

The Costs and Benefits of Duty-Free, Quota-Free Market Access for Poor Countries: Who and What Matters

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Abstract

This paper examines the potential benefits and costs of providing duty-free, quota-free market access to the least developed countries (LDCs), and the effects of extending eligibility to other small and poor countries. Using the MIRAGE computable general equilibrium model, it assesses the impact of scenarios involving different levels of coverage for products, recipient countries, and preference-giving countries on participating countries, as well as competing developing countries that are excluded. The main goal of this paper is to highlight the role that rich and emerging countries could play in helping poor countries to improve their trade performance and to assess the distribution of costs and benefits for developing countries and whether the potential costs for domestic producers are in line with political feasibility in preference-giving countries.

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Introduction

The globalization surge of the past three decades mostly missed the poorest countries in the world. While other developing countries were able to ride the wave, the share of today's least developed countries (LDCs) in global exports fell by two-thirds from 1970 to 2000, twice as much as the fall in their share of global income.¹ In broad terms, there are two principal sources of the LDCs' poor export performance: severe supply-side challenges, resulting from a lack of sound institutions and policies, inadequate infrastructure, and a paucity of physical and human capital; and implicit discrimination against their exports in rich-country trade policies. Progress is being made in a number of countries in addressing the supply-side challenges, but these problems will not be solved easily or quickly. The second source of poor export performance in poor countries should be more amenable to reform, as it requires only that richer countries open their markets to countries accounting for a tiny share of global trade.

The high-income members of the Organization for Economic Cooperation and Development (OECD), and increasingly advanced developing countries as well, provide preferential market access for developing countries, but even the more generous programs for LDCs often contain exceptions. Moreover, the exceptions are usually concentrated in a narrow range of products where LDCs have comparative advantage, especially agricultural commodities (often sugar, rice, meat, and dairy) and labor-intensive manufactures, such as textiles, apparel, and footwear. The effects of these politically-driven exclusions are further magnified by the structural weaknesses in the economies of LDCs, which are generally not very diversified. Thus, even a small number of product exclusions can rob preference programs of much of the potential benefit. In addition to the remaining formal barriers, preferential arrangements have rules of origin that restrict international sourcing of inputs and that is an acute concern in poorer countries with a high degree of specialization in the manufacturing sector, and limited ability to create the backward and forward linkages required by many origin regimes.²

To boost LDC engagement in global markets as a tool of poverty reduction, UN members agreed in the 2000 Millennium Declaration that developed countries should provide duty-free, quota-free (DFQF) market access for LDCs. That Millennium Development Goal (MDG) was reaffirmed at the World Trade Organization (WTO) ministerial in Hong Kong in 2005, except that U.S.

¹ Data is for today's list of LDCs (because the list changed over time) and is from the United Nations Comtrade database and the International Monetary Fund's *International Financial Statistics*.

² In assessing the potential to expand poor-country exports, it is important to keep in mind that administrative and regulatory barriers also arise outside the preference programs themselves. Most notably for some LDCs in Africa, sanitary and phytosanitary standards to protect human, plant, and animal safety frequently block agricultural exports because many poor countries lack the capacity to certify compliance.

negotiators insisted on limiting it to 97 percent of tariff lines. At the same time, the communiqué also called on developing countries “in a position to do so” to provide expanded preferential access for LDCs.

This study assesses four broad questions around improved market access for poor countries:

- How much would LDCs gain from 100 percent versus 97 percent DFQF market access in OECD markets?
- How would the distribution of gains and losses change if eligibility for DFQF access were extended to additional small and poor countries?
- How much would LDC gains rise if Brazil, China, and India also provide full market access?
- What would be the effect of improved access on producers in preference-giving countries?

To preview the results, the analysis confirms the result from previous research that 97 percent market access provides very few benefits for LDCs. But the evidence does not support two of the chief concerns about expanded preferential access for those countries. First, sub-Saharan Africa overall stands to gain, not lose, if OECD countries, including the United States, provide 100 percent DFQF market access for all LDCs; and other developing countries, such as Pakistan, do not suffer from preference erosion. Second, preference-giving countries do not suffer market disruption from removing exclusions for sensitive products, such as sugar or dairy. The adjustments are greater, however, if DFQF market access is extended to a broader group of small and poor countries.

Methodology

The MIRAGE (Modeling International Relationships in Applied General Equilibrium) model is a multi-sector, dynamic, multi-region computable general equilibrium model devoted to trade policy analysis. It is described in detail and the implications of its features compared with other CGE models are analyzed in Bouët (2008) and the model is extensively described in Decreux and Valin (2007). Simulations are run until 2020 to measure the long-term impact of the policy scenarios. The model is applied using data on the economic structure and trade of 113 countries in 57 sectors from the Global Trade Analysis Project (GTAP) database version 7 (Narayanan and Walmsley, 2008), and data on trade policies, including preferential tariff levels, from the MAcMapHS6 version 2 database (Boumellassa, Laborde, and Mitaritonna, 2009).³

If these tools have been widely used in numerous global or regional trade agreement assessments, specific modifications have been done for this study. First, the tariff data set has been updated so that the baseline reflects important trade policy changes since MAcMapHS6 was last updated in 2004 (see next section). Second, the trade matrix was adjusted to

³ The MAcMapHS6 database has the most detailed information available on market access barriers and preferential trading arrangements, including bound and applied tariffs under World Trade Organization rules, and preferential tariffs arising from reciprocal regional trade agreements or unilateral preference programs, such as those studied here.

discriminate between "real" trade and virtual (or potential) trade. Our focus on LDCs requires particular care in the use of the data because of weaknesses and gaps in reporting by those countries and the problems are compounded in the case of potential exports that are blocked by prohibitive tariffs in importing countries. In the latter case, the trade matrix of the GTAP database allows for the possibility of trade creation by using constructed trade values instead of zeroes. For example, the trade matrix of the GTAP database includes "virtual" merchandise trade flows related to travel expenditures: rather than being treated as an export of services, the expenses of a Japanese tourist in Cambodia are translated in the database as a dutiable export of the consumed goods from Cambodia to Japan. But these "virtual" trade flows can be problematic in our assessment when it creates non-negligible exports from a LDC to an OECD country after removal of a high tariff on a specific commodity. For instance, the GTAP database displays an export of processed rice of about \$100,000 by Senegal to Japan facing a 340 percent tariff. Based on the model parameters (Armington elasticities for imperfect substitutes), the elimination of the duty can lead to a 15-fold increase in Senegalese exports of rice to Japan. Unfortunately, this flow is purely artificial and there is no way of knowing whether trade liberalization would boost Senegalese exports or by how much. Due to the magnitude of the shock, this problem will lead to a significant bias in our results.

To address the problems created by constructed trade values, we split the GTAP trade matrix in two categories: real trade flows, based on the trade data inputs to the GTAP database by Mark Gehlhar, and virtual ones.⁴ Tariffs, and their elimination, will affect only the former category. In addition, we have checked the quality of the input-output tables for key products in the LDC countries we focus on to avoid important mistakes due to data quality problems. For instance, the GTAP7 database shows that 15 percent of the production cost of processed rice in Senegal is due to imported wheat and 0 percent to the local paddy rice. This mistake in the construction of the IO table will also lead to serious problems in the CGE assessment since it implies that Senegal can export rice without producing it and simply by importing wheat. We fix such issues by reallocating the intermediate consumption to the appropriate sector in the IO table.

To make the modeling and analysis tractable, the data have been aggregated into 36 countries or regions and 28 sectors, with a focus on LDCs and the products they export. The geographic and sectoral composition is shown in Annex Table 1. Unfortunately, since the poorest countries have the least-available and lowest-quality data, many of the LDCs that we are interested in examining are either missing or have only partial data and can be included only on a weighted basis in larger regional aggregates. With those caveats, we tried to select for special analysis a range of LDCs from Africa and Asia that produce a range of products, both clothing and agricultural products. Similar factors around regional and export diversity drove the decision on which other small and vulnerable economies, and which preference-giving countries to isolate in the analysis.

