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TRADE PREFERENCES IN THE EU SUGAR SECTOR: WINNERS AND LOSERS

Leena Kerkelä*
Ellen Huan-Niemi**

Valtion taloudellinen tutkimuskeskus
Government Institute for Economic Research
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* VATT, P.O. BOX 1279, FIN-00101 Helsinki, FINLAND, leena.kerkela@vatt.fi

** MTT Agrifood Research Finland, Economic Research, Luutnantintie 13, FIN-00410 Helsinki, FINLAND, ellen.huan-niemi@mtt.fi

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Valtion taloudellinen tutkimuskeskus

Government Institute for Economic Research

Arkadiankatu 7, 00100 Helsinki, Finland

Email: etunimi.sukunimi@vatt.fi

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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. This paper will describe the trade preferences granted to developing countries under the EU sugar regime. 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) given to the African, Caribbean and Pacific (ACP) countries are assumed to be decreasing during the transition period. Within this background, a complete unilateral liberalisation of the EU sugar sector is simulated to depict the winners and losers in the global sugar markets if no preferences are governing the imports of sugar into the EU. 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 multi-region general equilibrium framework (GTAP) is used for this analysis. The results show that 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. 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 LDCs will be the 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.

Key words: EU sugar regime, WTO, market access, tariffs, preferential, regional, multilateral, trade agreements, ACP countries, least developed countries.

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Tiivistelmä: Käynnissä olevat neuvottelut maailmankaupan vapauttamisesta, EU:n myönnytykset kehitysmaille sekä sitoumukset WTO:ssa aiheuttavat uudistuspaineita nykyiselle EU:n sokeripolitiikalle. Nämä uudistukset tulevat muuttamaan kehitysmaiden asemaa sokerin maailmankaupassa. Tässä työssä kuvataan EU:n sokeripolitiikkaan liittyviä kehitysmaiden kauppaetuuksia eli preferenssejä. EU:n antaman EBA-myönnytyksen (Everything but Arms, Kaikkia paitsi aseita) ansiosta vähiten kehittyneiden LDC-maiden sokerin tuonnin oletetaan vapautuvan kokonaan vuodesta 2009 lähtien. Siirtymävaiheen aikana EBA-myönnytys sallii tuontikiintiöetuudet sekä osittain tullittoman sokerin tuonnin LDC-maista. Väliaikaisten SPS-tuontikiintiöiden, joita EU on myöntänyt AKT-maille (Afrikan, Karibian ja Tyynenmeren etuusvaltioille), oletetaan samanaikaisesti vähenevän. Tätä taustaa vasten arvioidaan tilannetta, jossa EU yksipuolisesti vapauttaisi sokerimarkkinoiden kaupan. Tutkimus osoittaa voittajat ja häviäjät tilanteessa, jossa etuudet eivät säätelisi EU:n sokerin tuontia. Lopputulokseen vaikuttavat merkittävästi eri maiden tarjontareaktiot, jotka taas riippuvat niin sokerin korvattavuudesta kuin tuotannon tehokkuudesta eri maissa. Analyysissa on hyödynnetty usean alueen yleisen tasapainon mallia (GTAP). Tulokset osoittavat, että pienet myönnytykset eivät uhkaa EU:n sisämarkkinoita, mutta täydellinen sokerin tuonnin vapauttaminen LDC-maista on merkittävä uhka EU:n sokeripolitiikalle. Nykyinen järjestelmä rajoittaa sokerin tuontia kaikista kehittyvistä talouksista ja joistakin kehittyneistä maista, jos kustannusdata on luotettava arvio tarjontareaktioille. LDC-maat hyötyvät nykyisen politiikan yhteydessä EBA-myönnytyksistä, mutta muutamat tehokkaat sokerin tuottajat ovat voittajia, jos koko EU:n sokeripolitiikka vapautetaan.

Asiasanat: EU:n sokeripolitiikka, maailman kauppajärjestö(WTO), markkinoillepääsy, tariffi, EU:n kauppasopimukset, yksipuoliset myönnytykset, vapaakauppasopimukset, AKT-maat, vähiten kehittyneet maat.

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Contents

1. Introduction

The issue of preferential market access for developing countries has long been a subject of interest among international trade economists (Panagariya 2000, Bhagwati et al. 1998). As an option, preferential market access for developing countries is to improve market access for developing countries due to the high tariffs for certain sectors in the developed countries. Still in practice, the greatest access is often granted for primary products with low value added, whereas high value added and processed products are protected by tariff escalation. The most common argument against trade preferences is that preferences to one set of developing countries come at the expense of other developing countries. For the developing world, the multilateral trade liberalisation within the World Trade Organization (WTO) as well as bilateral trade liberalisation within free trade areas, pose a threat in the form of preference erosion. This is partly why, in a world of prevailing distortions, trade liberalisation does not necessarily benefit the poorest but may come at their expense (Panagariya 2004).

Highly protected markets of the developed countries are extremely lucrative markets for developing countries with preferential market access, especially when the domestic market price in the developed countries is significantly higher than the world market price. A good example is the EU sugar sector. The EU is a net exporter of sugar partly due to over production and preferential market access granted to developing countries, thus making the EU a leading exporter and importer in the world sugar market (Appendix 1). The EU's leading position in the world sugar market is a result of domestic policy and not because of having a comparative advantage in sugar production. 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. 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 this preferential treatment. The multi-region computable general equilibrium model (GTAP) is used for studying the changes in the global sugar markets. The GTAP model and database have become standard tools for analysis in the changing world of commodity markets. The general equilibrium models

take into account the alternative possibilities of using resources within economies. This dampens the effects of policy changes but considers the adjustment possibilities of other sectors. This can be seen as an extension compared to the partial equilibrium models that give a more accurate picture of production constraints and details of single commodities.

