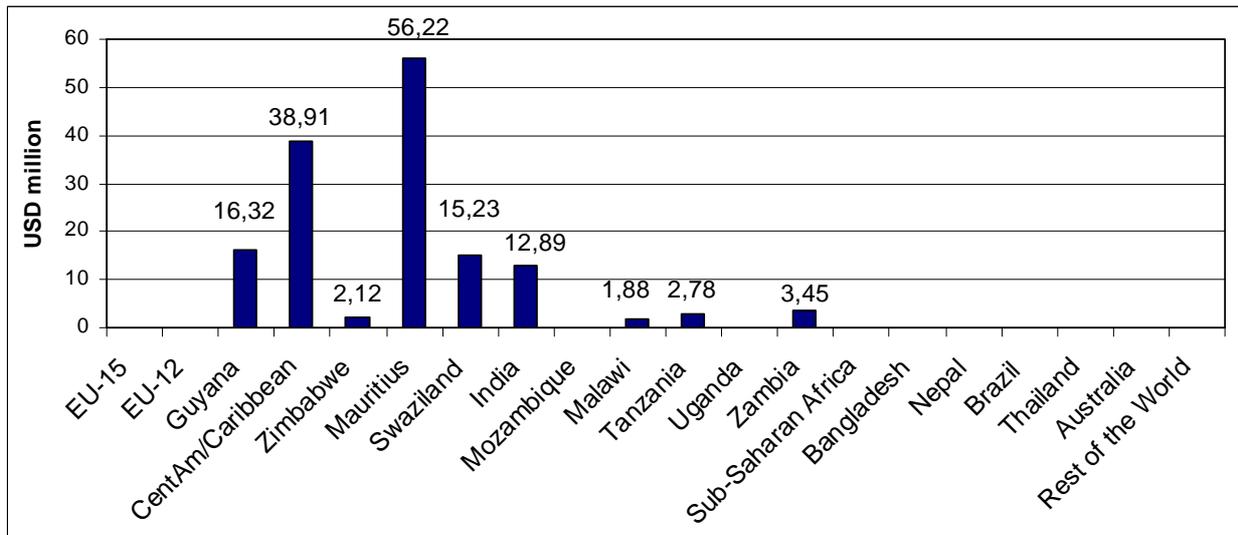
3.2. Scenarios for gradual changes in the tariff rate quotas and the unilateral liberalisation of the EU sugar sector

Under the Everything But Arms (EBA) concession, raw sugar can be exported duty-free by the LDCs to the EU market within the limits of a tariff rate quota. The changes in quota volumes and the price difference between the guaranteed price and the world market price are implemented in the TRQ software created by Elbehri and Pearson (2000). Only those LDCs (Appendix 3) that have signed the Framework Agreement with the EU are eligible to receive the increase in quotas. These countries or regions in the database are Mozambique, Malawi, Tanzania, Uganda, Zambia, Rest of Sub-Saharan Africa, Bangladesh, and Nepal (Rest of South Asia).

The preferential quota allocations by countries have been described as shares in Table 2 according to the ACP Protocol (Appendix 2) & Agreement with India, SPS (Special Preferential Sugar) quotas, EBA quotas (Appendix 3) and MFN quotas. In the simulations, it is assumed that each of the ACP countries and India faces a 15 percent annual decrease in their preferential quotas under the SPS quotas. It is also assumed in the simulations that the increase in new quotas

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(EBA quotas) is simultaneously negated by the decreasing amount of SPS quotas (e.g. Malawi or Tanzania). The new exporters of sugar to the EU under the Framework Agreement are Mozambique, Bangladesh, Nepal, Uganda, Burkina Faso, Ethiopia, and Sudan. For some countries, the given shock is calculated as a percentage shock based on the existing exports to the EU.

