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Tariff Preferences, WTO Negotiations and the LDCs The case of the "Everything But Arms" Initiative*

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Abstract

This paper aims to evaluate the impact of the recently adopted "Everything But Arms" (EBA) initiative of the EU on the Least Developed Countries (LDCs) and to show how the EBA preferences will be eroded with further multilateral trade liberalization. Considering that preferences granted by the EU in the past have already covered most of the exporting goods from the LDCs, the number of products that are actually affected by the EBA is quite small. Simulation results indicate that total welfare impacts of the EBA are less than US\$300 million for all the LDCs and that a great deal of these gains are associated with three "sensitive" products that are subject to gradual liberalization. Impacts of the EBA on the EU and third countries appear to be negative but quite small.

WTO negotiations exert pressures on the EU to reduce its protections, which may lower the high domestic prices in the EU and decrease the attractiveness of the EBA. Further results indeed show that gains for the LDCs from the EBA will be greatly reduced or even reversed under a series of EU reform scenarios, indicating the difficulties the LDCs are facing in the current negotiations. In light of these results, this study concludes that other development assistance measures from developed countries should be made available to the LDCs to ease their dependency on trade preferences and to foster their supply capacities.

Key Words: *"Everything But Arms" initiative, least developed countries, preferential trading agreement, WTO, agricultural trade negotiation.*

JEL classification: *F13, Q18, O55, O19, D59.*

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1. Introduction

The "Everything But Arms" initiative (EBA) of the European Union (EU) has recently been adopted for the purpose of further improving Least Developed Countries' access to the EU market. Under the EBA, all restrictions on imports except arms from the LDCs to the EU are to be removed on a non-reciprocal basis (European Community, 2001a)¹. This initiative is a continuation and enhancement of the non-reciprocal preferences granted under the ACP (Africa, Caribbean and Pacific) and the GSP (Generalized System of Preferences). From the perspective of the EU, it is a very significant step to fulfill the objective of the Doha Development Agenda (WTO, 2001a) and it has been included in the EU's WTO agricultural negotiation proposal (European Commission, 2002c). Reactions from other countries vary. For example, the proposal by the US (United States Department of Agriculture, 2002) does not contain such an offer, whereas many of the African countries continue to ask for special and differential treatment similar to the EBA initiative (WTO, 2001b). Despite the different reactions, its impact has been felt in the current agricultural negotiations, as the recent compromise offered by the WTO negotiation chair Stuart Harbinson contains a proposal similar to the EBA (WTO, 2003).

The objective of this study is two-fold. The first objective is to provide an economic assessment of the likely impact of the EBA on the LDCs. Several previous studies have examined this issue but consensus on its quantitative effects has not been achieved. For example, a study by UNCTAD (Bora et al., 2002) showed that the EBA would result in welfare gains in the range of US\$400 million. This result was concurred by a slightly earlier study (Ianchovichina et al., 2000), which estimated similar welfare gains for Sub-Saharan Africa alone, while another study (Trueblood and Somwaru, 2002) estimated the benefits at several times higher. These different welfare estimates may be attributed to the fact that the tariff cuts employed and the bases from which these cuts are applied vary in those studies. In fact, one of those studies (Trueblood and Somwaru, 2002) lacked of an accurate account of the existing preferences that the LDCs have already received. As such, a further evaluation of the EBA by accurately taking into account of the existing preferences is warranted.

The second and perhaps more important objective of this study is to examine how the ongoing WTO negotiations affect the benefits from the EBA. The fact that the EBA

¹ Non-reciprocal preferential trading arrangements such as the EBA are part of the complex web of Preferential Trading Agreements (PTA) maintained by the EU.

have received eminent attentions in various negotiation proposals suggests that this initiative should be examined in the broad context of the current negotiation. In fact, as multilateral liberalisation resulting from the negotiations will likely reduce the relative attractiveness of the preferences, a better understanding of the potential effects of the EBA with and without probable WTO reforms is essential for policy makers and trade negotiators.

WTO negotiations are intended for achieving the following two objectives simultaneously: achieving a fair and market-oriented trading system and assisting economic development in the LDCs. As declared in the Doha Ministerial Declaration, the first objective is to be attained *through a program of fundamental reform encompassing strengthened rules and specific commitments on support and protection in order to correct and prevent restrictions and distortions*, whereas the second is to be realized through the so-called "differential and preferential treatment". According to the "Harbinson" proposal (WTO, 2003) on negotiation "modalities", policy measures for achieving these two objectives include: substantial cuts in import tariffs, elimination of export subsidies and dramatic reductions of domestic support for developed countries; similar reforms with less stringent requirements for developing countries; and more favorable treatment and in some cases exemptions for the LDCs (e.g. duty and quota-free access). The problem is that these measures tend to place negative influence on each other. Even with the assumption that the concessions of the EBA can be fully realized and that possible influences of the safeguard clause and other conditions of the EBA are minimal, gains from such an arrangement will become less and less attractive as other countries also gain more access to the major markets during the multilateral trade liberalization process. "Erosion" of the EBA preference is bound to happen as it is built on the high EU internal prices. Since the EU is under pressure to reform its Common Agriculture Policies (CAP), due to the budgetary pressure and its WTO obligations, such high internal prices are not likely to be sustainable.

This discussion demonstrates the difficult positions of the LDCs. On the one hand, multilateral liberalization may lead to negative impact on them through preference erosion. On the other hand, keeping these preferences meaningful to the LDCs by opposing multilateral liberalization will be quite difficult to justify as it entails enormous economic cost to the world. In light of this discussion, it is highly relevant to assess whether or not and to what extent the benefits of the EBA will be eroded in the presence of further multilateral liberalization, and if so, what could be done in conjunction with trade policy changes to ease the possible negative consequences on the LDCs.

This rest of the paper is structured as follows. The second section offers a detailed description of the EBA. Section 3 briefly discusses the model and data used for the quantitative assessment of the EBA. Section 4 starts with the design of a series of policy scenarios, followed by results of these scenarios, including analyses on the impact of the EBA, and the joint impact of the EBA and a series of possible EU reform scenarios. A summary of the welfare cost associated with keeping the EBA "meaningful" concludes this section. In the last section some concluding remarks are offered.

2. The "Everything But Arms" initiative in the EU's preferential trading framework

In addition to its participation in the multilateral trading agreements under the WTO, the EU also maintains a complex system of regional and preferential trading agreements (PTA). According to Panagariya (2002), these PTAs range from custom unions such as the European Union itself, free trade areas such as the European Economic Area, the Mediterranean Partnerships, and various non-reciprocal preferences. This "multi-layer" system extends to virtually all its trading partners, except for six countries/regions, which enjoy the Most Favoured Nation (MFN) status. Among these agreements, there are two systems of non-reciprocal trade preferences concerning the LDCs, namely, the ACP preferences and the GSP schemes. These two systems are the predecessors of the EBA.

The ACP preferences dated back to 1957 with the establishment of the European Economic Community, when former colonies of France received preferential treatment. The first formal agreement between the EU and the ACP countries were established in 1975 under the first Lomé Convention. The structure and coverage of these preferences have changed through several generations of the Lomé Convention and have recently been replaced by the Cotonou Agreement. The current ACP preferences now cover 77 countries, of which 40 are classified as LDCs by the UN (European Commission, 2003a)². Like the Lomé Convention, the GSP scheme consists of a series of unilateral concessions offered by developed countries, including the EU, to developing countries. Currently, 146 independent countries and 25 dependent or administered territories benefit from the European GSP scheme (European Community, 2001b). All the LDCs defined by the UN are part of the GSP. There is considerable overlapping between the ACP and the GSP. In fact there are only 9 LDC countries

² Prior to 2002, Senegal was included in the ACP preferences as a non-LDC country. Since then, it has been included in the UN's list of LDCs.

that are included in the GSP but not in the ACP. These countries are mostly South Asian countries, including Bangladesh, Bhutan, Cambodia, Laos, Maldives, Myanmar, Nepal, and Yemen. In general, the ACP preferences are more favourable than the GSP, so it is natural for many of the LDCs to adopt the ACP preferences where available.

The EBA initiative is a direct extension of the GSP³, as adopted in the European Council Regulation No. 416/2001 (European Community, 2001a). A brief introduction of the ACP and the GSP preferences is offered in this section, followed by a detailed exposition of the EBA itself.

2.1. ACP preferences: from Lomé to Cotonou

The ACP preferences have been granted through the Lomé Conventions. The first Lomé Convention has been established in 1975. These preferences are characterized by its non-reciprocal nature, under which the EU has permitted almost completely duty-free access for most of the products originated from the ACP countries. The exceptions are mostly agricultural products, some of which are covered by the CAP. There have been exclusions or restrictions in the form of tariffs and/or quantitative or seasonal restrictions. The so-called "sensitive products" such as sugar, beef & veal, bananas and rum imports have been regulated through separated protocols (European Commission, 2000a).

Despite the concessions provided through the ACP preferences, their impact has been moderate, if not disappointing. Even though for most ACP countries, the EU is their main trading partner—exports into the EU represent 29 percent of their total exports in 2000, their share in EU's total import has declined from 13.3 percent in 1976 to 3.7 percent in 2000. Moreover, exports from the ACP to the EU are hardly diversified and concentrated in raw materials and agricultural products. Possible explanations for the underachievement of the agreement could be that market access for some key products was still restricted or that the development impact of the agreement has failed.

³ Although the EU adopts the EBA as an extension of the GSP, prior to the EBA, some LDCs actually enjoyed more favourable preferences offered through the ACP. Further, the duty-free access granted under the GSP covered fewer products than the ACP as the ACP preferences have been extended to all but 857 products at HS8 level, whereas the GSP provided duty-free access to all but 919 HS8 products. Nevertheless, one has to note that GSP covered more LDCs. In this study we take the view that the EBA is an extension of the preferences that are actually enjoyed by the LDCs. In this sense, it is worth reviewing both the GSP and the ACP preferences.

The unimpressive performance of the ACP preferences has led to a re-design and re-negotiation of the Lomé Convention (European Commission, 2002a). As a result of this effort, the latest Lomé Convention (Lomé IV, expired in 2000) has been replaced by the Cotonou agreement, which ambitiously aims at “reducing and eventually eradicating poverty consistent with the objectives of sustainable development and the gradual integration of the ACP countries into the world economy” (European Commission, 2002b). Four pillars are declared in the Cotonou Agreement:

- participatory approaches,
- a strengthened focus on poverty reduction,
- a comprehensive political dimension,
- and a new framework for economic and trade cooperation.