Partial equilibrium models are commonly used in the analysis of sugar policies. These models are applied in studies done by Devadoss and Kropf (1996), Borrell and Pearce (1999), Poonyth et al. (2000), and OECD (2003). These papers study the impacts of multilateral trade liberalisation in the global sugar markets either gradually or fully. The results from these papers have shown the effects of multilateral trade liberalisation on the EU sugar sector. As a complement to these papers, 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. This approach is also used by Mensbrugghe et al. (2003) to analyse sugar markets in OECD countries by fully implementing tariff rate quotas in a computable general equilibrium (CGE) model. 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.

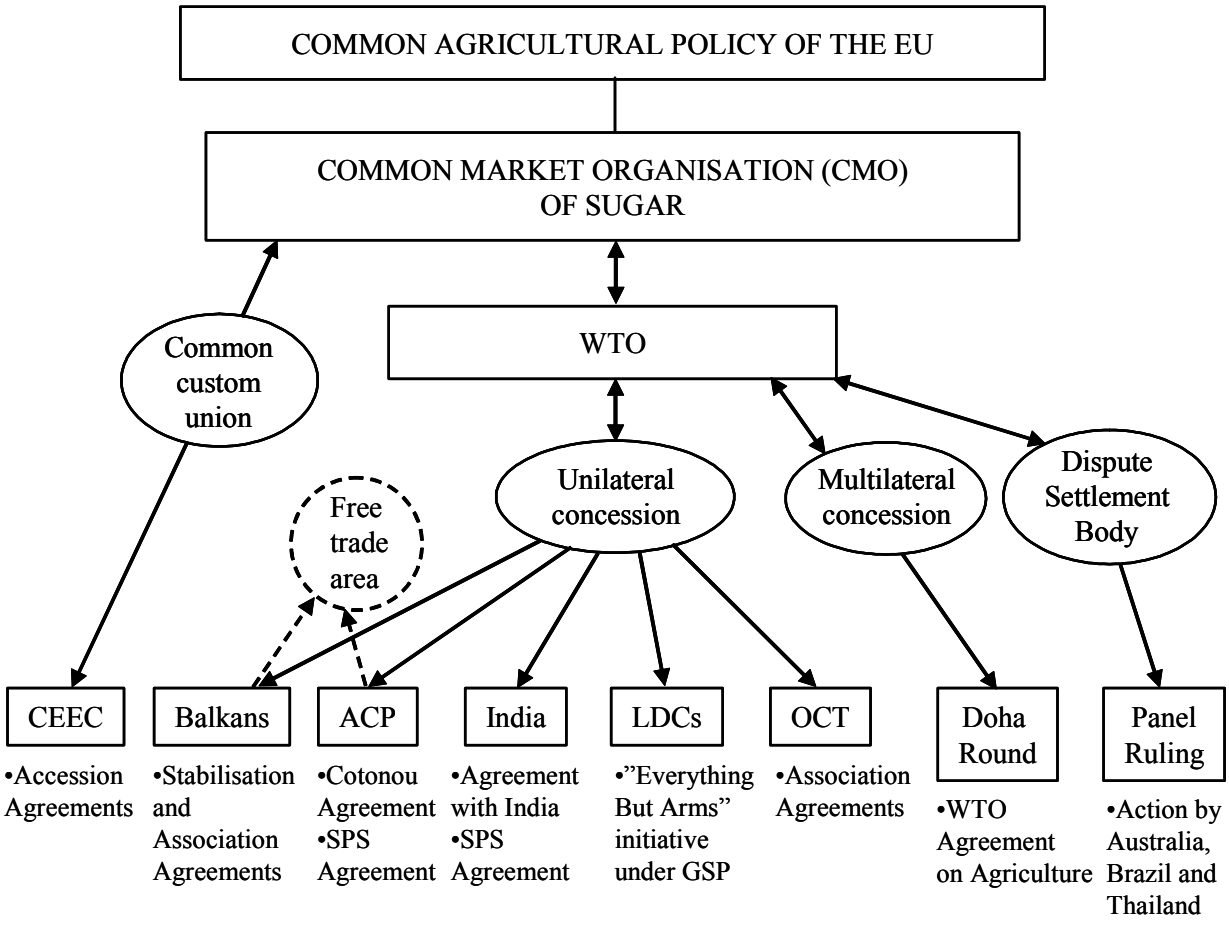
This paper will initially describe the trade preferences granted to developing countries under the EU sugar regime. Sugar imports into the EU from the Least Developed Countries (LDCs) are expected to be totally liberalised from year 2009 onwards because of the "Everything But Arms" (EBA) concession. 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 assumed to be decreasing during the transition period. Within this background, the extent of current distortions is estimated 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's position as one of the world's top exporters and importers of goods and services is testimony to the significance of the EU as a market for its trading partners, especially for the developing countries. Except for the agriculture and textiles markets, the EU has maintained its markets largely open in pursuing trade liberalisation through multilateral, regional and bilateral initiatives. According to a report by the WTO (2002), the EU's (previous 15 member states) overall simple average Most Favoured Nation (MFN) tariff was estimated at 6.4% for 2002. The simple average applied tariff on manufactured goods or non-agricultural products was 4.1%. However, the simple average tariff on agricultural products was at 16.1%, which was almost four times higher than the tariff for non-agricultural products. Thus, protection is prevalent and high in the internal markets for EU agricultural products due to the EU Common Agricultural Policy (CAP). Tariff peaks are common in sensitive agricultural commodities like sugar, and these prohibitive tariffs prevent any imports beyond the trade preferences given to developing countries.