Table 2. EU imports of sugar classified to different types of tariff rate quotas

Calculated shocks according to the increasing and decreasing level of tariff rate quotas

		ACP Protocol	SPS	EBA	MFN	TOTAL	Calculated Shocks
XSM	Guyana	88 %	12 %			100 %	-9
XCM	CentAm/Caribbean	78 %	8 %	0 %	14 %	100 %	-6
ZWE	Zimbabwe	56 %	44 %			100 %	-32
XSF	Mauritius	92 %	8 %			100 %	-6
XSC	Swaziland	89 %	11 %			100 %	-8
IND	India	51 %	49 %			100 %	-35
MOZ	Mozambique			100 %		100 %	5194
MWI	Malawi	52 %	24 %	24 %		100 %	33
TZA	Tanzania	48 %	11 %	41 %		100 %	75
UGA	Uganda			100 %		100 %	306
ZMB	Zambia	0 %	59 %	41 %		100 %	41
XSS	Sub-Saharan Africa	35 %	25 %	40 %		100 %	64
BGD	Bangladesh			100 %		100 %	25066
XSA	Nepal			100 %		100 %	306

Source: ACP Sugar, authors' calculations

According to the EBA concession, "duty and quota free" market access for sugar begins from year 2009 onwards for the LDCs. Before tariff liberalisation, the current preferential quota system guarantees both the volume imported as well as the price paid for the imported sugar to be above world market price. In this study it is assumed that due to the increasing flow of sugar after tariff liberalisation, the EU cannot afford to pay the high intervention price for external sugar any more. After tariff liberalisation the EU will be forced to pay the prevailing world

market price for sugar imports. The standard GTAP software is used in the simulations. The base data resembles the situation in 2009, after all the quota changes have been made.[12]

The unilateral liberalisation of the EU sugar sector is divided into four scenarios. In the first scenario (EBA), tariffs for sugar are removed from imports coming from the LDCs to the expanded EU (EU-25). It is assumed that all the LDCs can fully adapt their production to the world market price, whereby the current quota restrictions on imports have prevented the expansion of production and exports to the EU.

In the second scenario (EBA & EPA), tariffs for sugar are removed from imports coming from both the LDCs and ACP countries to the expanded EU. This scenario is to assume that the EU would liberalise sugar imports from the ACP countries after liberalising sugar imports from the LDCs. Tariff liberalisation for sugar imports coming from the ACP countries would be possible under the Economic Partnership Agreements (EPAs) to form free trade areas with the EU. It is assumed that all the LDCs and ACP countries can fully adapt their production to the world market price, whereby the current quota restrictions on imports have prevented the expansion of production and exports to the EU.

In the third scenario (PERFECT), tariffs for sugar are removed from imports coming from all countries in the world. It is assumed that all countries can fully adapt their production to the world market price. This scenario will show the potential exports of all sugar exporting countries if all countries would have access to the EU sugar market.

In the fourth scenario (REAL), tariffs for sugar are removed from imports coming from all countries in the world, but the potential supply responses are based on the estimations of the

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[12] In the EBA concession and Economic Partnership Agreements, sugar is only one product out of a large class of product items. In this analysis, linkages to these other product items have been precluded. The linkages could dampen the responses for sugar production when resources are used for competing purposes. However, tariff peaks for sugar are so high that effects from sugar would anyway dominate the results.

countries' production costs for sugar. The higher the production costs, the smaller the supply response. The countries' position on the supply curve is dependent on their production costs for sugar. Countries with the lowest productions costs, but facing the highest tariff before trade liberalisation, are assumed to have the best market access when the EU sugar market is fully liberalised. The ranking of countries according to the production costs index [based on the countries' sugar production cost (field & factory)] is portrayed in Appendix 5. This production costs index is adapted to the current GTAP model. The actual shocks are implemented in the form of "virtual tariffs" (the higher the production costs, the higher the entry barrier). This scenario will show the potential exports of sugar exporting countries only if low cost sugar producers could adapt their sugar production and expand their sugar exports to the EU market.[13]

4. Simulation results for gradual changes in the tariff rate quotas and the unilateral liberalisation of the EU sugar sector

In general, the changes in trade flows follow directly with the changes in tariff rate quotas. Table 3 reports the changes in the flow of sugar exports to the EU after gradual changes within the tariff rate quotas.[14] The results are controversial for Mozambique and Bangladesh, though. These countries are given 5000 and 25000 percent shock to their export quota, respectively. The shocks are based on the evaluation and comparison of the current exports of sugar with the future

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[13] The GTAP model is a demand driven model. It is assumed in the model that the potential demand in the EU sugar market generated by trade liberalisation will be automatically fulfilled by the expansion of production in countries that are currently exporting sugar to the EU market. The model does not take into account the cost and production structure of the sugar exporting countries. The assumed "virtual tariffs" would represent the cost and production structure of the sugar exporting countries.