The first two pillars are the non-trade components of the agreement, the third pillar concerns the political dimension, whereas the fourth pillar is the trade component. At present, the trade component of the Cotonou is only a framework for the EU and the ACP countries to renegotiate Regional Economic Partnership Agreements (REPA), with the aim of liberalising all bilateral trade between them on a reciprocal basis, thereby making the agreements fully WTO-compatible. In the meantime the present trading regime will be maintained during the preparatory period beginning from 2002 and ending at 2008 at the latest. After that, the REPAs will enter into force gradually, with a transition period of 12 years. Until now, only EU and South Africa has finished the negotiations on an REPA.

2.2. The Generalized System of Preferences

The GSP scheme was allowed under the WTO through its Enabling Clause, which states that preferential treatment under the GSP has to be non-discriminatory, non-reciprocal and autonomous. There should be no discrimination between developing countries, except for the benefit of least developed countries (WTO, 1979). The EU was the first to implement such a scheme in 1971. In operation, the GSP scheme of the EU follows a cycle of ten years. The present cycle began in 1995 and will expire in 2004. Regulations of the scheme are only valid for a period of 3 to 4 years and in January 2002 a new regulation entered into force (European Commission, 2003b).

The scheme operates at two levels: the general arrangement provides basic trade preferences based on traditional objectives of economic development, and special incentive clauses regarding sustainable development. The general system provides tariff

preferences depending on the sensitivity of the product, known as modulation. According to the latest EU regulation (European Communities, 2001b), preferences are granted to two differentiated product categories:

- for non-sensitive products, duty-free access is granted;
- for sensitive products, the reduction of the *ad valorem* duty is 3.5 percentage points of the corresponding MFN rate, whereas specific tariff should be reduced by 30 percent.

The Common Custom Tariff Schedule of the EU covers approximately 10500 HS-8 tariff lines in total and the MFN rates are zero for at least 2000 of these tariff lines. The GSP scheme covers around 7000 of the dutiable products, of which 3300 are classified as non-sensitive and 3700 are classified as sensitive (European Commission, 2003b).

The special incentive clauses of the GSP are related to the respect of social rights and protection of the environment. With these clauses, the preferences as specified in the general arrangement can either be increased or reduced. For example, those countries that respect social and environmental standards in relevant international agreements receive more favourable treatment, often in the forms of a doubling of the normal preferences. In addition, the EU is also allowed to reduce or withdraw the preferences for individual countries or specific sectors if they reach a certain level of competitiveness. The benefit of the GSP scheme may also be suspended if certain safeguard clauses are triggered. In summary, together with stringent rules of origin, these clauses give the EU the flexibility to adjust the magnitude and the coverage of the preferences.

The LDCs (together with countries affected by drug production) have been part of a special arrangement in the GSP scheme for many years. These countries have traditionally received more favourable treatment and have enjoyed duty-free access for a large part of industrial and agricultural products (European Communities, 2001b). Before the EBA, there were only slightly over 900 products (at HS8 level) that were subject to duties. Further, since 1998 the EU has tried to extend similar preferences as contained in the ACP preferences to the 9 LDCs that are part of the GSP scheme but not part of the ACP. The initiative to further improve market access for LDCs was followed up in February 2001 when the EU formally adopted the “Everything But Arms” regulation (European Communities, 2001a).

2.3. A detailed exposition of the EBA

The decision on the EBA followed a series of initiatives taken by the EU after the WTO Ministerial Conferences in Singapore in 1996, where developed countries committed themselves to improve market access for LDC products (European Community, 2001a). It amends the GSP scheme in several ways. First, the EBA offers the LDCs higher degree of market access. For virtually all products this means quota and duty free access. Second, the EBA equally grants all LDCs duty and quota-free access to the EU market, whereas the GSP scheme provides different treatments for different beneficiary countries and for different products. Third, unlike the GSP scheme, the EBA has no time limits. However, the EU Commission will review the functioning of EBA in 2005, when amendments can be introduced (European Community, 2001a and b).

2.3.1. Country and products coverage

All the forty-nine LDC countries as designated by the UN are included in the EBA. The Economic and Social Council of the UN reviews the list every three years and uses four criteria for determining LDC. A complete list of countries and selection criteria is included in Appendix 1.

Under the EBA, all restrictions, including tariff and Tariff Rate Quotas (TRQ), on virtually all exports (except for arms) from LDC to the EU are to be removed, without the reciprocal action by the LDC on EU's exports. This initiative took effect on March 5, 2001. As the existing preferences such as the ACP and the GSP have already led to quota and duty-free access for most of the exports from the LDCs, the EBA actually only affects 919 tariff lines at HS-8 level. Upon fully implementing the EBA, restrictions on exports from the LDCs remain for just 25 HS-8 tariff lines related to the trade with arms.

Table 1 illustrates the distribution of EBA products across product categories according to the classification of the Global Trade Analysis Project database (GTAP⁴ for

⁴ The GTAP database is a global database containing detailed input-output tables at country or regional level, and bilateral trade flows. By providing a "snapshot" of the world economy at a certain point (current version has a base year of 1997), it aims to support policy analysis of trade, agriculture and environmental issues at global level. It has been used extensively by applied researchers, especially those using computable general equilibrium models. For detailed documentation of the database, see Dimaranan and McDougall (2002). The current version contains information for 66 regions/countries and 57 industries.

short). It can be seen that virtually all the EBA-affected products belong to agriculture and food. In terms of HS-8 tariff lines, meat products, processed food products, and dairy contain the most items. Each of these three categories claims a share of over 10 percent of total EBA-affected products and their combined share is over 60 percent. The categories of beverage, vegetable and fruits, and bovine meats are also important parts of the EBA.

Table 1. Product coverage of the EBA at HS-8 level

Description	Number of products affected by the EBA (HS8)	Share in all EBA-affected products (%)
Sugar	9	1.0
Vegetables, fruit and nuts	35	3.8
Cereals grains nec	12	1.3
Vegetables oil and fats	10	1.1
Other processed Food products	290	31.6
Beverages	108	11.8
Processed rice	17	1.8
Other Meat products	153	16.6
Bovine meats products	48	5.2
Other Animal products	19	2.1
Paddy Rice	16	1.7
Dairy products	165	18.0
Bovine cattle, sheep and goats, horses	14	1.5
Other Crops	0	0.0
Plant based fibers	0	0.0
Chemical, rubber and plastic	17	1.8
Fishing	0	0.0
Oil seeds	0	0.0
Wool, silk-worm cocoons	0	0.0
Wheat	3	0.3
Sugar cane, sugar beet	3	0.3
Total	919	100

Source: European Commission (2000)

2.3.2. Sensitive Products in the EBA

Although the duty and quota free access has been granted for 876 of the 919 products with immediate effects, this treatment for 43 items will take place in three progressive stages. These items belong to the three sensitive product groups, namely, sugar, rice and bananas (European Community, 2001a). Specifically, for sugar, duties will be eliminated in three stages, with a 20 percent reduction on July 1, 2006, a 50 percent reduction on July 1, 2007, and an 80 percent reduction on July 1, 2008. By July 1, 2009, duties will be fully eliminated. For rice, duties will be eliminated according to a schedule identical to the one for sugar, starting on September 1, 2006.

And for bananas, duties will be reduced by 20 percent annually, starting on January 1, 2002 and ending on January 1, 2006 the latest. To compensate for these delays, the EU will offer immediate and real market access through the creation of duty-free quotas for sugar and rice, initially based on the best figures for LDC exports during the 1990s, plus 15 percent. These will increase by 15 percent each year during the interim period (see Table 2 below).

Table 2. Tariff rate quotas for rice and raw sugar for LDC in tons

	2001-02	2002- 03	2003- 04	2004-05	2005-06	2006-07	2007-08	2008-09
Rice (1)	2,517	2,895	3,329	3,829	4,403	5,063	5,823	6,696
Sugar (2)	74,185	85,313	98,110	112,827	129,751	149,213	171,595	197,335

(1) Marketing years September 2001 to September 2009

(2) Marketing years July 2001 to July 2009

Source: calculation based on European Community (2001a)

2.3.3. Safeguard Measures in the EBA

The safeguard measures specified in the GSP are largely retained in the EBA. Some amendments have also been made. Most notable among the amendments is the addition of the situation of "massive imports into the EU market" as a trigger for withdrawing the preferences. With regard to the three sensitive products (sugar, bananas, and rice), the EU is allowed to suspend the preferences entirely if imports cause serious disruptions to the EU's mechanisms that regulate these products. Serious disruptions refer to, among other things, reduction in market shares of European producers, reduction in their production, increases in their stocks, closure of their production capacity, bankruptcies, low profitability, low rate of capacity utilization, employment, trade and prices (European Community, 2001a and 2001b). In addition, the rules of origin specified in the GSP also apply to the EBA initiative.

These safeguard measures and rules of origin are clear reminiscent of the GSP. Some economists (e.g., Panagariya, 2002) have pointed out that exactly due to the many pretexts these preferences have been rendered ineffective. A recent World Bank working paper (Brenton, 2003) provided an initial evaluation of the impact of the EBA for the year 2001 and pointed out that the low level of utilization of the EBA preferences by non-ACP LDCs might be due to the rules of origin. Whether or not the objective of the EBA can be achieved in the longer run is certainly contingent on how these measures are applied in the future. For this reason, some caution should be exercised when evaluating the potential effects of the EBA.

2.4. Concessions offered in the EBA and its potential impact

To elicit the significance of the EBA, it is important to understand the trade and protection situations of the EBA products prior to its inception. For this purpose, we first examine trade data on exports from the LDCs to the EU (in particular, the EBA exports). Then the tariff concessions implied by the EBA are drawn out. Based on this, we offer a preliminary assessment of the potential effects of the EBA.