Notice should be taken that the EU's MFN treatment applies only to a few countries in the world. The EU grants preferential market access to most of its trading partners for some or all imports. Only 9 WTO Members are subject to exclusively MFN treatment in all product categories: Australia, Canada, Chinese Taipei, Hong Kong, China, Japan, Republic of Korea, New Zealand, Singapore, and the United States. Meanwhile, these countries accounted for 45.2% of EU's total merchandise imports in year 2001 (WTO 2002). Hence, these countries are the key trading partners for the EU. For other trading partners, the most beneficial treatment is granted to the Least Developed Countries (LDCs) and the Overseas Countries & Territories (OCT), followed by the African, Caribbean, & Pacific (ACP) countries and countries having concluded free-trade agreements with the EU, and then countries simply under the Generalized System of Preferences (GSP). Nevertheless, the LDCs and ACP countries are marginal trading partners for the EU, but the EU is an important trading partner for these countries owing to preferential access in the EU markets. Panagariya (2002) has described the EU's preferences as a spaghetti-bowl partly due to their obscuring nature. 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



While the common market organisation (CMO) of sugar exhibits a high degree of protectionism,[1] the EU has granted a whole array of trade preferences for developing countries. The EU is planning to establish free trade areas with the Balkan countries and African, Caribbean, & Pacific (ACP) countries. At the same time, the EU is granting unilateral trade concessions to these countries, in addition to concessions granted 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. 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

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

different policies to different regions and trading blocs. Thus, the EU sugar trade policy has deviated from the non-discriminatory principle of the WTO. On the other hand, the non-reciprocal trade preferences applied to the ACP countries are sanctioned by a waiver[2] 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.

2.1. The EU sugar regime, world sugar market and pressures for reform

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 CMO of sugar has established minimum support prices for sugar guaranteed by an intervention purchase system. A production quota system was established to limit the total quantity eligible for price support.[3] The EU sugar producers (growers and processors jointly) are responsible for paying the full costs to the EU Budget of surplus quota sugar disposal[4] through the producer levies. There are two types of quota: A and B. The major difference between A and B quota sugar is the level of imposed producer levies. Only quota sugar can be sold in the EU and is eligible for price support through the intervention mechanism and export refunds. Sugar produced in excess of the A and B quotas is called C sugar and cannot be marketed in the EU. C sugar has to be sold on the world market without the support of export refunds/export subsidies. Thus, the quota system limits the supply of sugar in the internal EU market (CAP MONITOR).

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

[3] The EU's intervention price for raw sugar is EUR 523 per ton. The world market price for raw sugar (New York No. 11) has been between the ranges of EUR 110 to 200 per ton.

[4] EU sugar is exported with the help of export refunds that amounted to as high as EUR 530 per ton in January 2004 due to a strong Euro.

The EU is a major trader in the world sugar market. The EU is 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.

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.

There is also pressure coming from the on-going WTO negotiations for further reduction in export subsidies and import tariffs. 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[5] to reform the EU sugar sector on July 2004.

[5] The intervention system for sugar will be abolished and replaced by a reference price set at one third lower than the prevailing intervention price. The EU production quotas for sugar will be reduced by 2.8 million tons. The A and B quotas will be merged, while existing arrangements for C sugar will remain. The national quotas will be transferable between EU member states. Subsidised sugar exports will fall to 400, 000 tons. Preferential imports from developing countries will continue, but the guaranteed price paid for preferential imports will drop by more than one third.

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

According to the EU Commission (DG Trade 2004), the EU trade with the ACP countries in 2002 totalled over EUR 58 billion with EU imports totalling EUR 30.5 billion and EU exports totalling EUR 28 billion. For most of the ACP countries and virtually all African ACP countries - the EU is the main trading partner. In 2001, trade with the EU represented 31% of total ACP exports (35% of total African ACP exports) and 29% of total ACP imports (37% of total African ACP imports). 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.

Preferential treatment for the ACP countries has far reaching historical roots. Most of the ACP countries are former colonies of the EU member countries. When the EU was formed, the overseas dependencies of Belgium, France, Italy, and the Netherlands were given associated status. These dependencies gained independence in the 1960s, but continued to maintain close economic links with the EU through the Yaounde Conventions and the Arusha Agreement. When Denmark, Ireland and the United Kingdom joined in 1973, it was agreed that the developing countries of the British Commonwealth, except those in Asia should receive similar associated status. In 1975, the EU entered into a new contractual agreement known as the Lomé Convention with 46 ACP countries, followed by Lomé II in 1979 with 58 ACP countries, Lomé III in 1984 with 65 ACP countries and Lomé IV in 1989 with 68 ACP countries, extended in 1995 to 70 ACP countries.

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[6] (SPS) with 17 ACP countries.

The import quotas given to the ACP countries are clearly above the minimum 5 percent market access level required under the Uruguay Round Agreement on Agriculture. During the Uruguay Round, the standard tariffs and additional import duties under the "Special Safeguard Provisions" have mostly prohibited the imports of non-preferential sugar. Only a very small amount of non-preferential sugar is imported. Even after the enlargement of the EU,[7] the minimum market access under the Uruguay Round commitments will not increase EU sugar imports. Likewise, even if the required market access is increased and doubled to the level of 10 percent in the forthcoming WTO agreement on agriculture, there is no requirement for the enlarged EU to increase the prevailing level of sugar imports because the preferential quotas for the ACP countries plus other sugar imports are still more than 10 percent of the EU-25 total consumption in sugar. Hence, the EU is able to prevent further imports of sugar that remain outside its preferential agreement with the ACP countries and other developing countries.