[14] In order to compensate for the delay in the full liberalisation of sugar under the EBA concession, raw sugar can be exported duty-free by the LDCs to the EU market within the limits of a tariff quota, which will be increased each year by 15% from 74,185 tons (white-sugar equivalent) in 2001/2002 to 197,355 tons in 2008/2009.

amount of sugar exports granted under the EBA preferential quotas. These countries are assumed to be unable to fulfil their preferential quotas.

Overall, the changes in the flow of sugar exports to the EU appear to be very marginal for the EU and world sugar markets as well. The results show actually a decrease in the imports of sugar into the EU. All current ACP exporters are losing market share in the European sugar market. The biggest losers are Zimbabwe and India with over 30 percent decrease in their sugar exports to the EU. The largest winners are Tanzania, Zambia and Malawi. The simulation results show that the scheduled changes in tariff rate quotas and transition period are stalling the impacts of tariff liberalisation granted by the EBA concession.

Table 3. Changes in the flow of sugar exports to the EU due to the alterations made within the tariff quota system

	Percent	USD million
Guyana	-8.49	-2.1298
Central America/Caribbean	-5.90	-3.1035
Zimbabwe	-31.80	-0.9739
Mauritius	-5.59	-4.5376
Swaziland	-7.70	-1.7351
India	-35.30	-5.9407
Mozambique	0.68	0.0006
Malawi	33.28	0.9534
Tanzania	75.17	3.1781
Uganda	0.68	0.0002
Zambia	40.58	2.1321
Sub-Saharan Africa	0.68	0.0621
Bangladesh	0.68	0.0001
Nepal	0.68	0.0681
Brazil	0.68	0.0101
Thailand	0.68	0.0021
Australia	0.68	0.0011
Rest of the World	0.68	0.2705
Total exports to the EU		-11.7421

The unilateral liberalisation of the EU sugar sector is divided into four scenarios: EBA scenario, EBA & EPA scenario, PERFECT scenario and REAL scenario. Table 4 shows the

sugar trade flows to the expanded EU (EU-15 and EU-12 together) from different countries/regions. If tariff liberalisation in the EU sugar regime is limited to the LDCs only under the EBA scenario, these countries would benefit the most. Duty and quota free market access for the LDCs would be at the expense of the ACP countries that do not belong to the LDCs category and other low cost sugar producing countries. However, it is assumed that all the LDCs can fully adapt their sugar production to the world market price without guaranteed market access or price. Also, necessary investments are available for these countries to expand sugar production in order to increase exports to the EU market. Infrastructure improvement is especially needed in land-locked countries to facilitate the increase of sugar exports to the EU.

Table 4. Sugar trade flows to the EU (USD million)

Regions	Partial Liberalisation		Full Liberalisation	
	EBA	EBA & EPA	PERFECT	REAL*
Guyana	-22	937	579	-16
Central America/Caribbean	-50	4715	2043	-46
Zimbabwe	-2	269	142	395
Mauritius	-75	1898	1263	-65
Swaziland	-20	2077	921	64
India	-11	-11	1167	0
Mozambique	54	10	4	2
Malawi	287	106	56	37
Tanzania	562	153	71	-6
Uganda	25	3	1	0
Zambia	256	104	62	217
Sub-Saharan Africa	5027	913	369	-5
Bangladesh	19	2	1	0
Nepal	2912	853	373	-9
Brazil	-1	-2	1939	11034
Thailand	0	0	347	43
Australia	0	0	487	58
Rest of the World	-43	-48	2879	-25
Total exports to the EU	8918	11979	12703	11677

* production cost data is incorporated into the shocks for REAL simulations

The EBA & EPA scenario, which includes tariff liberalisation for both the LDCs and ACP countries, would benefit the ACP countries the most. Countries not included in the tariff liberalisation process are the main losers in this scenario. Though, it is assumed that the ACP countries could fully adapt their sugar production to the world market price and extend their current sugar production significantly. This outcome may be unrealistic because many of the ACP beneficiaries are high cost producers. These high cost sugar producers may not be able to adjust their rigid production structures and dramatically increase their exports to the EU at world market price.