⁴ See the description of the database at https://www.gtap.agecon.purdue.edu/databases/trade_data.asp.

The Baseline

The first issue is to identify where we are now with respect to LDC market access. The Millennium Declaration approved by UN members in 2000 called for developed countries to provide DFQF market access for LDCs on essentially all products. The ministerial communiqué released by the WTO in Hong Kong in 2005 reaffirmed this commitment, but, at the insistence of U.S. negotiators, defined “essentially all products” as 97 percent of tariff lines.⁵

Most of Europe has already opened markets for 100 percent of exports from LDCs, as have Australia and New Zealand.⁶ Japan and Canada provide access for over 98 percent of products for LDCs, while the United States provides duty-free access for only around 80 percent of products for LDCs outside sub-Saharan Africa and Haiti, and South Korea’s preference program for LDCs covers only 75 percent of tariff lines. Among other OECD countries, Turkey provides DFQF access for most products outside agriculture and Mexico does not yet have a preference program. India and China also adopted preference programs for LDCs in recent years. These programs are described in more detail in Elliott (2009). Finally, at the WTO ministers’ meeting in Geneva in December 2009, Brazil announced that it would introduce a program in 2010, rather than waiting for the conclusion of the Doha Round, as it had earlier insisted.⁷

Since the MAcMapHS6 version 2 database is based on 2004 data, we needed to update the database to reflect relevant trade policy changes occurring since then, including:

- expanded duty-free access for LDCs in
 - o Japan
 - o South Korea
 - o India
 - o China
 - o Switzerland
 - o Turkey
- the phasing out of the implementation period for the protocol products in the EU27 for the EBA (rice, sugar, bananas)
- implementation of free trade agreements between
 - o the United States and Central America and the Dominican Republic (CAFTA-DR)
 - o India and South Asian neighbors (SAFTA)
 - o the Economic Partnership Agreements between the EU27 and ACP countries that have signed an agreement or at least an interim agreements.

The Scenarios

In order to explore a range of possible outcomes, we analyzed 10 different scenarios:

- A. 97% of tariff lines liberalized by OECD countries for LDCs

⁵ See, for example, the analysis in Oxfam International (2005).

⁶ We ignore the fact that the EU program excludes armaments as they are commercially insignificant.

⁷ See his statement at http://www.wto.org/english/thewto_e/minist_e/min09_e/min09_statements_e.htm.

- B. 97% of tariff lines liberalized by OECD countries for the LDCs and other designated countries (defined as those below the World Bank's low middle-income threshold, per capita, and with total national incomes below \$50 billion)
- C. 97% of tariff lines liberalized by OECD countries plus Brazil, China, and India for the LDCs
- D. 97% of tariff lines liberalized by the countries in C for the beneficiaries in B
- E. 100% DFQF given by OECD countries to LDCs
- F. 100% DFQF given by OECD countries to LDCs and other designated countries (as defined in B)
- G. 100% DFQF given by countries in C to LDCs
- H. Same as G but DFQF extended to other designated countries (as defined in B)
- I. 100% DFQF given by OECD countries to LDCs and low-income countries with populations smaller than 75 million
- J. Same as I plus larger low-income countries (Vietnam, Pakistan)

All scenarios are implemented in 2010.

In some scenarios, liberalization only concerns 97% of tariff lines and preference-giving countries are free to select the products excluded. In this case, we use the political economy criterion developed by Jean, Laborde and Martin (2008) to select the tariff lines excluded from liberalization. It is based on a political economy approach where the government (common agent) gives protection to economic sectors (multi-principals) against financial transfers and maximizes a function which includes national welfare and these financial transfers. As a result of this model, the government is supposed to select lines which maximize a political economy indicator depending positively on the height of the tariff and the magnitude of imports.

With the Mirage model simulations, it is possible to underline some interesting results that would be generated by these different scenarios, and in particular the distribution of potential gains and losses. In addition to the impact on different groups of preference beneficiaries, we are also interested in the impact on developed countries' production. The remaining tariff peaks in developed countries are the result of lobbying by powerful political constituencies, so, in order to assess the political feasibility of various scenarios, it is important to analyze the impact on preference-giving countries as well.

The Impact of 100 percent Market Access in OECD Countries for LDCs

Previous studies by Berisha-Krasniqi, Bouët, Laborde and Mevel, among others, demonstrated that tariff peaks in rich countries are concentrated in a few tariff lines and, therefore, 97 percent duty-free access provides very little benefit.⁸ That result was confirmed by this analysis, which shows no LDC gaining even as much as one-tenth of one percent in additional exports from 97 percent product coverage. For similar reasons, including that LDC exports are relatively concentrated, 97 percent coverage by more advanced developing countries also results in

⁸ See, for example, Heckman B, Ng F and Olarreaga M, 2002, *Eliminating Excessive Tariffs on exports of Least Developed Countries*

relatively small export gains. For that reason, in the discussion that follows, we focus on the scenarios involving 100 percent DFQF market access. The results in terms of overall export changes for all but two of the scenarios are presented in Annex Table 2.⁹

In this section, we will focus on the results when OECD countries provide 100 percent DFQF market access, and we examine the effects both for those benefiting from DFQF market access and others that might suffer preference erosion.¹⁰ Table 1 shows the change in exports and overall welfare for one Asian and four African LDCs, as well as two aggregates containing LDCs—Rest of Southeast Asia, which includes Cambodia and Laos (as well as oil exporter Brunei), and Rest of Africa, which contains a mix of LDCs, as well as other low- and middle-income countries, making it particularly difficult to interpret.

Table 1: Percentage change in Key Variables in 2020 from OECD implantation of 100% DFQF for LDCs (sorted by change in welfare).

DFQF Recipients	Exports	Welfare	Other developing countries	Exports	Welfare
Malawi	12.97	2.65	Mauritius	0.03	0.02
Rest of South East Asia	2.52	0.95	Central America	0.14	0.01
Ethiopia	1.35	0.29	South Africa	0.02	0.00
Bangladesh	4.16	0.29	Rest of Asia and Oceania	0.00	0.00
Mozambique	0.39	0.17	Middle East and North Africa	0.01	0.00
Senegal	1.16	0.15	Nigeria	0.01	0.00
Rest of Africa	0.08	0.03	Rest of Eastern Europe	0.00	0.00
Madagascar	-0.03	-0.02	Sri Lanka	-0.01	0.00
			China	-0.03	0.00
			India	-0.01	0.00
			Pakistan	-0.04	0.00
			Philippines	-0.01	0.00
			Vietnam	-0.01	-0.01
			Brazil	-0.03	-0.01
			Bolivia	-0.03	-0.01
			Indonesia	-0.03	-0.01
			Rest of Latin America	-0.05	-0.01
			Paraguay	-0.04	-0.03

⁹ Two scenarios, D and H, involve Brazil, China, and India providing DFQF access to countries other than LDCs and, since no one has proposed that, they are excluded to save space.

¹⁰ Annex Table 3 shows the results for additional economy-wide variables for all countries and regions in the database for the two central scenarios: where only the OECD provides 100 percent DFQF market access for LDCs, and where Brazil, China, and India do so as well.

With the exception of extremely small losses for Madagascar, the other LDCs for which we have data show gains from 100 percent DFQF access in OECD markets. It is also notable, given the concerns about the extension of U.S. preferences to Asian apparel exporters, that the export losses in Madagascar in this scenario come in agriculture, not the apparel sector. Additional details on the potential implications of these changes for sub-Saharan African LDCs are discussed in Box 1 at the end of this section. Moreover, these small losses are reversed if the major emerging markets also provide duty-free, quota-free market access (see below).

Overall, Malawi is the biggest gainer by far because of an unusual set of circumstances—a relatively high dependence on tobacco exports facing an unusually high, 350 percent, tariff in the U.S. market, which leads to a sharp increase in exports of that product. Thus, this case also underscores the need for complementary government policies to guard against increased export concentration and commodity dependence when trade barriers are lifted.