[6] 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.

[7] Under the WTO rules, third countries have to be compensated for their market access in the countries that are joining a common custom union like the EU, if the third countries' "current access" in the markets of the accession countries is jeopardised due to the common custom union. The CEE countries were importing sugar not only from the former EU and new member states, but also from third countries like Brazil, Guatemala, Nicaragua, Mexico, Cuba, and Australia. The potential "current access" quotas for third countries are estimated to be about 490 thousand tons in the enlarged EU-27 sugar sector (Huan-Niemi and Niemi 2003). However, the "current access" of third countries can be compensated in other ways than allocating sugar import quotas. For example, ethanol import quotas or import quotas for other commodities/manufactured products could be given instead of sugar (or even monetary compensation).

2.3. EU preferential agreement with the Least Developed Countries

The United Nations has denominated "Least Developed Countries" a category of countries (50 countries in December 2003) that are deemed structurally handicapped in their development process since 1971. In response to the socio-economic weaknesses of the LDCs, the United Nations grants these countries a special favourable treatment in the allocation of resources under its relevant co-operation programmes. At the same time, the organisation gives a strong signal to the other development partners of the LDCs by periodically identifying these countries and highlighting their structural problems, thereby pointing to the need for special concessions in their favour, especially in the area of development finance and in the multilateral trade framework.

In year 2002 (WTO 2003), the EU is the largest merchandise exports destination for Africa (USD 66.4 billion), followed by North America (USD 23.8 billion), and Asia (USD 4.4 billion). The EU is the most important single market for the LDCs. According to the EU Commission (DG Trade 2003), the LDCs merchandise exports to the EU totalled EUR 13.1 billion in 2002, which amounted to 35% of LDCs exports to the world (EUR 37.9 billion).

The "Everything But Arms" (EBA) unilateral trade concession from the EU is intended to further improve trading opportunities for the LDCs. All agricultural products are included in the concession, which is in contrast with the original GSP concession to the LDCs that focused on manufactured products. Although market access of the LDCs in the EU had a wide coverage of products before the EBA concession, a further 919 agricultural products (tariff lines at HS 8-digit level) are freed from ad valorem or specific tariffs and import quotas. At present, agricultural products such as fruits and vegetables, meat and dairy products are granted "duty and quota free access" to the EU market.

The EBA concession took effect on March 2001. On the other hand, the full liberalisation of sugar, rice and bananas are phased in with a transition period.[8] The "duty and quota free" market

[8] 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.

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[9] 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. 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, 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.

One very important non-trade barrier is the safeguard measures enacted to protect the EU market from serious disturbances. The EU Commission has stated that, in any given marketing year, imports into the EU from the LDCs for sugar, rice and bananas exceed or are likely to exceed imports in the previous marketing year by more than 25%, the EU Commission will automatically examine whether the conditions for applying safeguard measures in accordance with the GSP Regulation are met. Moreover, the EU is entitled to apply the safeguard measures provided by the "Agreement on Safeguards" under Article XIX of GATT 1994. The safeguard measures are in place to protect the EU market from massive influx of sugar imports from the

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

LDCs. The emerging question is whether it is politically sensible to impose the safeguard measures after granting unlimited preferential market access to the poorest countries in the world.

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. In the EU Commission's reform proposal for the EU sugar regime, one of the driving forces to reduce the EU domestic sugar price by one third 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.[10]

3. Studying the changes in the global sugar markets 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 regime. The GTAP model and database are standard tools for analysis in the changing world of commodity markets.[11] 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 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 and the demand

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

[11] 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.

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[12] 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.

[12] 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

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.

The simulations are implemented in steps in order to capture the time span of the changes made to the EU sugar regime. First, changes are made within the tariff quota system of the trade preferences applied in the EU sugar regime. Second, the EU sugar regime is liberalised for a set of countries only – the LDCs first and later both the LDCs and ACP countries. Finally, the EU sugar regime is liberalised for all countries in the world.

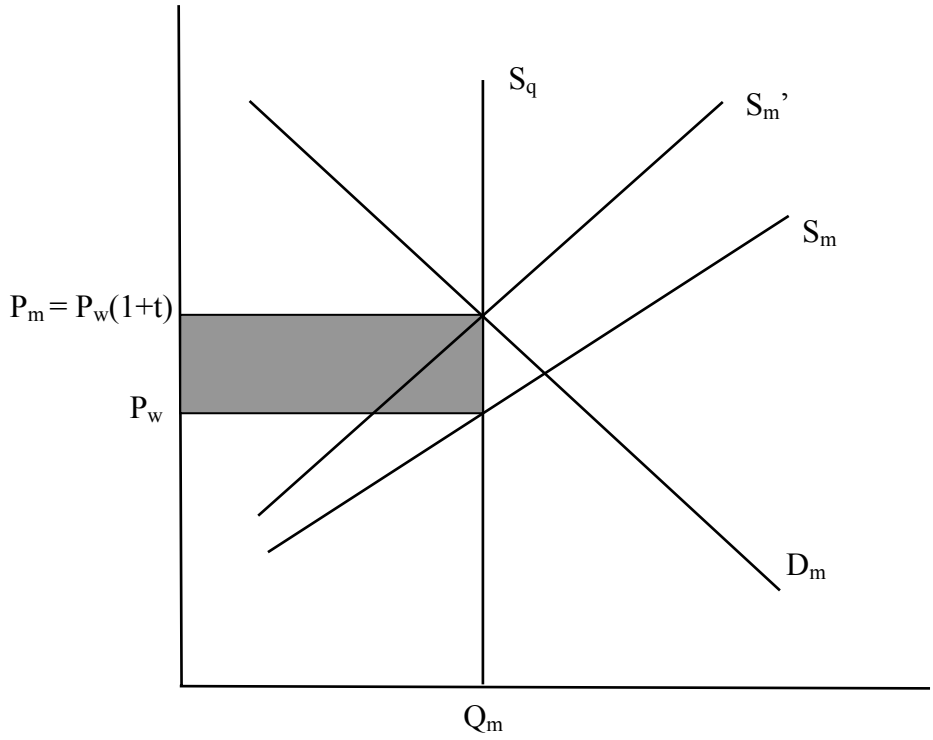
4. Changes made within the tariff quota system of the EU sugar regime