In the PERFECT scenario, where the EU sugar regime is liberalised for all countries, the greatest beneficiaries would be those countries whose current market access to EU have been restricted the most. The EU's protection is at the expense of other large sugar producers or exporters like India, Brazil, Thailand and Australia. In this scenario, the ACP countries are major winners as well because the model assumes that the ACP countries could fully adapt their sugar production to the world market price and extend their current sugar production significantly.[15] Hence, the assumption here is that the ACP countries' current market share in the EU is the base for the expansion in market share after market liberalisation in the EU sugar regime. However, the current market share of the ACP countries is guaranteed by tariff rate quotas and the price paid is much higher than the world market price. It is doubtful that the ACP countries can compete at world market prices without guaranteed market access due to preferential treatment.

In the REAL scenario, the benefits from the liberalisation of the EU sugar regime would accrue to a few countries like Brazil, Zimbabwe, Zambia, etc. Most of the current sugar

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[15] The model behaves as if the current tariff quota regime had prevented a large potential of demand to realize, thus curtailing the sugar exports of the ACP countries. This is not true because in reality the supply response is not perfectly elastic. Rather, the supply response is actually inelastic.

exporters from the ACP countries like Mauritius[16] may disappear from the EU market even though Mauritius has a strong presence in the EU sugar market due to the current preferential treatment granted by the EU. Most of the LDCs are losers under this scenario. The ultimate winner would be Brazil with almost 95% of the total sugar exports to the EU from all countries in the world.

Appendix 4A & 4B will also depict the winners and losers of EU's protection and tariff liberalisation for sugar. In all the tariff liberalisation scenarios, EU sugar exports would disappear from the global sugar markets. In terms of trade, the greatest loser would be the EU. EU sugar production would decrease the most (83%) under the PERFECT scenario with a total value of USD 31.5 billion. Even under the EBA scenario, EU sugar production would decrease by over USD 22 billion. Production of sugar in the EU would still decrease by 64% even though tariff liberalisation in the EU sugar regime is limited to the LDCs only.

On the other hand, the EU overall would gain from the liberalisation scenarios in welfare terms due to cheaper imports of sugar. The welfare effects are opposite compared to the trade effects in the case of the EU. Though, Guyana would be one of the countries that would lose both in welfare and trade terms due to the loss of preferences. An aggregate measure in regional welfare evaluated in US dollars is collected in Table 5 to show the winners and losers in welfare terms.

The losers under the REAL scenario are Guyana, Mauritius, India, Tanzania, Uganda, Sub-Saharan Africa, Bangladesh, Nepal and Rest of the World. For some of the countries/regions, there would be positive welfare gains even though the export flows are negatives. This is because the loss in export flows could be compensated by a more efficient resource allocation, i.e. Central America/Caribbean.

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[16] The simulations do not take into account the loss of quota rents to the ACP countries. Sugar exports can be an important source of income for some of the ACP countries.

The connection between welfare and trade can be illustrated by comparing the trade and welfare values. The LDCs would gain in terms of market access due to the EBA concession, but much of the gains are diluted due to the deterioration in the terms of trade under the total liberalisation scenario.

Table 5. The aggregate welfare effects (USD Million)

Regions	Partial Liberalisation		Full Liberalisation	
	EBA	EBA & EPA	PERFECT	REAL
EU-15	1582	4051	5119	2886
EU-12	-156	69	497	63
Guyana	-8	492	271	-24
Central America/Caribbean	55	2447	1028	73
Zimbabwe	-4	79	38	146
Mauritius	-13	537	320	-11
Swaziland	35	562	246	23
India	-39	-17	167	-28
Mozambique	65	5	3	5
Malawi	125	31	15	9
Tanzania	253	55	24	-4
Uganda	6	-2	-3	-2
Zambia	71	15	9	55
Sub-Saharan Africa	1552	212	53	-56
Bangladesh	-2	-4	-9	-6
Nepal	1098	233	85	-11
Brazil	137	106	799	4733
Thailand	23	33	96	23
Australia	31	32	120	31
Rest of the World	-4	-470	310	-919