The reported gains for the rest of Africa region are noticeably smaller than for the individual African LDCs and this could be due to the fact that only a subset of countries in the aggregation are LDCs that receive expanded access. As expected, an examination of more detailed results for Southeast Asia shows that the gains are mostly due to increased exports of apparel to the U.S. market, as are the gains for Bangladesh. The sectoral change in exports, by country or region, for this scenario is shown in Annex Table 4. The increased export of apparel from Southeast Asia probably represents mostly exports from Cambodia, since Laos is small and has very little export capacity and Brunei, the third country in that aggregate, exports mostly oil and faces low tariffs.

What is also notable in Table 1 is that other competing countries that might be expected to suffer from preference erosion—Mauritius, South Africa, and Central America—instead show gains, albeit very small. And for other developing countries, if they suffer losses at all, estimated losses fall well below one-tenth of one percent of total exports or national income.

To put the potential gains in some perspective, we can compare them to two other sets of results—general equilibrium estimates of the welfare gains from global free trade, and partial equilibrium estimates of the export gains of moving from 97 percent to 100 percent product coverage in the context of a feasible Doha Round outcome (based on what was on the table in the summer of 2008 when the talks collapsed).

With respect to the gains from global free trade, Bouët (2008) uses the same MIRAGE model and estimates that global free trade would produce welfare gains of around 0.8% of national income for low-income countries. In contrast to unilateral trade preferences in OECD markets, global free trade would bring additional gains from access to other developing-country markets, as well as from these countries' liberalization of their own markets. Thus, it is notable that the estimated benefits from 100 percent market access for LDCs show welfare gains well above the level estimated for global free trade for Malawi and Southeast Asia, and of more than a third of that level for Bangladesh and Ethiopia.

While they are the only technique for showing the global distribution of gains and losses from changes in trade policy, computable general equilibrium models have features that make the

size of the estimates quite conservative. To suggest the range of possible benefits, Table 2 contrasts the CGE results for LDCs with estimates from Laborde (2008), which uses a less conservative, partial equilibrium, approach that takes into account only potential changes in demand in the liberalizing countries, and not potential supply constraints in the exporting countries.¹¹ In addition to using a different estimation method, the Laborde results are in the context of the WTO's Doha Round and thus only cover the 32 WTO members.

The partial equilibrium analysis suggests that total LDC exports could increase as much as \$2 billion, or 17 percent. The largest relative gains in both sets of estimates go to Malawi, as well as the Asian LDCs that face tariff peaks on their exports of apparel to the U.S. market. Other African LDCs see smaller gains, but that is not surprising since they generally have good access in their major markets. The partial equilibrium estimates of gross gains are also available for other LDCs that are members of the WTO and those show large gains for Benin and Sierra Leone, and gains of a quarter or more, relative to base-year exports, for Maldives, Nepal, and Niger (Laborde 2008, p. 22).

Table 2: Percentage Variation in Exports for two scenarios in two models

	100 % OECD DFQF		100 % OECD + MICS ^b	
	General Equilibrium	Partial Equilibrium ^a	General Equilibrium	Partial Equilibrium
Bangladesh	4.16	28.96	4.82	38.55
Cambodia ^c	2.52	31.27	2.55	32.96
<i>Clothing</i>	19.49	n.a.	19.51	n.a.
Ethiopia	1.35	n.a.	2.24	n.a.
Madagascar	-0.03	-0.74	0.57	20.61
Malawi	12.97	215.08	13.91	240.41
Mozambique	0.39	16.29	1.41	128.11
Senegal	1.16	8.46	9.38	64.83
All WTO LDCs ^d	n.a.	16.97	n.a.	44.36
All WTO LDCs ^b (million dollars)		2 108		7 731

n.a. = not available.

a. Canada, Japan, Norway, Switzerland, United States; the EU is excluded because it provides 100 percent DFQF.

b. The CGE model includes South Korea and Mexico in OECD, while the partial equilibrium includes them with Brazil, China, and India as middle-income countries.

c. In the CGE model, the results are for the regional aggregate, "rest of South East Asia," which includes Laos and Brunei, as well as Cambodia, which dominates exports.

d. The partial equilibrium estimates are in the context of a Doha Round agreement and thus only include WTO LDCs.

¹¹ In this model, LDCs have no supply constraints and react perfectly to the increased demand for their products when barriers are removed. See Fontagne, Laborde, and Mitaritonna (2008) for details.

Finally, it should be noted that neither the general nor the partial equilibrium estimates account for rules of origin or other administrative obstacles that can block access, even when traditional trade barriers are eliminated. Thus, the benefits are likely underestimated because they assume full access in the EU market, despite restrictive rules of origin in the EBA program that are known to inhibit exports. But the benefits of moving to 100 percent DFQF access in other markets would also be less than estimated here if programs for LDCs create or retain similar obstacles. That underscores the importance of including changes to restrictive rules of origin, as recommended by the CGD Working Group on Global Trade Preference Reform.¹²

For example, the EU rule of origin for fish restricts exports from countries that do not have domestically-owned commercial fleets capable of operating beyond territorial waters in the country's exclusive economic zone (EEZ). When fish are caught in a country's EEZ, the rule of origin under the EBA (and other programs) bases eligibility for preferences on the vessel owner's nationality, rather than the exporting country. LDC exports of fishery products can be considered eligible if they undergo processing domestically, but that requirement is often difficult for LDCs to meet because of onerous sanitary standards.

Another export that is important for many LDCs is apparel, which under the EBA is subject to a "double transformation" rule of origin that requires LDCs to use yarn or fabric that is produced domestically and then assembled into a final product. The EU rule is far more restrictive than the single transformation rule of origin for apparel under the U.S. African Growth and Opportunity Act (AGOA), which allows eligible African exporters to source fabric and other inputs globally and then assemble them into an apparel item that is eligible for preferences.¹³

¹² Information on the working group, as well as the final report, may be found at http://www.cgdev.org/section/initiatives/_active/reformingtradepreferences/global_trade_preference_reform.

¹³ For more detail, see Portugal-Perez (2007),

Box 1 The Impact on Africa of 100 percent DFQF Market Access in the United States

Currently, Asian LDCs are outside of the more generous regional preference programs offered by the United States and because the GSP program that is available to them excludes apparel, they are among the biggest potential gainers from the adoption of 100 percent DFQF access in the U.S. market. But the potential increase in competition raises concerns among existing preference beneficiaries, especially in sub-Saharan Africa, where a handful of countries have been able to take advantage of AGOA to increase apparel exports. Unfortunately, our ability to explore these issues in the detail we would like is inhibited by lack of data: of the five major African apparel exporters (accounting for 90 percent of exports under AGOA), we have disaggregated data for only one LDC, Madagascar, as well as for Mauritius. Kenya, Lesotho, and Swaziland are included in the Rest of Africa aggregate.

The results that we have do not suggest that African apparel exporters will systematically lose out. More disaggregated results do show modest reductions in African apparel exports to the United States, generally in a range of one to one and a half percent of current exports. But if U.S. reform is embedded in broader global reform, as modeled here, sub-Saharan African exporters gain access in other markets as trade flows adjust globally.

As noted above, Madagascar is the only significant African LDC apparel exporter for which there is data and, while Madagascar is also the only country that does not gain from 100 percent DFQF market access in OECD countries, that result is not due to preference erosion in apparel. As shown in annex table 4, there is essentially no change in Madagascar's exports of apparel under this scenario. As also shown in that table, Mozambique, which is not currently a major exporter of apparel, would see a small gain, as would South Africa, a non-LDC. Mauritius, a major exporter and non-LDC, would see a very small loss, while Ethiopia, Malawi, and Senegal, which export very little apparel, would shift resources from that sector to others. It is also important to note, however, that rules of origin are not addressed here and changes to those rules in the European Union would be important to allow the adjustment to occur in that market in particular.

Moreover, 100 percent product coverage is of benefit to Africa generally because benefits are currently narrowly concentrated in a few countries and products, mainly oil, and full coverage would eliminate the exclusions on agricultural exports.¹ To the degree that there are losses from expanding preferences for all LDCs, it would be preferable to address these through targeted measures to increase competitiveness or to compensate the adjustment, rather than discriminating among LDCs.