4.1. Tariffs, quotas and tariff rate quotas

In a competitive model with a single homogenous product, any tariff has an equivalent quota and vice versa (Anderson 1988). This equivalence can be summarized in value terms by comparing the price the exporters get compared to the price importers pay. The difference in values measures either the tariff revenue collected by the government or the quota rent that accrues either to the exporters or importers with licences to import.

One effective difference in this setting comes from the import supply functions. Figure 1 depicts the import demand D_m (e.g. in the EU) balancing with the import supply function S_m from the rest of the world. Imposing an ad valorem tariff t deepens the supply function to $S_{m'}$, and the price consumers pay P_m is higher than before. When the importing country can affect world prices, lower demand also bids down the world price to P_w. The quantity imported will be decreased to Q_m. The tariff revenue is the shadowed area $P_mP_w*Q_m$. The binding equivalent quota is at the same import level Q_m, but the supply function becomes completely inelastic when the imports have reached the quota level and the supply function is now S_q.

Figure 1. Price effects and supply responses of tariffs and quotas

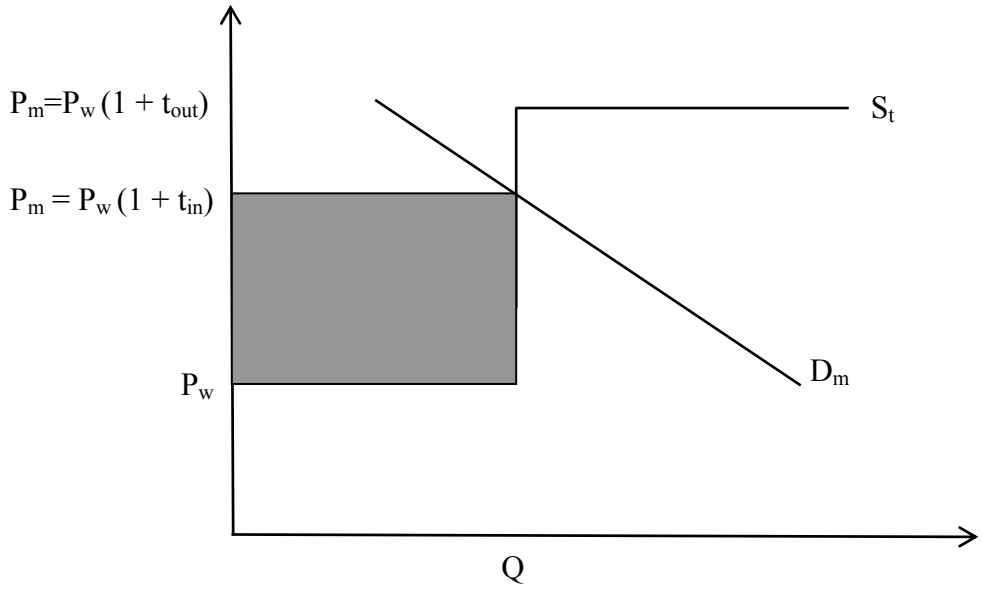


Tariff rate quota (TRQ) is a two-tiered tariff where, lower in–quota tariff (t_{in}) is applied to the first Q units of imports and a higher over-quota tariff (t_{out}) to all subsequent imports (Figure 2). The internal market price P_m is the world market price P_w plus the imposed tariff (t_{in}/t_{out}). The supply function is shown in Figure 2 (applied from Elbehri and Pearson 2000). The supply function S_t is a step function with two horizontal lines. The lower flat line represents the in-quota imports and extends from 0 to Q. The upper flat line represents the effective import 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 (Dm). 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).

The supply function (S_t) in the TRQ-regime is described as a completely elastic and flat line. Normally, the supply function is upward sloping, taking into account the diminishing marginal

revenues in production. The nature of the supply response is meaningful only when the regime is facing large changes.