4. Conclusions

Gradual changes within the tariff rate quotas in the EU sugar regime would have a very marginal impact on the flow of sugar exports to the EU appear and world sugar markets as well. The simulation results showed that the scheduled changes in tariff rate quotas and transition period are stalling the impacts of tariff liberalisation granted by the EBA concession. Small concessions will not threaten the EU internal market, but total liberalisation of sugar imports from the LDCs will be a major threat to the EU sugar regime. Conversely, the EU would gain

from the liberalisation scenarios in welfare terms due to cheaper imports of sugar. The welfare effects are opposite compared to the trade effects in the case of the EU.

The current EU sugar regime limits sugar imports from all developing countries or some efficient producers, if the cost data is a right estimate of the potential supply response from developing countries. Under the trade liberalisation scenarios, Guyana would be one of the countries that would lose both in welfare and trade terms due to the loss of preferences. The LDCs would gain in market access due to the EBA concession, but much of the gains are diluted due to the deterioration in the terms of trade under the total liberalisation scenario. The LDCs would be the major winners under the EBA concession supported by the current regime, but a few efficient sugar producers will be the winners if the current regime is entirely liberalised for all countries.

The full liberalisation of the EU sugar regime and the abolition of the preferential treatment in the EU sugar regime would change the position of the countries as winners or losers. The assumptions on the production and export possibilities of the sugar producing countries and the homogenous nature of sugar would create more losers than winners. For some of the losers, the loss of sugar exports could seriously damage their fragile economy. Therefore, the abolition or loss of preferential treatment is an important issue and hotly debated around the world.

Trade preferences have the potential of helping developing countries to promote self-sustained economic development and can substitute transfers in the form of direct financial assistance from developed countries to poor developing countries. The EU has maintained this development perspective by granting preferential access to the highly protected and subsidised EU sugar market with prices significantly above the world market prices. In the short run, any sudden changes in the EU regime and trade policies may cause severe problems for the poor currently employed in the export-oriented sugar industry of the developing countries. Compensation is needed for these affected people because of the adjustment costs due to the

changes in trade policies. In the long run, the sustainable export performance and economic development based on the comparative advantage of the developing countries should be the final objective. Though, the livelihood of the poor must be protected against sudden changes in trade policies in the effort to achieve the Millennium Development Goals.

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Appendix 1

Major sugar producers, importers and exporters: 2000-02 average (in raw sugar equivalents)

Main Producers		Main Importers		Main Exporters	
Country/regions	Mil.tonnes	Country/region	Mil.tonnes	Country/region	Mil.tonnes
Brazil	21.6	Russia	5.0	Brazil	11.9
India	20.7	European Union	1.9	European Union	6.2
European Union	17.3	Indonesia	1.8	Thailand	4.3
China	9.2	Japan	1.6	Australia	3.6
United States	7.6	Malaysia	1.5	Cuba	2.6
Thailand	6.5	Korea	1.5	India	1.5
Mexico	5.2	Nigeria	1.5	South Africa	1.3
Australia	5.1	United States	1.4	Columbia	1.3
Pakistan	3.9	Canada	1.2	Guatemala	1.1
Cuba	3.2	Algeria	1.2	Mauritius	0.5
All other	39.5	All other	27.1	All other	13.6
World	139.8	World	45.7	World	47.9

Source: F.O. Lichts International Sugar and Sweetener Report

Appendix 2

The import quota for raw sugar under the ACP/EU Sugar Protocol (19 countries)

ACP Countries	Agreed Quanitities (tons w.s.e.)
Barbados	50,312.4
Belize	40,348.8
Congo	10,186.1
Côte d'Ivoire	10,186.1
Fiji	165,348.3
Guyana	159,410.1
Jamaica	118,696.0
Kenya	0.0
Madagascar	10,760.0
Malawi	20,824.4
Mauritius	491,030.5
St Kitts & Nevis	15,590.9
Surinam	0.0
Swaziland	117,844.5
Tanzania	10,186.1
Trinidad	43,751.0
Uganda	0.0
Zambia	0.0
Zimbabwe	30,224.8
Total	1,294,700.0