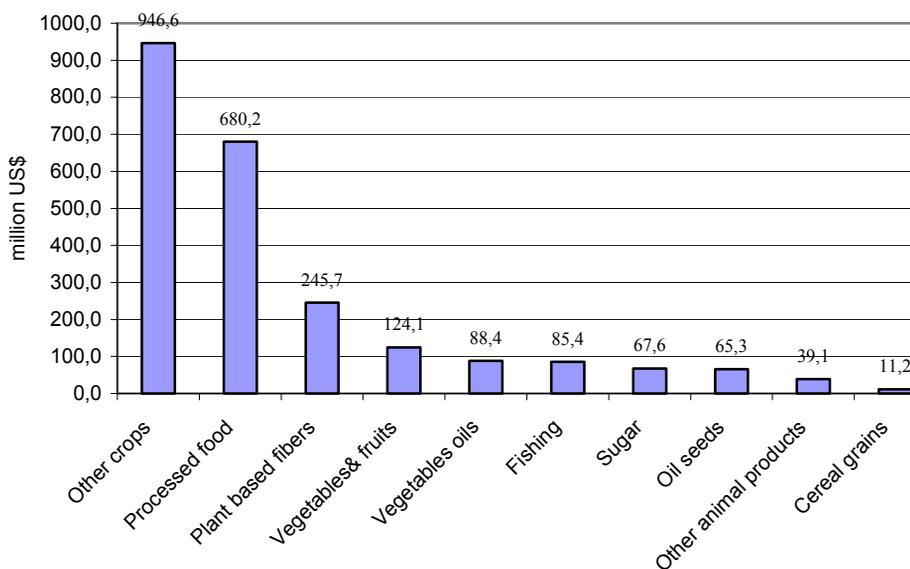
Figure 1 illustrates export values of major products from the LDC to the EU in 1999. These are extracted from the TRAINS database⁵ and are aggregates according to the classification of the GTAP database. Only four aggregated products have exports exceeding US\$100 million, including processed food products, other crops, plant fibers, and vegetable and fruits. Exports of fish, sugar, oil seeds, animal products, and cereal grains are between 10 and 100 million dollars. Total agricultural and food exports from the LDCs to the EU amount to just over US\$2.5 billion in 1999 (representing a quarter of all merchandise exports from the LDCs to the EU, from UNCTAD, 2001a). Exports from the LDCs constitute a small fraction of total imports of the EU, suggesting that the impact of the EBA might be small for the EU.

As the EBA only involves a small fraction of the products that are included in the Common Custom Tariff Schedule of the EU (919 HS-8 products), its potential effects on promoting exports from the LDCs are likely to be limited. To illustrate this point, Table 3 provides an overview of the EBA, including its product coverage, tariff concessions (in terms of the differences between pre-EBA average tariff rates and zero), and export values in 1999. Specifically, columns 2,3 and 4 of the table display, respectively, for each product groups, number of total HS6 lines, number of EBA products at HS6 level, and number of EBA products at HS8 level. The last three columns show the corresponding export values of the EBA products and all products, as well as the shares of EBA exports in total exports.

The product groups as shown in Table 3 are ordered by export values. Sugar is by far the largest EBA-affected product, which boosts an export value of over US\$67 million in 1999. The first three columns of the table indicate that all the 7 HS-6 sugar items are covered by the EBA and therefore they are all subject to tariff reduction.

⁵ This database, Trade Analysis and Information System, is compiled by UNCTAD (2001a).

Figure 1. Exports of agricultural products from the LDCs to the EU, 1999



Source: TRAINS database (UNCTAD, 2001a).

Pre-EBA tariff rates for the sugar items range from 75 to 103 percent. These indicate that there are substantial potential gains to be reaped upon fully implementing the EBA. The reservations by the EU, in the form of gradual removal of the import restrictions on sugar, certainly testify the "sensitiveness" of this product in the LDC-EU trade relationship.

The second row in Table 3 concerns vegetables and fruits. Although the export value of the EBA component of this category (mainly bananas) only accounts for 14 percent of its total trade, still it reaches US\$17 million. However, the fact that the pre-EBA tariff rates are only 2.3 percent indicates that potential gains to the LDC are likely to be much smaller, as compared to sugar. The category of other cereal grains is the third biggest EBA category, which covers 9 out of the possible 10 HS-6 lines. In fact, these 9 EBA products claim all the exports for this category. The pre-EBA tariff rates of 37 percent imply that there is much to be gained from the EBA. Other than the above mentioned three product groups, the EBA seems to have minor potential effects, either due to the very low pre-EBA export values, or due to the very low pre-

EBA tariff rates. Among this latter group, perhaps there is some potential for rice. Pre-EBA tariff rates for rice are over 87 percent and its export value in 1999 is about US\$0.4 million. Again, rice is listed as a sensitive product and is subject to a special phasing out clause in the EBA.

Table 3. The EBA: an illustration of product coverage, tariff rates and LDC exports

GTAP categories	Number of HS items			Ave. pre-EBA tariff ⁴	Export of EBA products ⁵	Total LDC exports ⁶	Share of EBA exports
	Total (HS6) ¹	EBA (HS6) ²	EBA (HS8) ³				
					1,000US\$	1,000US\$	%
Sugar	7	7	9	75-103	67,618	67,618	100.0
Vegetables, fruit and nuts	89	19	35	2.3	17,203	124,124	13.9
Cereals grains nec	10	9	12	37.1	11,283	11,283	100.0
Vegetables oil and fats	47	7	10	0.2	1,667	88,401	1.9
Food products nec	248	102	290	2.1-2.5	475	680,237	0.1
Beverages	30	8	108	1.2	432	1,379	31.3
Processed rice	2	2	17	87.4	399	399	100.0
Meat products nec	43	33	153	9.7-19.2	378	940	40.2
Bovine meats products	29	19	48	9.7-19.2	217	217	100.0
Animal products nec	48	9	19	2.8-4.5	149	39,055	0.4
Paddy Rice	2	2	16	61.6	38	38	100.0
Dairy products	24	23	165	51.2	21	36	58.3
Bovine cattle, sheep and goats, horses	8	3	14	2.8-4.5	16	16	100.0
Crops nec	62	0	0	0.0	0	946,585	0.0
Plant based fibers	8	0	0	0.0	0	245,746	0.0
Chemical, rubber and plastic	987	5	17	-	0	156,942	0.0
Fishing	40	0	0	0.0	0.0	85,439	0.0
Oil seeds	15	0	0	0.0	0	65,298	0.0
Wool, silk-worm cocoons	6	0	0	0.0	0.0	9,531	0.0
Wheat	2	2	3	-	0	0	n/a
Sugar cane, sugar beet	2	2	3	-	0	0	n/a
Total	1,709	252	919		99,896	2,523,284	4.0

Notes: ¹ Number of total HS6 lines for each GTAP category; ² Number of HS6 lines covered by the EBA (UNCTAD, 2001a); ³ Number of HS8 lines covered by the EBA (European Commission, 2000); ⁴ Tariff rates adopted from UNCTAD (2002); ⁵ Total exports of EBA products from the LDC to the EU in 1999 (UNCTAD, 2001a); ⁶ Total exports from the LDC to the EU in 1999 (UNCTAD, 2001a).

Overall, the export value of all the EBA products only amounts to just below US\$100 million in 1999, representing only a 4 percent share in total agricultural and food exports from the LDCs to the EU for that year. For several products, such as sugar, cereal grains and rice, there seems to be some scope of further export expansion for the LDCs after implementing the EBA. However, the special arrangement regarding sugar, rice and banana will likely delay such gains. For other EBA products, the tariff

rates have already been low and/or the current exports are quite small. Therefore the potential expansion of LDC exports seems to be limited for these products.

3. Methodology and data

To realize the two objectives of the study, relevant policy scenarios are formulated and experiments are carried out to simulate the possible effects of these scenarios. Due to the multi-regional and multi-sectoral nature of the EBA initiative, we choose to conduct such simulations within a global computable general equilibrium framework. The GTAP model (Chapter 2 of Hertel, 1997) and database are identified to be well suited for handling these tasks. The GTAP model is a standard global model that features inter-sectoral linkages through nested Constant Elasticity of Substitution production functions, international trade linkages through the so-called Armington specifications (Armington, 1969). The demand side of the model is featured by a Constant Difference Elasticity demand system. Standard neoclassical assumptions such as constant return to scale, perfect competition, profit and utility maximization are applied. With this modelling structure, explicit welfare analysis and decomposition are possible.

The accompanying GTAP database (Dimaranan and McDougall, 2002) is based on detailed regional input-output tables and detailed bilateral trade flows. It gives a snapshot of the world economy at a given time and satisfied the usual equilibrium conditions. Agricultural and food products are well presented in the database. This study applies an aggregated version of the most recent GTAP database, covering 19 aggregated regions and 20 sectors. Individual LDCs that are presented in the aggregation are Malawi, Mozambique, Tanzania, Zambia, and Uganda. Other LDCs are largely included in the aggregated rest of Sub-Saharan African (SSA) regions. Most of the agriculture and food sectors are incorporated in the aggregation as individual ones, including paddy rice, wheat, cereal grains, vegetable and fruits⁶, oil seeds, plant fibres, other crops, other animal products, beef, other meats, vegetable oil, dairy, processed rice, sugar, and other processed food products. In addition to these, non-agricultural products are aggregated into natural resources, textile and clothing, manufacturing, and services. A complete list of the aggregated sectors and regions is contained in Appendix 2. Agricultural protections are included in the database in the forms of import tariffs, export subsidies and various domestic support measures (output subsidies, intermediate input subsidies, factor-based payments, etc). Since the existing preferen-

⁶ Banana is aggregated into vegetable and fruits.

tial arrangements between the EU and the LDCs are not adequately represented in the database, we need to adjust the tariff rates in the original GTAP database so that the applicable preferential tariff rates are accounted for. After this adjustment, the starting point of the subsequent simulations contains the same EU-LDCs tariff rates as compiled by UNCTAD (2002), which are listed in the fifth column of Table 3⁷.

4. Policy Scenarios and Results

Three sets of policy scenarios are simulated using the GTAP model and the adjusted database, as illustrated in Box 1. The first scenario (called the EBA Scenario) is a simple comparative static scenario where EU's import tariff rates for all commodities from the six LDC countries/regions are eliminated. Note that tariff cuts are not identical across products. In fact, according to Table 3, the biggest cuts are for sugar, cereal grains, processed rice, dairy, and the livestock sectors⁸.