Figure 2. Price effects and supply responses in tariff rate quota (TRQ) regime



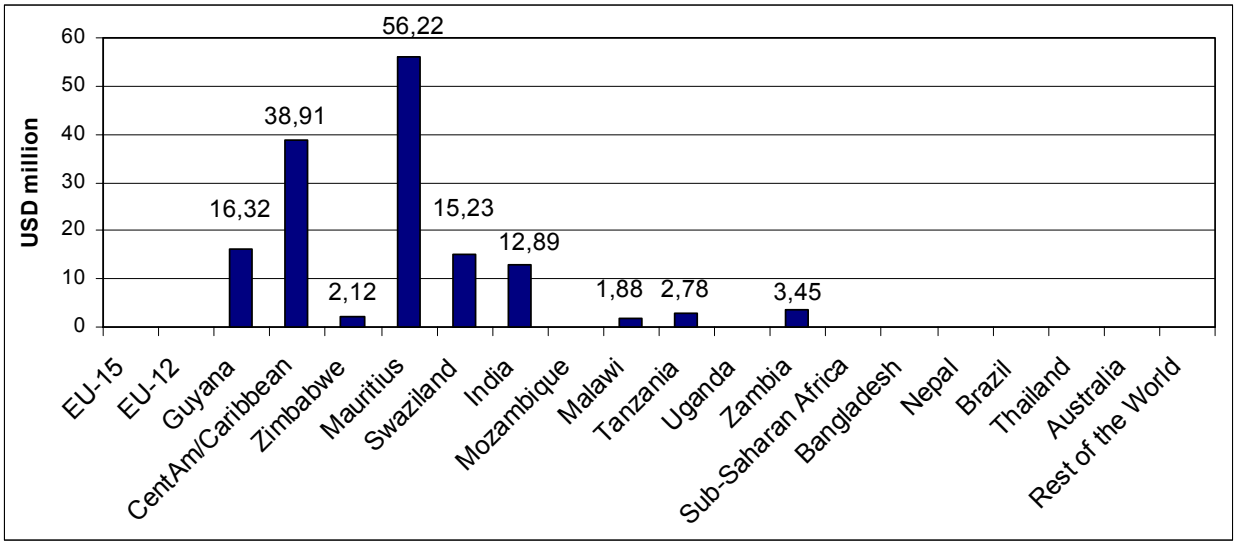
By using actual available data detailing the preferences granted to developing countries under the EU sugar regime, gradual changes in the tariff rate quotas are analysed in a framework that takes into account the non-linearities in the tariff rate quota regimes. The Elbehri and Pearson (2000) special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

The EU Sugar Protocol can be described as a tariff rate quota system. However, the exporters under the EU Sugar Protocol 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.

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.

Figure 3 depicts the quota rents under the EU Sugar Protocol for the 20 regions exporting sugar to the EU. The results have been obtained from the GTAP simulations whereby 100 % of the tariff revenues have been accrued to the ACP countries and 95 % to the LDCs. 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.

Figure 3. Quota rents for the 20 regions totalling USD 149.8 million



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.

4.2. Changes made within the tariff quota system of the applied EU trade preferences

Under the Everything But Arms (EBA) concession, raw sugar[13] can be exported duty-free by the LDCs to the EU market within the limits of a tariff rate 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.[14] The changes in quota volumes and the price difference between the guaranteed price and the world market price are implemented in the TRQ software (Elbehri and Pearson special software).[15] 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 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 (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,

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

[14] 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.

[15] The EBA concession includes gradual reduction in tariffs together with gradual increase in quotas. Implementing these changes within the TRQ software is technically complicated as the tariff within quotas should remain to a level that is higher than the above quota rate. This is the reason that the gradual reduction in tariffs is not implemented within the TRQ software created by Elbehri and Pearson (2000).

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

The case for Nepal is difficult due to inaccuracy of data. The GTAP database shows exports of sugar to the EU from the XSA region amounting to USD 10 million. Currently, none of the countries under the XSA region is exporting sugar to the EU. Under the EBA quotas, Nepal is the only preferential sugar exporter to the EU in the XSA region. The value of sugar exports under the EBA quotas is about USD 4 million. To show the increase in EBA quotas, a cumulative 15 percent shock for 8 years is given to this region.

Table 3 reports the changes in the flow of sugar exports to the EU. Though, the results are controversial for Mozambique and Bangladesh. 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 amount of sugar exports granted under the EBA preferential quotas. However, these high increases are not allowed in the model structure. These countries are assumed to be unable to fulfil their preferential quotas.

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

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. As a conclusion, 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.

5. Complete liberalisation of sugar imports into the EU for only a set of countries or for all countries in the world

The EBA concession includes gradual reduction in tariffs together with gradual increase in quotas before the "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. The open question is what will be the price paid for sugar imported from the LDCs after tariff liberalisation? Will it be the current high price or world market price? It is assumed in this

study that due to the increasing flow of sugar after tariff liberalisation, the EU cannot afford to pay the high price for sugar any more. Subsequently, the EU will be forced to pay the prevailing world market price for sugar imports after tariff liberalisation. This is the reason that the standard GTAP software is used to analyse the normal tariff liberalisation of sugar imports into the EU.[16] The base data resembles the situation in 2009, after all the quota changes has been made and simulated.

There are four formulated 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 countries' production costs for sugar. The higher the production costs, the smaller the supply

[16] 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.

response. The countries' position on the supply curve is dependent on their production costs for sugar. Countries with the lowest productions costs, but also with the highest tariff, are assumed to have the best market access when the EU sugar market is fully liberalised. The ranking of countries is portrayed in Appendix 5 according to the production costs index, based on the countries' sugar production cost (field & factory). This production costs index is adapted to the current GTAP model. The actual shocks are implemented in the form of 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.