What Happens if the OECD Extends 100 Percent Access to Other Small, Poor Countries?

We tested three different scenarios for extending eligibility for DFQF market access in OECD countries beyond LDCs to:

- a) Low-income countries with populations smaller than 75 million, the size threshold used by the UN in designating LDCs and the criteria for expanded DFQF access in Norway.
- b) All low-income countries, including Vietnam and Pakistan.
- c) Additional small and vulnerable countries that fall below the World Bank's low middle-income (per capita) threshold with total national incomes below \$50 billion, which excludes Pakistan and Vietnam because they are large.

Table 3 shows the estimated change in exports for potential beneficiaries under each scenario, as well as those left out. In general, extending DFQF market access to other low-income countries, even when Pakistan and Vietnam are included, entails generally small losses for both LDC beneficiaries and excluded countries, and, when they are included, large gains for Pakistan and Vietnam. There are relatively large losses for Sri Lanka, the Philippines, and Central America, but they remain well under one-half of one percent in those cases. Unfortunately, the benefits for the smaller low-income countries is harder to assess because of data limitations, with only Pakistan and Vietnam having sufficient information available to assess the impact in detail. The increase in exports for the rest of Africa region could be due to increased benefits for low-income countries in that region.

Extending DFQF market access to other small and low middle-income countries creates large gains for those countries for which we have data, especially Paraguay (17%) and Sri Lanka (21%). The African, Central American, and Latin American residual regional aggregates also gain, presumably because they include small, low middle-income countries that would gain from additional access. But this scenario leads to modest reductions in the gains for Asian LDCs and either larger declines in gains or outright losses for African LDCs, including of more than 1 percent of exports for Ethiopia and Madagascar. The inclusion of low income countries, especially from Latin America and Asia, will expand the scope of products on which African LDCs will face increased competition, first of all in agriculture. Preference erosion losses also increase for other developing countries, though they are relatively small except for Mauritius.

Table 3: Percentage Change in Export Volume in 2020 in Scenarios Where OECD Grants 100% DFQF

Region	E (OECD for LDCs only)	I (OECD for LDCs plus small LICs)	J (OECD for LDCs plus all LICs)	F (LDCs plus other small, poor)
LDCs:				
Bangladesh	4.16	4.07	3.38	3.46
Ethiopia	1.35	1.10	0.90	-0.49
Madagascar	-0.03	-0.36	-0.70	-2.28
Malawi	12.97	11.42	11.15	4.71
Mozambique	0.39	0.27	0.21	-0.48
Senegal	1.16	1.17	1.12	0.80
Rest of South East Asia	2.52	2.52	2.25	2.40
Rest of Africa	0.08	0.23	0.29	0.49
Preference recipients in Scenario J :				
Pakistan	-0.04	-0.06	11.90	-0.05
Vietnam	-0.01	-0.02	18.00	-0.06
Preference recipients in Scenario F:				
Bolivia	-0.03	-0.04	-0.02	3.46
Paraguay	-0.04	-0.04	-0.03	16.95
Sri Lanka	-0.01	-0.05	-0.27	20.94
Other developing countries:				
Brazil	-0.03	-0.03	-0.07	-0.12
China	-0.03	-0.03	-0.10	-0.06
India	-0.01	-0.01	0.04	-0.04
Indonesia	-0.03	-0.03	0.02	-0.07
Mauritius	0.03	-0.24	-0.35	-1.96
Nigeria	0.01	0.01	0.03	0.03
Philippines	-0.01	-0.02	-0.17	-0.07
South Africa	0.02	0.02	0.04	-0.02
Central America	0.14	0.13	-0.02	0.83
Middle East, North Africa	0.01	0.00	0.00	3.51
Rest of Asia and Oceania	0.00	0.00	0.08	0.00
Rest of Eastern Europe	0.00	0.10	0.10	0.12
Rest of Latin America	-0.05	-0.06	-0.07	0.78

LICs = low-income countries (World Bank definition); other small and poor are those classified as low middle-income by the World Bank, with total national incomes of less than \$50 billion.

How Important is Improved Access in Large, Emerging Markets?

For some countries, particularly in Africa, extension of full market access by large emerging markets would significantly expand the potential gains from unilateral preference programs. In these scenarios, we include as emerging markets China and India, which have implemented partial duty-free preferences for LDCs, and Brazil, which also recently announced that it will introduce a program next year.¹⁴ China announced a few years ago that it would provide duty-free, quota-free access on 440 tariff lines for 30 sub-Saharan African with which it has diplomatic relations and then announced an expansion of that in late 2009 to 95 percent of tariff lines. It also offers DFQF on a smaller number of tariff lines to Asian LDCs with whom it has relations. India's programs provide DFQF market access on 85 percent of tariff lines and partial duty reductions on another 9 percent, phased in over several years. The announcement by Foreign Minister Celso Amorim in Geneva last year said that Brazil would begin providing duty-free access for LDCs on 80 percent of items in 2010 and then increase coverage to "all tariff lines" over four years.¹⁵

Unfortunately, we do not have full information on these programs and we have to make some assumptions to identify the products likely to be excluded in the 97 percent coverage scenario, which could skew the results somewhat. From what we do know about these programs, the political economy and the range of import-sensitive products appear to be similar to what we find in OECD countries. Thus, China's original list of covered products excluded cotton, sugar, most fruits and vegetables, and a number of textile and apparel products (we do not have the expanded list). India includes sugar and cotton, but excludes a number of other agricultural products and offers no or only partial preferences on many textile and apparel products. Textiles and apparel were also raised as sensitive by industry groups in Brazil.¹⁶

Thus, we have had to decide which products to exclude in the 97 percent product coverage scenario with limited information. The partial list of exclusions that we have suggests that the political economy of preferences is similar in these countries to that in the OECD, and if we use a similar method for selecting sensitive products, then the exclusions turn out to be nearly as important in these emerging market programs as in OECD countries.¹⁷ This is somewhat surprising, since overall trade barriers are higher on average in developing countries, but it is consistent with what we observe about the high concentration in a few sectors of LDC exports. Thus, the analysis suggests that meaningful impact on LDC exports and welfare (Table 4 and Annex Table 3) will result only if emerging markets also provide 100 percent product coverage.

¹⁴ Turkey is included as a member of the OECD in those simulations.

¹⁵ Because Minister Amorim's statement also refers to the Hong Kong communiqué, it is not entirely clear whether the commitment is to eventually cover 100 percent or 97 percent of tariff lines. See his statement on the WTO website at http://www.wto.org/english/thewto_e/minist_e/min09_e/min09_statements_e.htm.

¹⁶ On China, see Minson (2007); for a comparison of China and India, drawing on the political economy literature, see Engel (processed); and on Brazil, see *Bridges Weekly Trade News Digest*, Vol. 10, Number 41, December 6, 2006.

¹⁷ As discussed in the methodology section, we determine exclusion list based on Jean, Laborde and Martin (2008) political economy criterion.

Table 4: Comparing the Percentage Change in Export Volume in 2020 when Brazil, China, and India also grant 100% DFQF to LDCs

LDCs	OECD only	OECD + EMs
Malawi	12.97	13.91
Senegal	1.16	9.38
Bangladesh	4.16	4.82
Rest of South East Asia	2.52	2.55
Ethiopia	1.35	2.24
Mozambique	0.39	1.41
Madagascar	-0.03	0.57
Rest of Africa	0.08	0.22

EMs	OECD only	OECD + EMs
Brazil	-0.03	0.00
China	-0.03	-0.02
India	-0.01	0.64

Other developing countries	OECD only	OECD + EMs
Bolivia	-0.03	-0.04
Central America	0.14	0.14
Indonesia	-0.03	-0.03
Mauritius	0.03	0.05
Middle East and North Africa	0.01	0.00
Nigeria	0.01	-0.13
Pakistan	-0.04	-0.06
Paraguay	-0.04	-0.03
Philippines	-0.01	-0.02
Rest of Asia and Oceania	0.00	0.01
Rest of Eastern Europe	0.00	0.01
Rest of Latin America	-0.05	-0.04
South Africa	0.02	0.03
Sri Lanka	-0.01	-0.05
Vietnam	-0.01	-0.01

Focusing on the 100 percent product coverage scenario where emerging markets join OECD countries, this is the only scenario examined where Madagascar shifts from small losses to small gains. This scenario also results in more marked increased gains for several other LDCs in Africa, particularly Ethiopia, Mozambique, and Senegal, with more modest additional benefits for the Asian LDCs. The African regional aggregate also sees a large relative gain, though it remains small in absolute terms.