The second set of scenarios (Scenarios 2, 3, 4) is intended to illustrate how the EBA preferences are "eroded" in the presence of a series of "plausible" reforms scenarios, in which the EU reforms its trade policies in the three major negotiations areas on a Most Favoured Nation (MFN) basis⁹. In Scenario 2 (Market Access Scenario), in addition to the EBA shocks (as simulated separately in Scenario 1), import tariff rates on imports from all third countries to the EU are reduced by 50 percent. In Scenario 3 (Export Subsidy Scenario), in addition to the EBA shocks, all export subsidies of the EU are removed. In Scenario 4 (Domestic Support Scenario), in addition to the EBA shocks, all domestic support measures of the EU are reduced by 35 percent¹⁰. Results

⁷ This involves using a simulation routine called "ALERTAX" (Malcolm, 1998) to exogenously shock the MFN tariff rates in the GTAP database to the actual preferential rates, while keeping the trade data as close to the original database as possible. Note these pre-EBA tariff rates are taken from the UNCTAD study. We have independently replicated some of the tariff rates using the TRAINS database and reached similar estimates.

⁸ To highlight the significance of the three sensitive products, we also consider a supplementary scenario where pre-EBA tariff rates for the sensitive products are maintained while those for other agricultural and food products are eliminated.

⁹ These scenarios are formulated based on a recently released policy paper on the proposed negotiation "modalities" by the Chair of the Agriculture Committee of the WTO (FOI, 2003).

¹⁰ We choose a simplistic approach to implement the reduction of domestic support in the EU. As the GTAP database breaks down total domestic support into output subsidies, intermediate input subsidies, and land and capital based subsidies, we shock all these instruments by 35 percent to achieve the overall reduction target. As different instruments have different effects, other approach may achieve quantitatively different results.

from each of these scenarios show the joint impacts of the EBA and the reforms in the corresponding negotiation area.

Box 1. Policy Scenarios

A. The EBA Scenario (Scenario 1)

Eliminating EU's import tariffs imposed on all exports from the six LDC regions.

B. Scenarios related to preference erosion (Scenarios 2-4)

Scenario 2 (Market Access Scenario)

Implementing the EBA shocks as contained in Scenario 1, and reducing EU's import tariff rates imposed on agricultural and food products from all third regions by 50%.

Scenario 3 (Export Subsidy Scenario)

Implementing the EBA shocks as contained in Scenario 1, and removing EU's export subsidies on all agricultural and food products.

Scenario 4 (Domestic Support Scenario)

Implementing the EBA shocks as contained in Scenario 1, and reducing all domestic support in the EU by 35%.

C. Combined WTO scenario (Scenario 5)

Implementing the shocks contained in Scenario 1, plus: a) reducing EU's import tariff rates imposed on agricultural and food products from all third regions by 50%, as conducted in Scenario 2; b) removing EU's export subsidies on all agricultural and food products, as conducted in Scenario 3; c) reducing all domestic supports in the EU by 35%, as conducted in Scenario 4.

The last scenario (Scenario 5) is conducted for summarizing the combined impacts of the reforms in all negotiation areas. In Scenario 5, the reforms in market access, export subsidies, and domestic support are carried out simultaneously, together with the EBA shocks.

4.1. Potential gains from the EBA (scenario 1)

As discussed in details in Section 3, implementing the EBA entails a removal of all the tariff and quantitative restrictions associated with 919 HS-8 tariff lines. Although the reforms on the three sensitive products are to be implemented gradually, the main experiment (scenario 1) conducted here removes all the restrictions simultaneously. Therefore the results reflect a more optimistic picture of the reforms. Exports from the LDCs will benefit from such a move, especially for the sectors with deeper tariff cuts. Output and production patterns of the LDCs will also be impacted due to these countries' relative specialization in certain sectors. In addition, the impact of this reform will also be felt at the macro-level.

4.1.1. Effects on trade and production

Percentage changes in LDCs' exports to the EU and the corresponding post-EBA export values, as resulted from implementing the EBA initiative (Scenario 1), are reported in Table 4.

Table 4. Effects of the EBA on exports from the LDCs and third countries to the EU (Scenario 1)

Changes in export quantities, percent													
	Wheat	Cereal	Veg.	Oil	Plant	Other	Other	Bovine	Other	Veg	Dairy	Rice	Sugar
	grains	grains	fruit	seed	fibre	crops	animal	prod.	meats	oil			
Malawi	240	238	-5	-12	-10	-11	-1	24	25	-15	417	1120	679
Mozamb.	281	277	6	-3	-2	-4	13	43	43	-3	492	1288	859
Tanzania	257	242	-4	-14	-8	-12	-17	35	35	-9	435	1146	1562
Zambia	301	227	-7	-23	-15	-19	-6	29	28	-15	449	1197	517
Uganda	296	292	9	-1	-1	-1	18	114	114	0	506	1345	1145
SSA*	290	286	7	-3	-2	-2	19	75	75	-1	500	1320	895
Aus& Nzl	-0.1	-0.8	-0.3	-0.1	0.4	0.4	-0.2	-0.1	-0.1	-0.1	-0.1	-8	-15.6
Japan	-0.1	-0.8	-0.2	0	0.5	0.4	-0.2	-0.1	-0.1	-0.2	-0.1	-8	-15.6
ASEAN	-0.1	-0.8	-0.2	0	0.4	0.3	-0.2	-0.1	-0.1	-0.1	-0.1	-8	-15.6
S Asia	-0.1	-0.8	-0.3	0	0.5	0.4	-0.2	-0.1	-0.1	-0.1	-0.1	-8	-15.6
E Asia	-0.1	-0.8	-0.2	0	0.5	0.4	-0.2	-0.1	-0.1	-0.1	-0.1	-8	-15.6
USA	-0.1	-0.8	-0.2	0	0.5	0.4	-0.2	-0.1	-0.1	-0.1	-0.1	-8	-15.6
Canada	-0.1	-0.8	-0.2	0	0.5	0.4	-0.2	-0.1	-0.1	-0.1	-0.1	-8	-15.6
Post-EBA export values, US\$ million													
Malawi	0	1.4	3.9	4	5.5	389.1	0.6	0	0.1	0.5	0.3	0.6	116.7
Mozamb.	0	3.7	27.8	5.3	22	5.2	0.3	1.4	0.1	0.5	1.5	0.1	20.3
Tanzania	0	22.3	72.5	10.7	125.5	212.3	13	2.2	5.2	5.2	0.2	4.8	183.4
Zambia	0.1	1.5	7.5	2.4	10.4	25.6	0.8	0.3	0.6	0.4	0.1	0.5	164.9
Uganda	0	1.8	11.1	2.3	18.6	441.3	8.2	0.6	0	0	2.4	0.7	1.4
SSA	3.6	33.6	766.4	160.2	1173.5	3988.8	113	6.3	5.9	242.6	7.8	128.9	471.9
Changes in volumes of output, percent													
Malawi	0.3	0.4	0.1	-4.1	-9.6	-8.4	3.3	-0.3	0.1	0	0.8	-0.7	397.1
Mozamb.	-0.5	0.2	0	-1.2	-2.4	0.1	0.5	-0.9	0.1	-0.4	-1.6	0	16.3
Tanzania	-1.9	1.2	-2.1	-1.4	-7.7	-3.1	-0.2	0.7	0.7	-5.4	0.7	6.4	39.3
Zambia	3.5	0.1	-1.1	1.6	-5.9	-0.4	0.3	-0.3	-0.1	-0.2	0.2	0.5	268.4
Uganda	0.1	0.1	0	0	-0.4	-0.6	0.3	0.9	0.1	-0.3	0.5	1.3	1.4
SSA	0.3	0.4	0.7	-0.1	-1.1	-0.8	0.3	0.3	0	-0.2	0.1	0.9	14.8

Source: simulation results from Scenario 1. All changes are based on the base data.

Note: the abbreviations SSA refer to Rest of Sub-Saharan Africa.

Not surprisingly, in terms of percentage changes, exports increase the most for the sectors with the highest tariff cuts, especially for wheat, cereal grains, meats, dairy, rice and sugar. The most notable changes are for sugar, whose exports reach US\$117 million, 183 million, 165 million and 472 million in Malawi, Tanzania, Zambia and rest of Sub-Sahara Africa, respectively. Due to the fact that pre-EBA exports of wheat, cereal grains and dairy were quite low, high percentage changes in exports

(shown in the upper panel of Table 4) do not translate into significant increases in value terms. As can be seen from the middle panel of Table 4, post-EBA export values for these sectors remain quite small. In contrast, exports of the products with smaller tariff cuts decrease slightly, reflecting inter-sectoral reallocations in the LDC countries. These products include oil seeds, plant fibres, other crops, and vegetable oil.

The production patterns in the LDCs are similarly impacted by the EBA. As can be seen in the lower panel of Table 4, output of sugar increases dramatically—in Malawi and Zambia, it is more than doubled, whereas in Mozambique, Tanzania, and Sub-Saharan Africa, it is increased by more than 10 percent. Outputs for rice and cereal grains also increase in most LDCs. On the other hand, decreases in some other products are also observed, especially for plant fibres and other crops. This is because the sharp decreases in their exports dampen total demands for these products. Also, expansion of outputs in other sectors leads to outflow of resources from these sectors. Aside from the above-mentioned products, output changes in other products vary across countries. Most of these changes are quite small and can be attributed to the adjustment on the export side.

These results demonstrate that the LDCs do have some potential in producing certain products, especially sugar. With the implementation of the EBA, there also seem to be some opportunities for them to export these products. Moreover, as exports from the LDCs only constitute a small fraction of the total imports of the EU, the impact of the EBA on the EU and the rest of the world appear to be quite insignificant. As shown in Table 4, exports from the third countries into the EU generally decrease slightly (in the range of 0.1 to 0.8 percent) and for a few products such as plant fibres and other crops, bilateral exports from the third countries actually increase slightly, due to the decreases of exports from the LDCs. Rice and sugar are the lone exceptions, where notable decreases are observed. For instances, exports of sugar from the third countries decrease by over 15 percent.