Source: ACP Sugar Website

Appendix 3

The EBA import quota for raw sugar under the Framework Agreement (26 countries)

	2001/02	2002/03	2003/04	2004/05	2005/06
Angola	0	0	0	0	0
Bangladesh			8989	8282	6643
Benin	0	0	0	0	4238
Burkina Faso	7073	7238	7672	7374	5090
Burundi	0	0	0	0	0
Cambodia	0	0	0	0	0
Congo DRC	0	0	0	10831	8155
Ethiopia	14298	14689	15249	14264	11737
Guinea	0	0	0	0	3974
Haiti	0	0	0	0	0
Laos	0	0	0	0	0
Madagascar	0	0	0	6550	4742
Malawi	10402	10661	10959	10925	8076
Mali	0	0	0	0	4985
Mozambique	8332	8384	10117	9738	7731
Nepal	0	8970	8667	9191	7248
Niger	0	0	0	0	5118
Rwanda	0	0	0	0	0
Sierra Leone	0	0	0	0	5960
Senegal	0	0	0	0	4816
Somalia	0	0	0	0	0
Sudan	16257	17037	16979	17032	15214
Tanzania	9065	9317	9940	9493	7589
Togo	0	0	0	0	5980
Uganda	0	0	0	0	4979
Zambia	8758	9017	9538	9146	7475
TOTAL	74185	85313	98110	112826	129750

Source: ISO 2004

Appendix 4A Changes in the production of sugar (in percent)

Regions	Partial Liberalisation		Full Liberalisation	
	EBA	EBA & EPA	PERFECT	REAL*
EU-15	-63.84	-81.34	-83.31	-71.79
EU-12	-22.93	-53.35	-66.54	-55.5
Guyana	-10.17	675.6	419.21	-5.31
Central America/Caribbean	5.03	173.17	79.71	8.20
Zimbabwe	3.48	207.2	111.45	305.38
Mauritius	-41.22	1191.84	798.11	-32.44
Swaziland	2.71	282.02	129.04	17.88
India	0.51	0.23	5.85	0.23
Mozambique	236.36	60.14	35.87	28.43
Malawi	2124.61	781.53	416.53	272.27
Tanzania	131.07	36.5	17.56	-0.47
Uganda	21.73	3.80	2.03	1.40
Zambia	890.71	362.66	215.94	753.84
Sub-Saharan Africa	201.07	41.12	20.69	10.02
Bangladesh	2.53	0.51	0.59	0.75
Nepal	74.47	22.47	10.44	0.43
Brazil	3.35	3.74	18.57	90.30
Thailand	6.25	7.68	20.82	8.48
Australia	5.22	8.38	36.85	11.07
Rest of the World	2.11	3.18	8.73	2.93

* production cost data is incorporated into the shocks for REAL simulations

Appendix 4B Changes in the production of sugar (in USD million)

Regions	Partial Liberalisation		Full Liberalisation	
	EBA	EBA & EPA	PERFECT	REAL*
EU-15	-20638	-26297	-26933	-23208
EU-12	-1585	-3687	-4598	-3835
Guyana	-15	1027	637	-8
Central America/Caribbean	141	4840	2228	229
Zimbabwe	7	389	209	573
Mauritius	-90	2613	1750	-71
Swaziland	24	2474	1132	157
India	105	47	1217	49
Mozambique	49	13	8	6
Malawi	312	115	61	40
Tanzania	595	166	80	-2
Uganda	35	6	3	2
Zambia	398	162	96	337
Sub-Saharan Africa	6435	1316	662	321
Bangladesh	30	6	7	9
Nepal	2790	842	391	16
Brazil	528	589	2924	14223
Thailand	157	193	524	213
Australia	110	176	775	233
Rest of the World	1316	1983	5446	1829

* production cost data is incorporated into the shocks for REAL simulations

Appendix 5

The ranking of countries according to the production costs index based on the countries' sugar production cost (field & factory) from numerous sources

Production Cost Index (EU average = 100)

cane sugar producer

beet sugar producer