The partial equilibrium estimates in Table 2 show a similar distribution of gains, but of a much larger magnitude. In this scenario, exports from Madagascar, Mozambique, and Senegal could increase by as much as 21 percent, 128 percent, 65 percent, respectively, compared to increases of 10 percent or less in the general equilibrium modeling. Overall, the partial equilibrium estimates for all WTO LDCs suggest an average increase in exports of up to 44 percent, worth an additional \$8 billion for these countries.

Perhaps the most interesting result in the general equilibrium analysis is that all three emerging markets granting 100 percent DFQF market access improve their position relative to the scenario where only the OECD grants DFQF market access to LDCs. Other developing countries see little or no preference erosion as a result of the expanded access for LDCs (Table 4).

What is the Impact of 100 percent DFQF Market Access for OECD Countries?

The overall conclusion regarding the impact on preference-giving countries—both developed and developing—is that it is small. Annex Table 3 shows the results from the CGE model for changes in exports, GDP, and welfare, among other indicators, and they are indistinguishable from zero for all preference-giving countries when 100 percent DFQF for LDCs is given, either by the OECD only, or OECD plus Brazil, China, and India. Table 5 shows the sector-specific variation in production for preference-giving countries and, while the impact often exceeds the average, economy-wide impact (not surprisingly), there is only a handful of cases where production declines rise to even as much as 0.5 percent.

For the OECD countries not already granting 100 percent product coverage, the most sensitive products are often agricultural products subject to tariff-rate quotas to help control supply and prop up prices. The expressed concern, whether in Japan for rice and dairy, Canada for dairy and poultry, or sugar in the United States, is that expanded market access for LDCs will destabilize the price support programs. It is true, that the estimated reductions for agricultural products that are commonly controlled through quantitative restrictions could be suppressed because the model cannot completely address the prospects for trade creation in cases where little or no trade currently exists. Still, one would not expect large gains for potential LDC exporters of commodities such as meat and dairy products because it would be difficult for poor countries to meet rich-country food safety standards for these products. And in other sectors, the prospects for significant supply expansion are limited.

To explore one example in more detail, are the CGE results in Table 5 and Annex Table 4 that show very little change in either exports or U.S. production of sugar from providing 100 percent DFQF for LDCs plausible? While the estimate of no change in production is influenced by the restrictions imposed on trade creation in cases of zero trade, a brief survey of LDC exporters and markets also suggests there is little reason to expect a large surge in U.S. imports if sugar is included in DFQF for LDCs. Currently, only two African LDCs—Malawi and Mozambique—have access to the U.S. market under the historical quota allocation system and their quotas are small. Only two other African LDCs—Ethiopia and Zambia—have had exportable sugar surpluses in recent years. But African sugar producers tend to be relatively high-cost and transportation costs are also high.¹⁸ The European Union is also the traditional market for African exporters, though some of those exports could shift to the American market since the reform of the EU sugar regime (forced by a WTO complaint by Brazil) reduced the internal price from 50 percent higher to roughly the same level as in the United States.

¹⁸ The exception to this is Sudan, which is planning large investments in sugar production with the aim of boosting output ten-fold. But Sudan is currently excluded from U.S. preference programs and the U.S. market by comprehensive foreign policy sanctions over human rights and democracy issues.

Table 5: Percentage Change in Production Volume from implementing 100% DFQF for LDCs*

Sector	ANZ	Canada	EFTA	EU	Japan	S. Korea	Mexico	Turkey	US	Brazil	China	India
Agrofood	-0.04	-0.06	-0.02	-0.00	-0.02	2.02	-0.00	-0.04	-0.05	-0.05	-0.01	-0.09
Industry	0.01	0.01	0.00	-0.00	0.00	-0.11	0.01	0.02	0.01	0.02	-0.00	0.15
Animal and meat products	-0.05	-0.01	-0.00	-0.01	-0.01	1.24	-0.01	-0.37	0.02	0.08	0.00	0.13
Beverage and tobacco	-0.00	-0.00	0.01	-0.00	-0.00	0.11	0.01	0.04	0.02	-0.01	-0.00	0.01
Chemical rubber plastic	0.01	-0.01	0.00	-0.01	-0.02	0.14	0.01	0.01	0.01	-0.01	-0.00	0.14
Coal oil gas	-0.02	0.02	-0.00	-0.00	0.02	-0.47	0.03	0.01	0.03	0.01	0.05	-0.37
Cotton wool silk forestry	0.02	0.02	0.05	0.01	0.01	0.01	0.02	0.07	0.03	0.03	0.02	-0.09
Fish	-0.01	-0.01	0.00	0.00	-0.01	0.30	0.00	-0.00	0.00	0.00	-0.01	-0.10
Leather products	0.02	-0.01	0.02	0.00	0.02	0.18	0.01	0.09	0.05	-0.08	-0.01	0.47
Metals	0.06	0.04	0.01	-0.00	0.01	-0.29	0.01	0.02	0.04	0.06	0.02	0.30
Milk	-0.05	-0.03	-0.01	-0.01	-0.01	0.98	0.01	0.02	-0.10	-0.00	0.01	-0.00
Oil seeds	-0.97	-0.57	0.48	-0.17	-0.38	-57.62	-0.45	-1.56	-0.99	-0.41	-0.33	-0.07
Other cereal grains	0.04	-0.06	-0.01	-0.00	-0.01	0.84	0.01	-0.12	0.04	0.17	0.01	0.05
Other crops	0.02	-0.40	0.14	0.03	-0.03	0.07	-0.14	-0.66	-0.76	-0.05	-0.03	-0.14
Other food products	-0.05	-0.03	-0.00	-0.00	-0.03	1.99	0.01	0.02	-0.01	-0.01	-0.02	0.08
Other manufactured products	0.02	0.02	0.00	-0.00	0.01	-0.15	0.01	0.01	0.02	0.03	0.01	0.16
Other minerals	0.01	0.01	0.00	0.00	0.00	-0.24	0.01	0.01	0.01	0.01	0.01	0.06
Other services	-0.00	0.00	-0.00	0.00	0.00	-0.03	0.00	-0.00	-0.00	-0.00	-0.00	-0.04
Rice	0.03	0.09	0.29	0.13	-0.00	-0.01	-0.00	-0.32	0.04	0.00	0.00	0.10
Services	-0.00	0.00	-0.00	0.00	0.00	-0.02	0.00	-0.00	-0.00	-0.00	-0.00	-0.04
Sugar	-0.15	0.01	-0.54	0.21	-0.35	4.43	0.01	0.06	0.01	0.15	-0.17	0.03
Textile	-0.27	-0.57	0.05	0.07	-0.03	-0.23	-0.22	0.08	-0.45	-0.09	-0.11	0.21
Trade	-0.00	-0.00	-0.00	0.00	-0.00	0.12	0.01	-0.00	-0.00	-0.00	0.00	-0.06
Transport	0.01	0.01	0.00	0.00	0.00	-0.07	0.01	-0.00	0.01	0.01	0.00	-0.00
Vegetable and fruit	0.04	0.05	-0.00	0.00	0.01	0.84	0.00	0.06	0.03	0.01	0.00	-0.62
Vegetable oils and fats	-0.51	-0.91	-1.36	-0.24	-0.27	120.93	-0.07	0.03	0.02	-0.50	-0.46	-0.20
Wearing apparel	-0.10	-0.01	0.02	0.03	-0.00	-0.11	-0.03	0.03	-0.13	-0.06	-0.21	0.41
Wheat	0.10	0.05	0.01	0.00	0.01	0.36	0.02	-0.02	0.04	0.09	0.01	0.06

*For OECD countries, when only they implement; for emerging markets, when they implement along with OECD.