4.1.2. Macroeconomic and welfare effects

Implementing the EBA leads to welfare improvement for the LDCs. Table 5 shows percentage changes in utility and GDP, as well as total welfare changes in terms of equivalent variation (EV) for the LDCs and the EU. Percentage changes in GDP range from 4.7 percent in Malawi, 2.4 percent in Zambia, to 1.1 percent in Mozambique and 0.5 percent in rest of Sub-Saharan Africa. Changes in utility level range from

1.2 percent in Malawi to 0.1 percent in Sub-Sahara Africa. In monetary terms, welfare gains are the highest in Sub-Sahara Africa (US\$169 million), followed by Tanzania (US\$59 million), Malawi (US\$30 million), Zambia (US\$11 million), Mozambique (US\$8 million) and Uganda (US\$2.4 million). Although these gains in dollar terms are quite limited, for certain smaller LDCs such as Malawi and Tanzania, their macro impacts are not negligible.

These changes in welfare can be mostly attributed to allocation efficiency effects and terms of trade effects. Allocation efficiency is improved for the LDCs due to the reallocation of resources to the products with more trading possibilities, while terms of trade improves with higher relative exporting prices. Both of these effects are directly linked to the unilateral removal of import tariffs by the EU on a number of agricultural and food products. Table 5 shows that all the LDCs benefits from a terms of trade improvement and in most LDCs this effect dominates the total welfare results. For instance, over US\$117 million of the total US\$169 million gains for rest of Sub-Sahara Africa are due to improved terms of trade. Allocation efficiency also improves for all LDCs but Zambia, which suffers an efficiency loss of over US\$13 million¹¹.

Table 5. Macroeconomic and welfare effects of the EBA (Scenario 1)

	GDP (%)	Utility (%)	Welfare (EV in US\$ mil)		
			Total	Efficiency	Terms of trade
EU	0	0	-184	-2.2	-178.5
Malawi	4.7	1.2	30.4	9.5	22.7
Mozambique	1.1	0.3	8.5	1.3	3.8
Tanzania	3.5	0.9	59.7	15.2	32.2
Zambia	2.4	0.3	11.3	-13.5	26.1
Uganda	0.3	0	2.4	0.2	1.5
Sub-Sahara Afr.	0.5	0.1	169.2	29.4	117.5
World	n/a	n/a	38.2	39.7	-1.3

Source: simulation results from scenario 1.

For the EU, a total welfare loss of US\$184 million occurs, almost entirely due to the unfavourable terms of trade effects resulted from the unilateral tariff cuts. However, this loss is inconsequential to the EU and in fact, there are no noticeable losses in either its utility or GDP. Most of the third regions (not shown in the table) experience very minor losses in welfare but no noticeable declines in either utility or GDP, sig-

¹¹ This is mainly due to the presence of an output tax on manufacturing goods in Zambia in the GTAP database version 5. Reduced manufacturing output leads to a loss of tax revenue.

nalling that the trade diversion effects are quite small. The aggregated welfare effects of US\$38 million for the whole world appear to be positive but very small.

4.1.3. Role of the sensitive products

Section 3 emphasizes the importance of the three sensitive products (sugar, banana, and rice) for the LDCs. To see how the delayed liberalisation of these products affect the overall impact of the EBA, we conduct simulation for a supplementary scenario where pre-EBA tariff rates for the sensitive products are maintained while those for other agricultural and food products are eliminated.

Under such a scenario, total welfare gains are reduced markedly (presented in Table 6). Except for rest of Sub-Sahara Africa, all the other LDCs have welfare gains below US\$6 million. For Sub-Sahara Africa, the gain of US\$ 41 million is less than a quarter of the welfare gains available from a "full" EBA scenario, whereas for Malawi and Tanzania, the gains are less than 10 percent of those under the EBA scenario. A decomposition of the welfare results show that except for Sub-Sahara Africa, there are no significant allocation efficiency gains and terms of trade effects are also minimal. In terms of utility and GDP, all the six LDC regions experience less than 1 percent increases. In contrast, the EU suffers a far smaller loss (US\$31 million as compared to a US\$184 million loss in Scenario 1).

Table 6. Macroeconomic and welfare effects of the EBA without reforming sensitive products

	GDP (%)	Utility (%)	Welfare (EV in US\$ mil)		
			Total	Efficiency	Terms of trade
EU	0	0	-30.8	0.7	-30.3
Malawi	0.1	0	0.3	0.1	0.3
Mozambique	0.7	0.2	5.4	0.8	2.5
Tanzania	0.4	0.1	5.9	1.1	3.6
Zambia	0	0	0	-0.1	0.1
Uganda	0.2	0	1.3	0.1	0.9
Sub-Sahara Afr.	0.1	0	41.8	8.9	27.6
World	n/a	n/a	10.2	10.3	0

Source: simulation results.

These results show that the EBA initiative is not likely to generate any significant welfare gains for the LDCs, because of its limited product coverage and its limited tariff concessions (given the preferences that had been granted in the past). Furthermore, a great deal of the gains will likely come from the three sensitive products that are subject to lengthy implementation, especially sugar. Lastly, the negative impact

on the EU and third countries seems to be quite small, indicating that granting duty and quota free access to the LDCs does not cost the EU as well as the third countries.

4.2. Preference erosion and impact of possible EU reform scenarios (scenarios 2-4)

The attractiveness of the EBA initiative and its predecessors is made possible by the protection measures that the EU maintains against other exporters. In fact, the multi-instrument Common Agricultural Policy (CAP) of the EU pushes internal EU prices much higher than the prevailing world market prices. The CAP consists of export subsidies, high import tariffs and quantitative restrictions (import quotas specified in Tariff Rate Quotas—TRQs, for various products and production quotas), as well as domestic support measures that are directly linked to agricultural outputs of and inputs and factors used in agricultural sectors.

With the EBA and its predecessors (ACP and GSP preferences), the LDCs are able to exploit the higher internal EU prices, thereby gaining preferential advantages over low cost producers in the rest of the world. Take sugar, one of the most important products concerned in the EBA initiative, as an example. The EU sugar regime features restrictions on imports through high import tariff, domestic intervention price and production quotas within the EU, and preferential access to the EU market through Tariff Rate Quotas to the ACP countries (Frandsen et al., 2003). This policy has resulted in an internal EU sugar price of about one or two times higher than the world market price (European Commission, 1999). As a consequence of this policy, the EU is a major exporter of sugar in the world market, and some of its members maintain production capacity of sugar beets under unsuitable weather condition.

The ongoing WTO agricultural negotiation and the imminent enlargement of the EU pose serious pressure on the EU to reform the CAP. On the one hand, many WTO members exert pressure on the EU to cut import tariff, export subsidies and trade-distortion domestic supports (see FOI, 2003, for a summary of negotiation positions of key WTO members). On the other hand, extending the same supports as enjoyed by the existing EU members to the newly admitted ones would put serious pressure on the EU budget. Against this background, it is conceivable that the EU will at least partially reduce these trade-distortion measures, thereby effectively reducing the preference margins available to the LDCs.

For this reason, we conduct further simulations to investigate how the preferences margin as granted by the EBA would diminish under a series of "plausible" EU reform scenarios. These scenarios contain conjectured EU reforms during the next round of WTO trade liberalisation. The combined results of these scenarios will demonstrate the cost associated with keeping the preferences meaningful by maintaining the protection measures of the EU.

Two sets of results are provided for each of the four scenarios (Scenarios 2-5, see Box 1). The first of these concerns changes in imports and outputs in the EU (reported in Table 7), whereas the second reports welfare changes obtained from these experiments (Table 8). In the presentation of the results below, we discuss mainly the combined results from the EU reforms and the EBA initiative, by which the "erosion" of the EBA preferences is illustrated. Where needed, we also draw out the qualitative results on the separate impacts of the EU reforms alone to explain how the presence of these reforms reduce or erode the gains from the EBA.

4.2.1. Impact of market access reform in the EU (scenario 2)

Reducing tariff rates on imports from all trading partners except the LDCs by 50 percent will reduce the composite domestic prices of imports in the EU, more than under the EBA scenario, due to the dominant share of imports from non-LDC regions in total EU imports. This leads to an increase in total imports into the EU. However, preferential margins available to the LDCs are reduced significantly and exports from these countries face more competitions from the third countries. The competition is most fiercely for vegetable and fruits, other food, plant fibres, other crops, other animal products, beef, and vegetable oil. Due to the fact that the EBA does not offer any further tariff reductions for many of the above-mentioned products to the LDCs and that the third countries receive quite significant concessions from the EU's market access reform, the LDCs lose some of their export market shares for these products.

These negative impacts on LDCs from the market access reform of EU greatly reduce the benefits from the EBA, as reflected in the combined effects of the market access reform and the EBA (results of Scenario 2, reported in Table 7). For many products, exports from the LDCs to the EU actually decrease. For example, Sub-Sahara Africa's exports of vegetable and fruits, and other crops decrease respectively by 2 and 4 percent, indicating a worse-off situation as compared to the pre-EBA case. For other agricultural products, such as wheat, cereal grains, dairy, and sugar, even though the preference margins offered by the EBA remain positive, other major exports are able

to increase their exports to the EU as well. As a result, exports from the LDCs increase at much lower magnitudes than in the EBA scenario. To see this, one can compare the percentage changes in the EBA (Scenario 1, shown in Table 4) and Scenario 2 (Table 7). For the case of sugar, exports originated from SSA increases by less than 600 percent in Scenario 2, as compared to nearly 900 percent increase in Scenario 1.

In terms of welfare, all LDCs are worse off from EU's market access reform, either due to deteriorations in allocation efficiency or terms of trade or both. These results are shown in the upper left panel of Table 8. Take Sub-Saharan Africa as an example. Total welfare changes in this region will be a loss of US\$25 million, down from a gain of US\$169 million in the EBA Scenario. For the other LDC countries, welfare changes are either negative or marginally positive, as compared to the gains from the EBA scenario. To understand these welfare results, we focus on the negative export price effects, which dominate the total terms of trade effects. These negative export price effects are due to two reasons. On the one hand, MFN tariff cuts by the EU lead to a substitution away from imports originated from the LDCs and relatively smaller increases in imports from the LDCs. This point can be seen from the smaller increases shown in Table 7, as compared to the corresponding changes in Table 4. On the other hand, the preferential access granted to the LDCs actually "traps" the exports from the LDCs and prevents them from shifting to other markets, thereby dampening the prices of LDCs' exports. This is supported by the simulation results (not shown here) that increases in LDCs' exports into other markets are quite limited.