5.1. The elasticity of substitution for sugar trade

Tariff liberalisation in the EU sugar regime will have a dramatic impact on the trade flows into the EU. The results are particularly sensitive to the elasticity of substitution for sugar trade. Low elasticity of substitution for sugar will generate small trade flows and relatively modest efficiency gain, whereas high elasticity leads to high efficiency gains due to large trade flows. The elasticity of substitution for a commodity is typically drawn from econometric work that uses time-series price variation to identify the elasticity of substitution between domestic goods and a bundle of imported commodities (composite imports). The current EU sugar regime with its import system regulated by tariff rate quotas cannot produce a natural framework for estimating a reliable elasticity of substitution for sugar. When sugar imports are governed by tariff rate quotas and these quotas cannot be traded between countries/regions, the observable elasticity between domestic goods and composite imports approaches to zero. The observable elasticity between countries/regions also approaches to zero.

The original default elasticity of substitution for sugar in GTAP (database 5.4.) is 2.2 and based on the SALTER Model (Jomini et al. 1994). The structure of imports in GTAP model is based on the assumption that importers first choose between the domestic commodity and a bundle of imported commodities (composite imports). Within the bundle, importers choose between commodities from different countries/regions. The standard assumption is that the elasticity of substitution between different countries/regions (4.4) is twice as high as the elasticity between domestic production and composite imports (2.2).

On the other hand, Hertel et al. (2003) estimated from the U.S. trade data that the elasticity of substitution for sugar between different countries/regions to be 5.4. The standard assumption would make the elasticity of substitution for sugar between domestic production and composite imports to be 2.7. These elasticity figures may be too low to estimate the actual elasticity of substitution for sugar trade flows into the EU sugar market. First, the EU mainly imports raw sugar, which is a very homogenous product, even though the product category for sugar in trade statistics includes a wide variety of sugar containing products. Therefore, raw sugar imported from different regions cannot be differentiated distinctively from each other. Second, as stated above, the differences between the sugar producing countries is not distinguished from demand or tastes, but as a result of granted preferences regulated by tariff rate quotas.

The EU would not need to make a distinction between sugars coming from different regions. As a homogenous commodity, raw sugar is used as the base to estimate the elasticity between domestic production and composite imports. Consequently, it is assumed in the simulations that the elasticity between domestic production and composite imports is 5.4, whereas the elasticity of substitution between different countries/regions is 10.8 in the GTAP model. The assumed elasticity is obtained by multiplying the elasticity of substitution for sugar estimated by Hertel et al. (2003) by a factor of 2. The sensitivity analysis on the variation in the elasticity of substitution is presented in Table 4, thus showing that the assumed elasticity is compatible with the elasticity estimated by Hertel et al. (2003).[17]

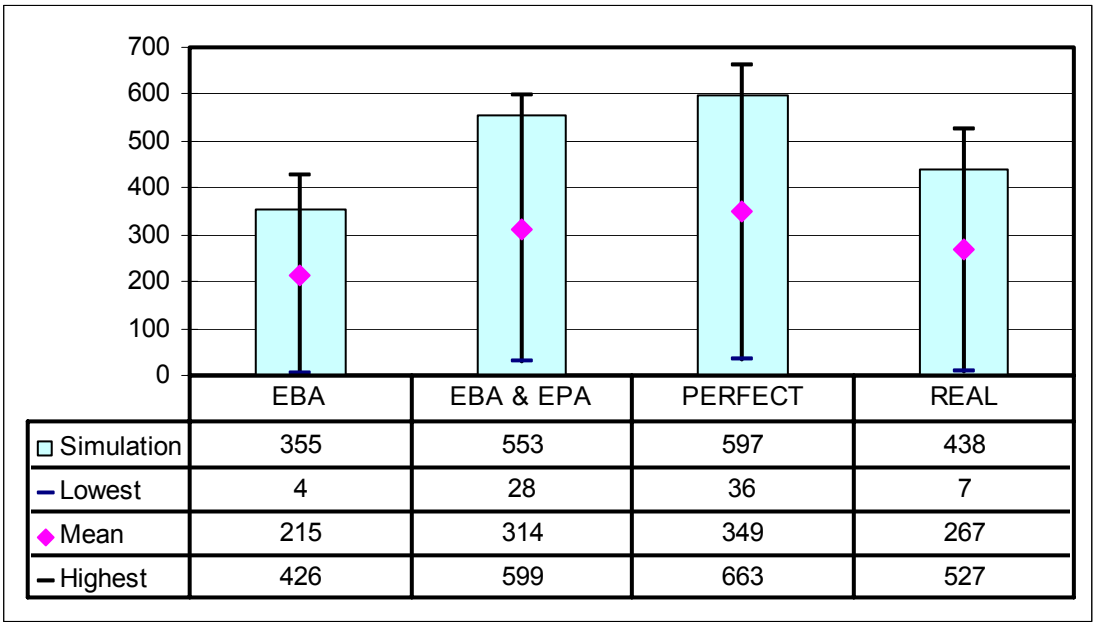
Table 4 illustrates the distribution of percentage changes in the aggregate imports of sugar into EU (former 15 member states only) for the four assumed scenarios. The broad bars represent the simulated results with the assumed elasticity of 5.4 for substitution between domestic production and composite imports and 10.8 for between regions. The lines in the middle of the broad bars

[17] The GEMPACK software utilises the Systematic Sensitivity Analysis to entangle the problem with the uncertainty of parameters. Around the observed or estimated values, the modeller needs to make an approximation of the distribution of the real parameter. In this study, the assumed Armington elasticity is selected from a distribution of the estimated values. In the Systematic Sensitivity Analysis, the distribution is assumed to be biased upwards with larger values having a greater probability. The mean and standard deviation for the endogenous variable has been carried out by a Guassian Quadrature with a scaling factor of 4 and a uniform distribution function. The results are reported in table 4. The elasticity between imports from different regions is assumed to be completely correlated with the elasticity between domestic and imported commodities. The Systematic Sensitivity Analysis for a symmetrical distribution is described in Arndt and Pearson (1996).

depict the distribution of the simulated results from the Systematic Sensitivity Analysis. The diamonds describe the mean of the distribution. The "Highest" value is the mean plus one standard deviation and the "Lowest" value is the mean minus one standard deviation. The broad bars are within the limit of the distribution even though the simulated results are in the upper bound of the distribution.