To explore further the potential for market disruption from increased African sugar exports, we applied a simple partial equilibrium analysis to this sector. Table 6 shows the impact on domestic production and prices from two scenarios, one where U.S. imports of sugar increase by 100,000 short tons, which would have almost no impact on U.S. prices and production, and a second with increased imports of 300,000 short tons, which would reduce production by 6 percent and average prices by 10 percent, to 20 cents per pound.¹⁹ Though there is no economic justification for the U.S. price-support program for sugar, these estimates suggest that at least some expansion of access is possible, without major disruption of the market, as long as that remains the political goal of the minority that controls policy.

Another sensitive sector for the United States is apparel and, here, both the CGE and partial equilibrium (Table 2 and Annex Table 4) results do show relatively large increases in apparel exports by Bangladesh and Southeast Asia (mostly by Cambodia). But, again, the impact on U.S. production is small, -0.45 percent for textiles and -0.13 for clothing. If removal of tariffs led to increased imports that are two to three times higher than estimated in the CGE model, closer to what is suggested by the partial equilibrium model (Table 1), and if the impact on production is proportional, it would still be in a range of one to two percent.²⁰

There are two major reasons for the relatively limited impact on U.S. production. First, the increase in imports from the Asian LDCs is offset to some extent by small decreases in exports spread among a large number of other exporters. Secondly, LDCs tend not to compete in the same product lines as American producers, who are generally far more technology sophisticated and capital-intensive. This is illustrated by the fact that Bangladesh's apparel exports are equal to 12.4 percent of the volume of U.S. production, but only 2.75% of the value.

¹⁹ The estimates were done using the partial equilibrium model in Hufbauer and Elliott (1994).

²⁰ The estimated 4 percent increase in Bangladeshi exports from the CGE model, shown in Table 1, for all exports to all countries. As shown in Annex Table 4, the increase in exports of textiles and clothing, most of which would be to the United States, is nearly 13 percent. The partial equilibrium estimates of increased exports are a bit more than twice that figure for Bangladesh and roughly 50 percent higher for Cambodia.

Table 6: Effects of enlarging the U.S. Sugar Quota

Estimated levels after altering quota	Scenario 1	Scenario 2
New Import Price (calculated, dollars/short ton)	414.3	376.1
New Import Volume (assumed, '000 short tons)	1,500.0	1,700.0
New Domestic Price (calculated, dollars/short ton)	421.6	395.0
New Domestic Output (calculated, '000 short tons)	8,318.9	8,000.1
Base year levels (year)		
Import Price (dollars/short ton)	437.0	
Import Volume (WTO quota level, '000 short tons)	1,400.0	
Domestic Price (dollars/short ton)	437.0	
Domestic Output ('000 short tons)	8,500.0	
Elasticities and intercepts used for calculations (see Hufbauer and Elliott)		
(i) Domestic Demand		
Own-Price Elasticity (Edd)		
Cross-Price Elasticity (Edm)	-1.33	
	1.30	
(ii) Domestic Supply		
Own-Price Elasticity (Es)		0.60
(iii) Import Demand		
Own-Price Elasticity (Emm)		
Cross-Price Elasticity (Emd)	-3.78	
	3.69	
(iv) Equation Intercepts		
ln(a)		
ln(b)	9.23	
ln(c)	5.40	
	7.79	

Source for model and parameters: Gary Clyde Hufbauer and Kimberly Ann Elliott, *Measuring the Costs of Protection in the United States*, Washington: Institute for International Economics, 1994, p. 81

Source for data: U.S. Department of Agriculture, U.S. Sugar and Sweeteners: Recommended Data, online at <http://www.ers.usda.gov/briefing/sugar/data.htm>.

Conclusions

Unilateral trade preference programs were created four decades ago to stimulate exports and help developing countries diversify their economies as part of their development strategies. Through preferences, but also regional and multilateral negotiations, many developing countries succeeded spectacularly in using trade as a tool of development, but the least developed countries lagged for a variety of reasons. The duty-free, quota-free market access initiative was developed to give these countries a boost.

While significant progress has been made toward the goal of improved market access for LDCs since the Millennium Declaration embraced it in 2000, much also remains to be done. This analysis helps to identify the distribution of potential costs and benefits from further progress. Several key conclusions stand out:

- There are still significant benefits for LDCs from removing the remaining barriers they face in OECD countries, but only if all products are covered. Since both rich-country tariff peaks and LDC exports are relatively concentrated, excluding as few as three percent of tariff lines, as proposed by the United States at the WTO ministerial meeting in Hong Kong in 2005, reduces the benefits to basically zero.
- Although it has nearly full access in its main markets, including in the United States under AGOA, sub-Saharan Africa can still gain from 100 percent DFQF market access that eliminates remaining agricultural restrictions in the U.S. markets.
- The gains for LDCs, especially in Africa, are significantly enhanced if Brazil, China, and India also provide 100 percent DFQF market access.
- There is little evidence of significant losses for other competing developing countries that are not LDCs, including Pakistan or Sri Lanka, nor is there evidence of net losses for Africa from the United States extending DFQF market access to Asian LDCs.
- The LDCs account for a trivial share of global exports, the reason for the initiative, and preference-giving countries thus have little to fear from extending full market access to them. The quantitative results show that the expected impact on welfare, exports, and domestic production are very small to zero, including for the quota-controlled agricultural products excluded by Canada, Japan, and the United States, as well as textiles and apparel in the latter case.
- Relative to the scenario where only the OECD does so, the large emerging markets do *better* if they also grant 100 percent DFQF market access to LDCs.

- Extending DFQF access to other low-income countries (by the World Bank definition) has little impact on existing LDC beneficiaries or preference-giving countries, but big benefits for Pakistan and Vietnam if they are included.²¹
- Extending DFQF to other small and poor (lower middle-income) countries has large benefits in some cases for those countries, but at the expense of existing LDC beneficiaries, especially in Africa, and also entails higher costs for preference-giving countries.

The context around these potential gains is also important, however. In particular, they assume full utilization of available market access, but that does not happen for a number of reasons. It is not happening under the EU's Everything But Arms program because of rules of origin that are highly restrictive in some sectors and prevent LDC exporters being able to take advantage. The value of U.S. and other reforms in the future will also depend on what kind of rules they choose to implement. Policies outside preference programs themselves, such as sanitary and phyto-sanitary standards affecting agricultural trade in importing countries, and inadequate infrastructure and excessive red tape in LDCs, are often at least as important as traditional border measures and will also have to be addressed.

But providing market access is a step that this analysis suggests would be both beneficial for LDCs, and low-cost for preference-giving countries. UN Secretary General Ban Ki Moon just designated 2010 as the "year of development" and called for accelerated efforts to achieve the Millennium Development Goals. The goal of providing duty-free, quota-free market access for LDCs should be easily achievable by rich countries, as well as by Brazil, China, India, and other developing countries "in a position to do so."

²¹ Note, however, that Pakistan recently moved into the World Bank's low-middle income category and Vietnam is expected to do so, possibly as soon as this year.