For the EU, effects of the market access reform alone far exceed that of the EBA initiative. As a result, the EU experiences quite significant import increases in those sectors that are currently protected with very high MFN tariff rates. For example, total imports for beef, sugar and rice all increase by over 20 percent (shown in Table 7). Accordingly, outputs of these products decrease in the EU. Table 7 shows that outputs for rice and sugar decrease by 18.3 and 8.7 percent, respectively. In terms of welfare, allocation efficiency gains for the EU are completely cancelled out by terms of trade losses, resulting in negative but marginal total welfare changes for the EU: a loss of US\$69 million dollars, which is still a better-off scenario when compared to the effects of the EBA alone (a loss of US\$184 million). The effects on the third countries are positive and many times over the potential losses to the LDCs. In fact, the worldwide welfare gain will be more than US\$10 billion. This number clearly suggests an overwhelming benefit of the market access reform to the world, despite that it might impact the LDCs negatively by eroding the trade preferences granted to them.

Table 7. Changes in import and output in the EU under various reform scenarios, percent from base data

		Wheat	Cereal grains	Veg. fruit	Oil seed	Plant fibre	Other crops	Other animal prod.	Bo-vine prod.	Other meats	Veg oil	Dairy	Rice	Sugar
Market Access Scenario (scenario 2)														
Exports from LDCs	Mwi*	171	185	-11	-8	-8	-12	-7	-9	21	-18	369	641	461
	Moz	200	215	-2	-1	-1	-4	5	3	37	-8	427	734	564
	Tan	178	186	-11	-10	-7	-12	-23	-4	28	-14	379	652	1065
	Uga	203	219	-1	1	0	-3	6	49	98	-7	431	732	756
	Zam	197	177	-13	-17	-11	-17	-12	-8	22	-18	387	669	368
	SSA	200	214	-2	-1	-1	-4	6	22	62	-8	424	730	582
EU total	Import	4.1	0.8	1.3	-2.4	-2.9	-1.4	0.6	25.1	3.6	2.1	8.2	20.4	36.3
	Output	-7.6	-5.5	-2.8	1.2	0	0.2	-2.8	-6.5	-1	-1.5	-2.6	-18.3	-8.7
Export Subsidy Scenario (scenario 3)														
Exports from LDCs	Mwi	231	225	-6	-12	-9	-12	-3	24	24	-15	412	1122	662
	Moz	266	261	4	-3	-2	-6	11	42	41	-3	477	1278	832
	Tan	245	227	-5	-14	-8	-13	-19	34	34	-10	420	1142	1521
	Uga	284	276	7	-2	0	-2	16	113	112	-1	497	1337	1111
	Zam	289	216	-8	-23	-15	-20	-8	28	28	-15	443	1198	507
	SSA	273	268	5	-4	-2	-4	15	73	73	-2	476	1311	862
EU total	Import	-1.2	-1.5	-0.4	-0.6	-0.2	-0.9	-1.1	-0.5	-0.2	-0.5	-0.7	2.7	7.7
	Output	-3.3	-7.1	0.4	0.9	0.9	0.7	-0.4	-1.5	-0.4	-0.1	-2.7	-6.5	-11.4
	Export	-7.4	-17.7	0.6	2.4	2	1.9	1.4	-10.9	-2.7	0.2	-13.3	-14.8	-49.4
Domestic Support Scenario (scenario 4)														
Exports from LDCs	Mwi	413	418	-11	12	-8	-16	20	36	39	-7	429	1147	697
	Moz	454	462	-4	19	-3	-11	34	54	56	4	496	1292	866
	Tan	420	404	-12	7	-9	-18	-3	44	46	-3	435	1144	1566
	Uga	499	509	3	29	2	-4	46	136	141	10	535	1377	1203
	Zam	474	383	-16	-5	-16	-26	9	36	38	-10	446	1187	518
	SSA	466	476	-2	22	-2	-9	40	87	90	6	502	1324	902
EU total	Import	3.9	3.4	-1.1	9.1	-0.9	-2.4	2.4	1	0.3	1.2	-0.1	2.9	11
	Output	-8.1	-8.4	3.5	-16.2	1.9	4.2	-1.7	-0.8	-0.7	-1.2	0	-2.9	-2.4
Combined Scenario (scenario 5)														
Exports from LDCs	Mwi	274	300	-16	17	-6	-17	12	-2	34	-10	374	660	461
	Moz	297	330	-10	21	-1	-11	22	9	48	-3	418	737	553
	Tan	270	287	-18	12	-7	-18	-11	2	38	-9	368	654	1042
	Uga	318	353	-7	30	2	-7	28	62	121	1	446	749	768
	Zam	291	277	-20	4	-12	-23	1	-3	31	-13	380	670	360
	SSA	295	327	-11	23	-1	-11	23	28	74	-3	407	733	565
EU total	Import	7.8	2.9	-0.3	5.5	-3.6	-4	2.1	26.5	3.7	2.9	7.1	20	32.3
	Output	-19.1	-19.5	0.8	-14.2	2.1	4.2	-5.2	-9	-2.3	-2.8	-5.4	-21.7	-17.3

Source: simulation results. Note: Mwi, Moz, Tan, Uga, Zam and SSA refer to Malawi, Mozambique, Uganda, Zambia, and rest of Sub-Sahara Africa, respectively.

Table 8. Welfare results under various EU reform scenarios (US\$ million, changes from base data)

Regions	Market access scenarios (scenario 2)			Export subsidy scenarios (scenarios 3)		
	Efficiency	TOT	Total	Efficiency	TOT	Total
Aus & New Zealand	-51.6	356.7	293.4	-30	136.3	104.7
Japan	155.3	1131.2	801.5	-269.9	-270	-527.8
ASEAN	179.1	708.4	874.6	-21	-87.2	-115.9
SAARC	95.2	262.7	360.2	-26.6	-0.9	-30.7
East Asia	480.7	1359.3	1674.2	-66.9	-130.3	-207.5
United States	5.7	1134.1	1372	-214.4	-40.5	-325.9
Canada	16.7	133.9	99.8	-76.8	6.4	-68.9
Latin America & Caribbean	217.3	645	922.9	-52	-22.1	-79.6
EU	9103.3	-9490.6	-69	1639.1	1934.6	3629.1
Eastern Europe & FSU	511.5	1940.5	2556.4	-386.8	-503.8	-896.9
Middle East	318	930.2	1269.2	-608	-567.9	-1178.9
Malawi	5.6	12.7	16.9	9.2	21.9	29.3
Mozambique	-1.1	-2.7	-4.3	1.2	3.5	8.1
Tanzania	8.9	18.5	34.9	14	30.5	56.4
Zambia	-9.8	13.9	3.2	-13.4	25	10.5
Uganda	-0.4	-2.3	-3.6	-0.1	0.5	0.9
Sub Saharan Africa	-14.6	-3.8	-24.9	-44	-48.6	-71.1
Rest of Africa	255	564.2	805.7	-152.1	-281.6	-434.7
World	10794.7	-46.1	10750	-695.9	-0.1	-994.7
	Domestic support scenario (scenarios 4)			Combined scenario (scenarios 5)		
	Efficiency	TOT	Total	Efficiency	TOT	Total
Aus & New Zealand	-34.9	-48.8	-81.6	-118.3	456.3	328.7
Japan	-40.6	-746.8	-568.5	-165.1	154.1	-230.2
ASEAN	3.4	-27.6	-25.2	159.4	594.3	741
SAARC	6.4	-110.1	-107.5	79.6	164.7	242.9
East Asia	12.1	-187	-139.8	422.1	1028.8	1336.2
United States	-228.9	-554.7	-1002.7	-453.6	576	95.7
Canada	-44	82.3	63.5	-109.2	236	106.4
Latin America & Caribbean	-246.5	-246.2	-548.5	-85.9	408.4	332.9
EU	6792.4	2910.5	9694.1	16952.8	-4267.3	12995.4
Eastern Europe & FSU	-139.8	-362.3	-512.2	-36.3	1046.3	1093.2
Middle East	-192.7	-347.1	-549.6	-506.1	-22.8	-522.5
Malawi	7.7	17.6	23.8	3.8	7.7	10.5
Mozambique	1.2	2.4	5.2	-1.3	-4.5	-7.9
Tanzania	13.8	29.8	54.7	6.5	15	27.5
Zambia	-12.6	25.1	11.4	-8.8	12.1	2.5
Uganda	-0.7	-6.9	-9.7	-1.6	-10.4	-15.5
Sub Saharan Africa	-2.6	22.7	27.5	-119.3	-257.1	-396.5
Rest of Africa	-75	-220.3	-292.5	26.8	67.7	83.3
World	5820.2	-2.4	5817.7	14849.3	-24.3	14826

Source: simulation results. Note: the first three columns of each panel show the allocation efficiency effects, terms of trade effects, and total welfare effects of the scenario (including the effects from implementing the EBA), while the last column shows the total welfare effects of the relevant EU reform, excluding the effects from the EBA. Please note that numbers in columns 1 and 2 do not add to the corresponding number in column 3.

4.2.2. Impacts of eliminating export subsidies in the EU (Scenario 3)

Eliminating export subsidies in the EU, as part of the shocks simulated in Scenario 3, leads to an increase in EU's export prices, especially for the products with significant subsidies, namely, wheat, cereal grains, rice, beef, other meats, dairy and sugar. This in turn reduces EU's exports of these products to the world market and at the same time pushes up the corresponding world market prices, as the EU is a "large" trader in the world agricultural market. Accordingly, outputs of these products in the EU are reduced. On the other hand, for products with little or no subsidies, this reform is actually favourable because it expands their outputs by absorbing resources that move out of the previously subsidized sectors. Consequently, exports of these products actually increase. As the impact of the EBA is much smaller than that of the EU's MFN reforms, the above-mentioned effects generally dominate the results of Scenario 3. Table 7 illustrates the opposite movements of outputs of different products in the EU. For example, outputs for oil seeds and plant fibres increase by just below 1 percent, while outputs for sugar decreases by over 10 percent. Overall, total exports and outputs in the EU decrease, which push up world market prices.

From the results of Scenario 3, it is observed that the declines of outputs of many products in the EU (Table 7), in terms of percentage points, are far below that of exports from the EU. This implies that a significant portion of the outputs must be sold within the EU, possibly due to a substitution of imported products with domestically produced ones. In other words, those products that would be exported now compete in EU's domestic market against foreign products. This substitution happens due to the Armington specification used in the GTAP model, which defines imported and domestic products as imperfect substitutes. When world market prices rise because of fewer exports from the EU, the "home bias" structure results in less imports into the EU, thereby generating this seemingly paradoxically result, i.e., trading partners of the EU does not gain directly from the EU's removal of export subsidies. From Table 7, we can see that except for sugar and rice, total imports for all other products into the EU decline by up to 1.5 percent¹².