According to the assumed elasticity of 5.4 for substitution between domestic production and composite imports and 10.8 for between regions, sugar imports into the EU would increase between 355 to 597 percent from current imports depending on the different set of scenarios. The EBA scenario has the smallest impact and the PERFECT scenario has the largest impact on the sugar imports into the EU.

Table 4. Percentage changes in the aggregate imports of sugar into EU



	EBA	EBA & EPA	PERFECT	REAL
Simulation	355	553	597	438
Lowest	4	28	36	7
Mean	215	314	349	267
Highest	426	599	663	527

5.2. Simulation results for the four scenarios

Table 5 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 5. 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.[18] 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. Although, 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 exporters from the ACP countries like Mauritius[19] 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. EU sugar production would decrease the most (83%) under the PERFECT scenario with a total value of USD 31.5 billion. As a result, the greatest loser would be the EU. 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.

[18] The model behaves as if the current tariff quota regime had prevented a large potential of production 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.

[19] 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.

6. Conclusions

The simulation results show that 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. 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. The LDCs will be the 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

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

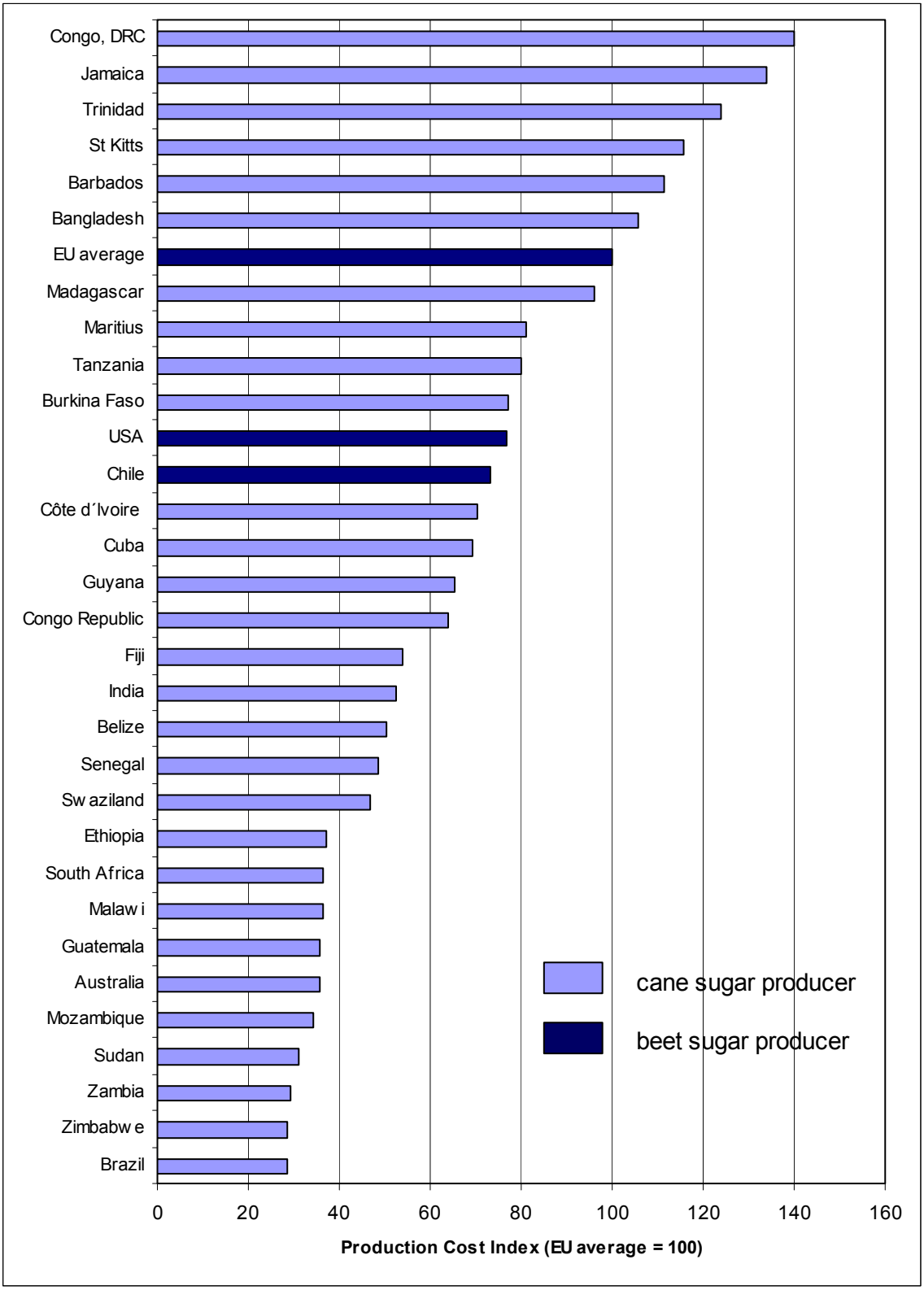
Appendix 4B Changes in the production of sugar (in USD million)

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



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