Annex Table 1: Regions and Sectors Used in the Model

Regions	Sectors
Australia New Zealand	Agrofood (aggregate)
Bangladesh*	Animal and meat products
Bolivia**	Beverage and tobacco products
Brazil	Chemical rubber plastic products
Canada	Coal oil gas
Central America***	Cotton wool silk forestry
China	Fish
EFTA	Industry (aggregate)
Ethiopia*	Leather products
EU	Metals
India	Milk
Indonesia	Oil seeds
Japan	Other cereal grains
Korea South	Other crops (includes raw tobacco)
Madagascar*	Other food products
Malawi*	Other manufactured products
Mauritius	Other minerals
Mexico	Other services
Middle East and North Africa	Rice
Mozambique*	Services
Nigeria	Sugar
Oil exporting countries	Textile
Pakistan	Trade
Paraguay**	Transport
Philippines	Vegetable and fruit
Rest of Africa***	Vegetable oils and fats
Rest of Asia and Oceania	Wearing apparel
Rest of Eastern Europe	Wheat
Rest of Latin America***	
Rest of South East Asia*	
Senegal*	
South Africa	
Sri Lanka**	
Turkey	
US	
Vietnam	

* Least developed countries

** Other small and poor countries

*** Region includes LDCs and/or other small and poor countries

Annex Table 2: Percentage Change in Total Export Value in 2020 in Selected DFQF Scenarios
(see text for scenario definitions)

Region	A	B	C	E	F	G	I	J
ANZ	0.00	0.00	0.00	-0.01	0.01	-0.02	-0.01	-0.04
Bangladesh	0.06	0.08	0.15	4.16	3.46	4.82	4.07	3.38
Bolivia	0.00	0.08	0.00	-0.03	3.46	-0.04	-0.04	-0.02
Brazil	0.00	0.00	0.00	-0.03	-0.12	0.00	-0.03	-0.07
Canada	0.00	0.00	0.00	-0.01	0.00	-0.01	-0.01	-0.02
C Am	0.00	0.02	0.00	0.14	0.83	0.14	0.13	-0.02
China	0.00	0.00	0.00	-0.03	-0.06	-0.02	-0.03	-0.10
EFTA	0.00	0.00	0.00	0.01	0.08	0.00	0.01	0.08
Ethiopia	0.02	0.03	0.22	1.35	-0.49	2.24	1.10	0.90
EU	0.00	0.01	0.00	-0.01	0.32	-0.01	0.01	0.12
India	0.00	0.00	0.02	-0.01	-0.04	0.64	-0.01	0.04
Indonesia	0.00	0.00	0.00	-0.03	-0.07	-0.03	-0.03	0.02
Japan	0.00	0.00	0.00	0.00	0.04	0.00	0.01	0.49
Korea South	0.00	0.01	0.00	-0.09	-0.07	-0.09	-0.08	0.41
Madagascar	0.01	0.00	0.07	-0.03	-2.28	0.57	-0.36	-0.70
Malawi	0.01	0.01	0.02	12.97	4.71	13.91	11.42	11.15
Mauritius	0.00	-0.01	0.00	0.03	-1.96	0.05	-0.24	-0.35
Mexico	0.00	0.00	0.00	-0.01	-0.02	-0.01	-0.01	-0.01
MENA	0.00	0.03	0.00	0.01	3.51	0.00	0.00	0.00
Mozambique	0.00	0.00	0.01	0.39	-0.48	1.41	0.27	0.21
Nigeria	0.00	0.00	0.00	0.01	0.03	-0.13	0.01	0.03
Oil Xers	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.03
Pakistan	0.00	0.00	0.00	-0.04	-0.05	-0.06	-0.06	11.90
Paraguay	0.00	0.06	0.00	-0.04	16.95	-0.03	-0.04	-0.03
Philippines	0.00	0.00	0.00	-0.01	-0.07	-0.02	-0.02	-0.17
Rest of								
Africa	0.00	0.01	0.01	0.08	0.49	0.22	0.23	0.29
Rest of AO	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.08
Rest of EE	0.00	0.06	0.00	0.00	0.12	0.01	0.10	0.10
Rest of LA	0.00	0.02	0.00	-0.05	0.78	-0.04	-0.06	-0.07
Rest of SEA	0.05	0.11	0.06	2.52	2.40	2.55	2.52	2.25
Senegal	0.00	0.01	0.27	1.16	0.80	9.38	1.17	1.12
South Africa	0.00	0.00	0.00	0.02	-0.02	0.03	0.02	0.04
Sri Lanka	0.00	2.10	-0.01	-0.01	20.94	-0.05	-0.05	-0.27
Turkey	0.00	0.04	0.00	0.04	0.92	0.04	0.21	0.30
US	0.00	0.00	0.00	0.03	0.13	0.04	0.04	0.04
Vietnam	0.00	-0.01	0.00	-0.01	-0.06	-0.01	-0.02	18.00

Annex Table 3: Percentage Change in Economy-Wide Variables in 2020 from Implementing 100 percent DFQF for LDCs

Region	Value of exports		GDP (volume)		Real effective XR		Terms of trade		Welfare	
	OECD only	With EMs	OECD only	With EMs	OECD only	With EMs	OECD only	With EMs	OECD only	With EMs
Australia New Zealand	-0.01	-0.02	0.00	0.00	-0.01	-0.01	-0.01	-0.01	0.00	0.00
Bangladesh	4.16	4.82	0.17	0.24	0.97	1.15	0.86	1.02	0.29	0.37
Bolivia	-0.03	-0.04	0.00	0.00	-0.01	-0.01	-0.02	-0.02	-0.01	-0.01
Brazil	-0.03	0.00	0.00	0.00	-0.01	-0.02	-0.02	-0.02	-0.01	-0.01
Canada	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Central America	0.14	0.14	0.00	0.00	0.04	0.04	0.04	0.04	0.01	0.01
China	-0.03	-0.02	0.00	0.00	-0.01	-0.01	0.00	-0.01	0.00	-0.01
EFTA	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethiopia	1.35	2.24	0.21	0.31	0.52	0.78	0.52	0.81	0.29	0.43
EU	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
India	-0.01	0.64	0.00	-0.02	-0.02	-0.17	-0.01	-0.14	0.00	-0.03
Indonesia	-0.03	-0.03	-0.01	-0.01	-0.01	-0.02	-0.01	-0.01	-0.01	-0.01
Japan	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.00
Korea South	-0.09	-0.09	0.04	0.04	-0.01	-0.02	0.00	0.00	0.11	0.11
Madagascar	-0.03	0.57	-0.01	0.04	-0.02	0.26	-0.02	0.22	-0.02	0.14
Malawi	12.97	13.91	1.21	1.40	3.80	4.26	3.98	4.44	2.65	2.99
Mauritius	0.03	0.05	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
Mexico	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Middle East and North Africa	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mozambique	0.39	1.41	0.15	0.41	0.17	0.67	0.17	0.61	0.17	0.52
Nigeria	0.01	-0.13	0.00	-0.05	0.00	-0.05	0.00	-0.08	0.00	-0.11
Oil exporting countries	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pakistan	-0.04	-0.06	0.00	-0.01	-0.02	-0.03	-0.01	-0.02	0.00	-0.01
Paraguay	-0.04	-0.03	-0.02	-0.01	-0.02	-0.02	-0.02	-0.02	-0.03	-0.03
Philippines	-0.01	-0.02	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	-0.01
Rest of Africa	0.08	0.22	0.02	0.05	0.04	0.11	0.02	0.08	0.03	0.08
Rest of Asia and	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.02

Oceania											
Rest of Eastern Europe	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rest of Latin America	-0.05	-0.04	-0.01	-0.01	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01
Rest of South East Asia	2.52	2.55	0.42	0.43	0.77	0.79	0.52	0.53	0.95	0.97	0.97
Senegal	1.16	9.38	0.15	0.92	0.31	2.52	0.26	2.35	0.15	1.13	1.13
South Africa	0.02	0.03	0.00	0.00	-0.01	-0.02	0.00	0.00	0.00	0.00	0.00
Sri Lanka	-0.01	-0.05	0.00	-0.01	-0.01	-0.02	0.00	-0.01	0.00	0.00	-0.01
Turkey	0.04	0.04	0.00	0.00	-0.02	-0.02	-0.01	-0.01	0.00	0.00	0.00
US	0.03	0.04	0.00	0.00	-0.01	-0.01	-0.02	-0.02	0.00	0.00	0.00
Vietnam	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00

XR = exchange rate; Ems = emerging markets (Brazil, China, India)

Annex Table 4: Percentage Change in Export Volume in 2020 When OECD Provides 100% DFQF