Although their exports to the EU are adversely impacted by the removal of EU's export subsidies, net food exporting countries are generally able to redirect their exports to markets other than the EU and in some cases increase exports to these markets.

¹² It is worth of noting that in Scenario 3, tariff barriers are maintained for the EU, by which the EU producers are protected from more competitions. Removing the tariffs would no doubt lower the import prices in the EU market and would lead to more imports.

Non-LDC net food importing countries generally lose welfare due to the higher world market prices. The EU itself, however, enjoys positive welfare gains of nearly US\$3.6 billion (shown in Table 8) as a result of removing its export subsidies, due to gains from both allocation efficiency and terms of trade. As expected, the negative impact of the EBA on the EU appears to be quite insignificant, in comparison to the gains from removing export subsidies.

The impact on the LDCs is quite different from that on the EU. Higher import prices for agricultural products lead to terms of trade losses for the LDCs. Again, take Sub-Saharan African as an example. From Table 8 we can see that the gains from the EBA are not enough to offset the negative welfare impact caused by the removal of EU's export subsidies. In fact, the combined effects of the EBA and the removal of EU's export subsidies (i.e., Scenario 3) are negative for the SSA. Due to their trade patterns with the EU and the world, the other LDC countries are affected marginally by this reform. For these countries, the combined welfare effects under Scenario 3 are positive but slightly smaller than that of the EBA alone.

To summarize, eliminating exports subsidies benefits the EU the most due to all the budget savings and efficiency gains. However, this move does not give rise to welfare gains to the rest of the world. Food importing countries no doubt have to face high import prices. For LDCs, there are no obvious benefits as most of them fall into the category of food importing countries. In addition, less exports from the EU implies more fierce competition in the EU market, which does not help the LDCs' exports, either.

4.2.3. Impact of domestic support reform in the EU (scenario 4)

Reducing different types of domestic support measures has different effects on producers in the EU. For example, reducing output subsidies for a product generally raises its price, which in turn puts downward pressure on its outputs. A reduction of intermediate input subsidies tends to cause significant substitution among different inputs and in general also impacts its final outputs. Land and capital based payments are among the most important policy instruments within the framework of the CAP. Reductions of these payments will push down the rental prices of land and capital and cause significant reallocations of these factors. The exact effects of this reform depend on both the budget outlays of the existing supports and their distributions across different instruments and products. These impacts on the EU will have repercussions on the world market through changes in trade pattern and terms of trade.

Results from Scenario 4 confirm the above discussion. On the input side, it is found that resources generally move out of agriculture, and that prices of the factors that are specific to agriculture, such as land, drop significantly. On the output side, the net effects of reducing these domestic support measures vary across products. Prices of wheat, grains, oil seeds, and meats and animal products increase significantly, whereas prices of vegetable and fruits, plant fibres, other crops decrease. Prices of rice, sugar and dairy also decrease, but to a less degree. Outputs of the first product group (wheat, grains, oil seeds and meats, see Table 7) decrease, whereas that for the second group goes up. The most notable output decreases is in oil seeds (over 16 per cent, according to Table 7), followed by wheat and grains (over 8 per cent), whereas outputs for vegetable and fruits, and other crops increases by 3.5 and 4.2 per cent, respectively. World market prices change accordingly, although not as significant as changes in domestic prices in the EU, due to the fact that other major exporters adjust their production and trade so as to absorb some of the shocks to the world market prices.

For the LDCs, as the world market prices of some key exporting goods (such as vegetable and fruits and other crops) drop, the gains from the EBA diminish. This is especially the case for rest of Sub-Sahara Africa, which is by far the largest exporter among the six LDC regions examined in this study. Terms of trade gains from the EBA are eroded considerably, particularly due to the unfavourable price effects in wheat, grains, and other crops. In monetary terms, domestic support reform in the EU will lower the welfare gains of Sub-Sahara Africa to only US\$27 million, even with the benefits from the EBA considered. For most other LDC countries, the negative impacts of the domestic support reform seem to be limited and are not enough to offset the gains from the EBA. Thus, welfare results for these countries generally remain positive, even though they are quite small.

The EU is understandably gaining significantly from the domestic support reform through budgetary savings and by using resources more efficiently. Its terms of trade also improves, thereby adding to a total welfare gain of nearly US\$10 billion even with the losses resulted from implementing the EBA being considered (Table 8). Other regions are affected negatively, mainly due to terms of trade losses from the higher world market prices. Overall, the world would enjoy a welfare gain about US\$5.78 billion from the EU's domestic reform alone, which far outstrips the welfare improvement from the EBA alone. When the effects of the EBA are included (as in Scenario 4), the welfare gain worldwide is about US\$5.82 billion.

These results support the hypothesis that domestic reform by the EU will reduce high EU prices in some key commodities that hold special interest to the LDCs. Consequently this reduces the terms of trade gains from the EBA for the LDCs. Still, these losses to the LDCs appear to be quite small compared to the overall gains achieved. The EU stands to gain significantly from such a reform and is in the position to provide assistance to the LDCs in order to offset the negative impacts on them.

4.3. Welfare cost associated with maintaining meaningful preferences for the LDCs (scenario 5)

The above results demonstrate that the benefits of the EBA to the LDCs would diminish or even totally disappear, should the EU carry out a series of "plausible" reforms on a MFN basis as part of the new round of multilateral trade liberalisation. As a summary of the three individual experiments (Scenarios 2-4), the last panel of Table 8 reports the welfare results of implementing the three reforms simultaneously, together with implementing the EBA. It is shown that simultaneously conducting these reforms leads to welfare losses for all the LDCs concerned in the study, especially for rest of Sub-Saharan Africa, which will suffer a loss of over a half billion US dollars¹³, thereby turning the gains obtained from the EBA scenario (US\$169 million, see Table 5) to a loss of nearly four hundred million US dollars under Scenario 5. Therefore, our results provide some justifications for the concerns on preference erosion and the fear of marginalizing the interests of the LDCs in the current WTO negotiations. As the EBA initiative aims at eliminating tariff and quantitative restrictions imposed on LDCs exports, there will be nothing more for the EU to offer the LDCs along the line of preferential treatment.

Certainly, maintaining the existing protection measures in the EU unchanged would be an option to keep these preferences meaningful. However, this option entails an enormous cost that distorts the world trade and harms the economic welfare of the whole world. Our results (Table 8) show that the worldwide welfare gains from the possible EU reform scenarios (the three reforms combined) amount to nearly US\$15 billion! In fact, most regions covered in this study gain from such a move by the EU, with the EU itself being the biggest beneficiary with a welfare gain of nearly US\$13

¹³ This estimate is obtained by conducting a separate experiment where only the MFN reforms by the EU are simulated. Adding the welfare results from the EBA scenario (Scenario 1) to the above estimate will lead to the welfare estimate for Scenario 5. Interested readers can find the welfare results for implementing the various EU reform scenarios with and without the EBA from Appendix 3.

billion. The LDCs, the Mid-east and North African region, and Japan are the lone losers under such a scenario.

As discussed in details in the previous subsection, about two-third of the total welfare gains come from the market access reform by the EU, whereas the domestic support reform provides much of the remainder. Removing export subsidies does not seem to generate significant gains for the rest of the world. However it does add to the welfare of the EU. Since these gains cannot be achieved if the EU wants to keep the preferences meaningful to the LDCs, the world would have to forgo these gains (15 billion dollars) for the sake of keeping the preferences meaningful. Our results have shown that the additional benefits offered through the EBA will only amount to a small fraction of the above-mentioned gains. For the EU to forgo the benefits at such a scale for itself and for the world at large would be difficult to justify from a purely economic perspective.

While the study shows that the worldwide welfare effects from EU's trade liberalisation far exceeds the potential harms to the LDCs, the question remains unanswered from the LDCs' perspective: how to protect the interests of these poor countries when the rest of the world stands to further gain from the new round of trade liberalisation. The notion that just because the losses of the LDCs are small they can simply be neglected and forgotten is certainly hard to accept. On the contrary, this issue has received ample attention during the Doha meeting. In fact, as agreed by the WTO members in the Doha ministerial Declaration, the interest of the LDCs within the overall objective of multilateral trade liberalisation has been explicitly stressed.

The difficulty raised in this paper, however, is that they conflict each other, i.e., multilateral liberalisation might diminish the benefits of special and differential treatment, while the later could slow down the progress of the former. Facing this dilemma, one has to realize that trade policy is not the only policy option in assisting economic development in the LDCs. In many cases, a set of policies should be implemented simultaneously. For example, the EU, with all the potential welfare gains from reforming its protection measures, can team up with other developed countries to compensate the LDCs for the possible losses. This compensation can be offered as, among other forms, development aid that targets various supply side constraints that prevent the LDCs from effectively competing in the world market. For example, in the case of the Sub-Sahara African region, our analysis shows that there are potentials for these countries to export sugar, vegetable and fruits, other crops, rice and plant fibres. Therefore, the EU and other developed countries can target their development aid to

improve these countries' infrastructure and boost their productivity so that the real competitive advantages of these countries can be exploited in the world market.

5. Concluding remarks

A detailed investigation of the EBA initiative shows that it only affects a limited number of products, mainly food and agricultural goods (including sensitive products such as sugar, rice and bananas), due to the preferences that has been granted prior to the EBA. In addition, current exports of the EBA-affected products from the LDCs to the EU are quite limited, too. Therefore, we only expect some positive effects for the EBA products in the concerned LDC countries.

Given the limited effective coverage of the agreement due to the preferences granted in the past, it is unlikely that this initiative will generate sizable gains for the LDCs at the macro-level. The quantitative analysis conducted in this study show that total welfare gains from such an initiative are less than US\$300 million for all the six LDC countries/regions considered in the study. Further, a great deal of the gains will come from the three sensitive products that are subject to lengthy gradual liberalization, especially sugar. Lastly, the negative impact on the EU and third countries seems to be quite small, indicating that granting quota and duty-free access to the LDCs does not cost the EU very much and does not pose a big threat to exports from the third countries. It should be further noted that the quantitative assessment of the benefits of the EBA is based on the assumption that the safeguard provisions and the rules of origin attached to the EBA initiative would not play the role of restricting exports from the LDCs. This is nonetheless a strong assumption, especially considering the results for the trade and production of sugar. If indeed the LDCs are able to take full advantage of this initiative and increase their exports of sugar dramatically, the safeguard clause may be triggered. Therefore, even the modest benefits of the EBA as shown in this study should be treated with caution.

Multilateral trade negotiations under the auspice of WTO exert pressure on the EU to reform its agricultural policy. It is the protection measures contained in the CAP that support the high EU domestic market prices and that keep the preferences attractive to the LDCs. Further analysis of this study demonstrates that the preference margin as well as gains from these preferences will be diminished under a series of "plausible" reform scenarios in which the EU cuts its market access barriers, export subsidies and domestic support measures. In fact, most LDCs will suffer welfare losses under such scenarios. These results suggest that further trade liberalisation may actually harm the

LDCs. However, using this result as an argument for maintaining EU's (and other countries') protections and for opposing the WTO route toward trade liberalisation would cause much bigger potential welfare losses to the whole world and ultimately would harm the LDCs in the long run. Indeed, the reforms carried out by the EU are shown to generate sizable gains for the world in general, which far exceed the potential losses to the LDCs. A coordinated effort by all WTO members in liberalising the world trading system will surely generate much more welfare gains.

Based on the quantitative analysis, two sets of policy implications can be drawn out from the perspective of the LDCs. Regarding the EBA initiative, it is important that the trading opportunities provided through the EBA is fully available to the LDCs. To do so, the EU should minimize the uncertainties and complexities associated with the safeguard measures and rules of origin. The presence of these measures in previous preference schemes (such as the GSP) may have contributed to their poor performance. To avoid this problem from happening again, the LDCs should seriously consider taking action to negotiate for unconditional quota and duty-free access to the markets of the EU and other developed countries. As many WTO members have proposed the abolition of Article 5 (special safeguard provisions) of the Agreement on Agriculture, the LDCs may take this opportunity to integrate the EBA into the new WTO agreement and to get rid of the attached safeguard provisions altogether. It should be noted, however, that these benefits are bound to be short-lived, and that long-term solutions should be considered.

Concerning the possible negative impact of the WTO reforms, the negotiation proposal of the African Group emphasizes the importance of implementing the Marrakesh Ministerial Decision. Although this decision was meant to primarily tackle the problems resulting from the Uruguay Round reform, many of the mechanisms proposed can also help to ease the problems discussed here. For example, technical and financial assistance and cooperation are much needed in solving many supply side constraints and bottlenecks that the LDCs face. As the LDCs have to compete on level grounds with other WTO members eventually, the key to improve their positions is to break these constraints. Certainly, the EU and other developed countries are in the position to offer such assistances as they stand to benefit the most from further multilateral liberalisation. If the efforts are indeed forthcoming from the rich countries and if the cooperation between the rich and the poor is genuine during the Doha Round, there is no reason to fear for marginalizing the LDCs. If not, the willingness of participation in the negotiations by the LDCs is difficult to envisage.

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Appendix 1 Least Developing Countries and the criteria's for selection

The United Nation Conference on Trade and Development (UNCTAD) designates countries that meet a set of criteria as Least Developing Countries (LDCS). Determination of a country as LDC is based not only on income, but also on the "potentials" for development of the country. Thus, countries with particular disadvantages are given priority by being included on the LDC list, whereas a country with similar income may not be included. The LDC list is based on the following criteria (UNCTAD, 2001b):

- 1) a low-income criterion based on a three year average estimate of the gross domestic product per capita (Under \$900 for inclusion, above \$1,035 for graduation);
- 2) a human resource weakness criterion, involving a composite *Augmented Physical Quality of Life Index (APQLI)* based on indicators of nutrition, health, education and adult literacy;
- 3) an economic vulnerability criterion, involving a composite *Economic Vulnerability Index (EVI)* based on indicators of instability of agricultural production, the instability of exports of goods and services, the economic importance of non-traditional activities, merchandise export concentration and the handicap of economic smallness;
- 4) a population not greater than 75 million people.

Based on these criteria, the following countries are recognized as LDCs:

Afghanistan	Ethiopia	Nepal
Angola	Gambia	Niger
Bangladesh	Guinea	Rwanda
Benin	Guinea-Bissau	Samoa
Bhutan	Haiti	Sao Tome and Principe
Burkina Faso	Kiribati	Senegal
Burundi	Laos	Sierra Leone
Cambodia	Lesotho	Solomon Island
Cape Verde	Liberia	Somalia
Central African Rep.	Madagascar	Sudan
Chad	Malawi	Tanzania
Comoros	Maldives	Togo
Congo	Mali	Tuvalu
Djibouti	Mauritania	Uganda
Equatorial Guinea	Mozambique	Vanuatu
Eritrea	Myanmar	Yemen

Appendix 2

Regional and sectoral aggregation of the GTAP database

New regions	Original GTAP regions
Aus & New Zealand	Australia, New Zealand
Japan	Japan
ASEAN	Thailand, Vietnam, Indonesia, Malaysia, Singapore, and Philippines
SAARC	India, Bangladesh, Sri Lanka
East Asia	Korea, Hong Kong, China, Taiwan, Rest of South Asia
United States	United States of America
Canada	Canada
Latin America and the Caribbean	Mexico, Central America and the Caribbean, Colombia, Peru, Venezuela, Rest of Andean Pact, Argentina, Brazil, Chile, Uruguay, Rest of South America
EU	European Union
Eastern Europe and FSU	Hungary, Poland, Rest of Central European Associates, Former Soviet Union.
Middle East	Turkey, Rest of Middle East
Malawi	Malawi
Mozambique	Mozambique
Tanzania	United Republic of Tanzania
Uganda	Uganda
Zambia	Zambia
Rest of Sub-Saharan Africa	Rest of Sub-Saharan Africa
Rest of Africa	Morocco, Botswana, Rest of South African Customs Unions, Other Southern Africa, Zimbabwe
Rest of the World	Switzerland, Rest of EFTA, Rest of the World
New sectors	Original GTAP sectors
Paddy rice	Paddy rice
Wheat	Wheat
Cereal Grains	Cereals and grain
Veg/fruit	Vegetables, fruit and nuts
Oil seeds	Oil seeds
Plant fibers	Plant based fibers
Other Crops	Other crops
Other animal prod.	Cattle, sheep, goat, horses and other animal products
Bovine meats	Meat: cattle, sheep, goat and horses
Other meats	Other meat products
Veg. oil	Vegetable oil and fats
Dairy	Dairy products
Rice	Processed rice
Sugar	Sugar cane, sugar beet and sugar
Processed food prod.	Other food products
Bev. & tob.	Beverages and tobacco products
Nat Res.	Forestry, coal, oil, minerals, fishing
Textiles	Textiles, wearing apparel, leather products, wool and silk- worm cocoons
Manufactures	Wood products, paper, products, petroleum./coal products, chemical/ rubber/ plastic products, mineral products, ferrous metal, metals nec., metal products, motor vehicles and parts, transport equipment nec., electronic equipment nec., machinery and equipment nec., manufactures nec.,
Services	Electricity, gas manufacture/distribution, water, construction, trade, transport nec., sea transport, air transport, communication, financial services nec., insurance, business services nec., recreation and other services, pub adm./health/defence, education, dwellings

Source: Authors' aggregation based on the GTAP database version 5 (Dimaranan and McDougall, 2002).

Appendix 3

Welfare results under various EU reform scenarios with and without implementing the EBA (US\$ million)

Regions	Market Access Scenarios (scenario 2)		Export Subsidy Scenarios (scenarios 3)	
	With EBA	Without EBA	With EBA	Without EBA
Aus & New Zealand	293.4	293	104.7	103.5
Japan	801.5	818.4	-527.8	-502.5
ASEAN	874.6	879.8	-115.9	-110.1
SAARC	360.2	368	-30.7	-21.2
East Asia	1674.2	1679.2	-207.5	-200.9
United States	1372	1392.2	-325.9	-297.8
Canada	99.8	99.2	-68.9	-70.1
Latin America & Caribbean	922.9	932.2	-79.6	-77.1
EU	-69	16.3	3629.1	3789.4
Eastern Europe & FSU	2556.4	2555.4	-896.9	-898.5
Middle East	1269.2	1257.9	-1178.9	-1193
Malawi	16.9	-4.2	29.3	-0.3
Mozambique	-4.3	-11	8.1	-0.3
Tanzania	34.9	-6.4	56.4	-1.8
Zambia	3.2	-3.9	10.5	-0.5
Uganda	-3.6	-5.5	0.9	-1.5
Sub Saharan Africa	-24.9	-148.8	-71.1	-235.6
Rest of Africa	805.7	816.4	-434.7	-427.2
World	10750	10694	-994.7	-1045.6
	Domestic Support Scenario (scenarios 4)		Combined WTO Scenario (scenarios 5)	
	With EBA	Without EBA	With EBA	Without EBA
Aus & New Zealand	-81.6	-82.7	328.7	328.3
Japan	-568.5	-543.7	-230.2	-213.5
ASEAN	-25.2	-19.4	741	746.3
SAARC	-107.5	-97.6	242.9	250.8
East Asia	-139.8	-133.6	1336.2	1341.3
United States	-1002.7	-974.5	95.7	115.8
Canada	63.5	62.3	106.4	105.8
Latin America & Caribbean	-548.5	-544.7	332.9	341.8
EU	9694.1	9883.6	12995.4	13070.3
Eastern Europe & FSU	-512.2	-515.1	1093.2	1093.1
Middle East	-549.6	-565.8	-522.5	-532.5
Malawi	23.8	-7	10.5	-10.4
Mozambique	5.2	-3.3	-7.9	-14.5
Tanzania	54.7	-6.7	27.5	-14
Zambia	11.4	0.3	2.5	-4.2
Uganda	-9.7	-12.2	-15.5	-17.4
Sub Saharan Africa	27.5	-140.6	-396.5	-516.8
Rest of Africa	-292.5	-285.5	83.3	94.2
World	5817.7	5783.7	14826	14765.9

Sources: simulation results of Scenarios 2-5 and the associated supplementary scenarios (see footnote 13 for explanations).

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