Sector	LDCs						
	Bangla	Ethiopia	Madag	Malawi	Mozamb	RoSEA	Senegal
Agrofood	1.99	5.79	0.03	14.16	4.12	-3.54	6.47
Industry	5.01	-3.11	-0.06	-8.46	-0.64	3.33	-1.05
Animal and meat products	-5.58	-3.03	0.16	-28.10	-4.03	-6.20	-4.24
Beverage and tobacco	-2.01	3.90	0.04	-4.55	-0.32	-1.88	-0.32
Chemical rubber plastic products	-3.95	-1.56	0.02	-11.33	4.95	-4.37	-1.27
Coal oil gas	-5.80	-0.01	-0.02	-5.38	-0.45	-2.05	-0.18
Cotton wool silk forestry	-4.34	-0.55	0.11	-24.93	-3.35	-2.42	-1.75
Fish	-1.92	-0.44	0.00	-7.67	-0.32	2.02	-0.71
Leather products	-2.47	-4.68	0.26	-19.35	-0.88	-3.98	-0.13
Metals	-6.64	-3.17	0.06	-14.70	-0.71	-6.34	-1.48
Milk	812.46	3583.82	-0.13	-18.47	8.40	-5.25	-1.60
Oil seeds	24.09	12.92	-0.31	-18.77	14.92	-2.66	-1.49
Other cereal grains	-1.27	2.13	0.08	-15.51	3.17	-2.09	-2.24
Other crops	33.98	-2.63	-1.09	63.41	31.55	-3.64	-2.06
Other food products	-2.34	11.55	0.09	-10.05	-0.16	-3.56	-0.64
Other manufactured products	-5.17	-2.72	0.04	-13.60	-0.37	-3.50	-0.76
Other minerals	-1.26	-0.75	0.01	-4.59	-0.10	-1.02	-0.30
Other services	-3.60	-1.78	0.04	-12.38	-0.48	-3.62	-1.06
Rice	50.16	-1.24	0.47	-15.12	-1.19	-4.54	-0.56
Services	-3.64	-1.65	0.03	-10.18	-0.44	-3.44	-0.98
Sugar	-3.16	0.20	0.67	-11.63	-1.13	-3.83	-2.43
Textile	5.52	0.82	-0.32	-21.07	-1.81	16.13	-1.50
Trade	-4.16	-1.77	0.01	-12.04	-0.31	-4.08	-0.93
Transport	-4.17	-1.45	0.02	-8.76	-0.34	-3.04	-0.80
Vegetable and fruit	71.00	-1.48	0.17	-18.87	-1.22	-2.84	-1.57
Vegetable oils and fats	-2.47	-11.43	-0.60	-18.91	1.06	-5.34	102.21
Wearing apparel	8.17	-2.53	0.04	-18.11	0.65	19.49	-1.64
Wheat	-3.39	-4.23	0.00	-21.46	0.00	-1.37	0.00

Annex Table 4 (continued)

Sector	Other Developing Countries														
	Bolivia	Central America	Indonesia	Mauritius	Nigeria	Pakistan	Paraguay	Philippines	Rest of Africa	Rest of E. Asia	Rest of E. Europe	Rest of Lat Am.	South Africa	Sri Lanka	Vietnam
Agrofood	-0.12	-0.26	-0.23	0.16	0.12	-0.09	-0.09	-0.55	1.18	-0.18	0.00	-0.23	0.08	-0.01	-0.07
Industry	0.03	0.32	0.00	-0.01	0.00	-0.06	0.06	0.01	-0.02	0.01	0.00	0.05	0.01	-0.01	0.00
Animal, meat products	0.04	-0.19	0.02	-0.54	-0.04	0.16	0.25	0.11	0.83	0.27	-0.14	0.14	0.11	0.04	-0.07
Beverages, tobacco	0.02	-0.09	0.51	-0.01	0.01	0.02	0.04	0.02	-0.08	0.20	0.00	0.03	0.04	0.03	0.17
Chemical, rubber, plastic products	0.05	-0.22	0.05	0.07	0.01	0.06	0.04	0.09	-0.09	0.00	-0.01	0.05	0.13	0.06	0.20
Coal, oil, gas	0.06	-0.01	-0.19	-0.03	0.00	-0.05	0.12	-0.12	0.04	-0.09	-0.01	0.00	-0.03	0.00	0.00
Cotton, wool, silk, forestry	-0.01	0.03	0.12	-0.20	0.50	0.60	0.08	0.09	-0.52	-0.03	0.35	0.25	0.09	0.08	-0.05
Fish	0.05	-0.09	0.01	0.01	0.00	0.02	0.04	0.10	-0.02	0.02	0.00	0.02	-0.03	0.03	0.08
Leather products	0.11	-0.30	0.03	-0.04	0.03	0.05	0.10	0.01	-0.25	0.13	0.01	0.14	-0.03	0.03	-0.01
Metals	0.11	-0.35	0.04	-0.03	0.02	-0.03	0.07	-0.01	-0.13	-0.01	0.01	0.11	-0.07	0.04	0.10
Milk	-0.04	-0.21	0.14	0.10	0.29	-0.10	-0.02	-0.02	0.19	0.12	-0.04	0.02	0.23	-0.04	0.22
Oil seeds	-1.78	-1.31	-0.72	-0.33	0.99	-18.84	-0.15	-3.09	96.04	-0.68	-0.78	-0.01	1.81	-0.77	-2.87
Other cereal grains	0.02	0.09	0.02	0.28	0.03	0.10	0.06	0.13	-0.15	0.56	0.08	0.14	0.28	0.04	0.26
Other crops	-0.21	-1.12	-0.52	-0.41	-0.01	-0.12	-0.20	-0.40	-0.26	-0.16	-0.32	-1.11	0.03	0.05	-0.17
Other food products	0.06	-0.15	-0.02	-0.06	0.00	-0.08	-0.01	-0.05	-0.10	0.01	-0.02	0.03	0.05	-0.05	-0.15
Other mfd. products	0.04	-0.22	0.06	-0.05	-0.01	0.04	0.05	0.02	-0.07	-0.01	0.00	0.07	0.03	0.03	0.00
Other minerals	-0.01	-0.07	0.00	-0.01	0.00	0.02	0.06	0.00	-0.03	0.00	0.00	0.01	-0.02	0.01	-0.01
Other services	0.07	-0.18	0.04	-0.03	0.00	0.04	0.06	0.03	-0.09	0.00	0.00	0.08	-0.03	0.02	0.01
Rice	0.01	0.05	0.17	-0.27	0.14	0.12	0.03	0.17	0.37	0.06	0.06	0.12	0.19	0.10	0.13
Services	0.07	-0.17	0.04	-0.02	0.00	0.03	0.06	0.03	-0.08	0.00	0.00	0.08	-0.03	0.02	0.01
Sugar	-0.07	-0.23	-0.28	0.27	0.32	0.23	0.27	-0.43	0.31	0.15	0.09	0.30	-0.13	0.37	-0.17
Textile	-0.40	4.29	0.04	0.05	0.08	-0.12	0.01	-0.20	-0.25	0.33	0.02	-0.21	-0.07	-0.16	-0.08
Trade	0.06	-0.20	0.04	-0.03	-0.01	0.03	0.05	0.03	-0.09	-0.01	-0.01	0.07	-0.05	0.01	-0.01
Transport	0.07	-0.14	0.04	-0.01	0.01	0.03	0.06	0.02	-0.07	0.00	0.00	0.07	-0.03	0.02	0.00

Vegetable, fruit	0.07	-0.03	0.17	-0.20	0.07	0.25	0.08	0.26	-0.45	0.02	0.00	0.08	0.07	0.13	0.09
Vegetable oils, fats	-0.02	-0.64	-0.43	2.18	-0.15	-0.46	-0.24	-3.75	-2.05	-0.99	-0.77	-1.13	0.48	-0.14	0.43
Wearing apparel	-0.13	0.60	-0.02	-0.07	0.21	0.01	0.06	-0.08	-0.24	1.04	0.06	-0.01	0.06	-0.03	-0.13
Wheat	0.00	0.04	0.17	0.00	0.23	0.99	0.08	0.28	-0.51	0.05	0.06	0.15	0.23	0.07	0.07

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