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Nothing to Declare: Duty-free access to imports from LDCs

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Abstract

Developed countries have agreed to provide duty free and quota free access to imports from LDCs covered by 97 per cent of tariff lines. However, LDCs would like to extend the agreement to 100 per cent coverage, since 3 per cent of tariff lines can cover a substantial proportion of LDC exports. Products of major interest include textiles and clothing and agricultural goods such as rice, oilseeds, sugar and bananas. The potential trade and welfare impacts of expanding the coverage are analysed using a global general equilibrium model. Updated estimates indicate LDCs stand to gain \$4.2 billion in additional exports, the bulk of which accrues to Bangladesh, Cambodia and West Africa. A further \$1.8 billion increase in exports could be obtained if LDCs had duty free access to the markets of China, India, Brazil and South Africa. However, non-LDC developing countries are likely to become worse off as a result of extension of preferences to LDCs.

Key words: WTO negotiations, trade, tariffs

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Introduction

As part of the Doha Round of World Trade Organization negotiations, members agreed at the Hong Kong Ministerial meeting of December 2005 that developed countries would provide duty free and quota free access to 97 per cent of imports from least developed countries (LDCs) (WTO 2005). This was to start at the beginning of the Doha implementation period.

LDC would like to extend the agreement to 100 per cent coverage, since 3 per cent of tariff lines could significantly affect the proportion of LDC exports. In addition, they would like similar preferential access to be provided by the major developing countries, such as China, Brazil and India. However, moving from 97 per cent towards 100 per cent product coverage is proving to be difficult as some developed countries continue to be unwilling to liberalize fully some sensitive products.

Products of major interest include textiles and clothing and agricultural goods such as sugar, rice and bananas. A number of developed countries had already met 97 per cent tariff line coverage by 2005 (e.g., EU, Canada, Australia and New Zealand) while a few others were yet to meet the benchmark. Since 2005, major improvements have been reported in Japan and Switzerland. In 2007, Japan expanded its coverage for duty-free and quota-free treatment from 7758 to 8859 products so that it now covers 98 per cent of its total tariff lines, or over 99 per cent of imports from LDCs (UNCTAD 2007). Switzerland grants as of 2007 immediate duty-free treatment for all products from all LDCs. The United States is yet to meet the 97 per cent benchmark mainly owing to textiles and clothing products, including cotton by-products, excluded from its GSP and, to a lesser extent, AGOA schemes. In addition, India and China have taken major steps to grant duty-free and quota-free market access for LDCs. China has granted, autonomously and within regional frameworks, duty-free treatment for over 400 tariff lines covering some 94 per cent of LDCs exports for 39 LDCs. India has granted, from May 2008, duty free and preferential market access for all LDCs on 94 per cent of its total tariff lines covering 92.5 per cent of global exports of all LDCs. Korea and Brazil have also indicated their intention to undertake some initiatives.

To assess the potential gains from the extension of duty-free and quota-free market access for LDCs to all developed countries, we use a general equilibrium model, GTAP. GTAP is

designed for trade policy analysis of this nature. Specifically, it contains bilateral trade and tariff data that are necessary to model the impacts of preferential agreements. The GTAP database refers to the base year 2007 and it specifies many, but not all, LDCs as separate regions in the model. The database contains preferential tariffs.

In the next section we describe the current trade patterns and the existing barriers. In the following section the scenarios, model and data are described. The fourth section contains the results, and finally, limitations, implications and conclusions close the paper. The analysis covers trade in goods, not services.

Trade patterns

LDC exports have increased significantly in recent years, after a period of relative stagnation in the 1990s when the share of global trade remained static at around half of one per cent (table 1). Exports have increased three-fold since 2000, and the share of world trade has increased to 0.9 per cent.

Table 1 Growth in LDC exports, selected years

	Total exports \$m	Share of global trade %
1950	1,764	2.8
1960	3,431	2.5
1970	5,355	1.6
1980	25,042	1.2
1990	25,434	0.7
2000	43,419	0.7
2010	169,865	1.1

Source: UNCTADSTAT online.

The markets for LDC exports

The European Union and the United States are the major markets for the LDCs (table 2). Access to these markets has improved over the past ten years, with exports expanding three-fold. More notable has been the increase in exports to developing countries, particularly China. India has also become a significant market.

Table 2 Major markets for LDC merchandise exports

	2000	2005	2010
	\$m	\$m	\$m
EU	10,566	19,675	29,935
USA	9,087	20,709	29,657
China	3,818	15,643	45,780
India	1,524	3,013	6,701
Japan	970	2,514	4,559
Canada	271	1,571	4,587
Brazil	218	336	1,526

Source: UNCTADSTAT.

LDC exporters dependent on commodities

Rising prices of minerals and energy in recent years have made developing countries appear more dependent on commodities. The current structure of LDC exports, shown in table 3, is dominated by minerals and energy, although apparel and clothing (HS Chapter 61) make a significant contribution. Most of the growth in LDC exports has occurred in mineral fuel/lubricants. Tariffs on such products are typically very low. There has also been substantial growth in non-fuel items, including agricultural (coffee and cotton) and manufactured products (printed books).

Table 3 Top ten LDCs exports by product, 2010

HS code	Description	\$m
74	Copper and articles thereof	5640
71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewellery; coin	4072
61	Articles of apparel and clothing accessories, knitted or crocheted	3135
26	Ores, slag and ash	1883
09	Coffee, tea, mate and spices	1824
49	Printed books, newspapers, pictures and other products of the printing industry; manuscripts, typescripts and plans	1801
24	Tobacco and manufactured tobacco substitutes	1030
07	Edible vegetables and certain roots and tubers	719
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes	718
52	Cotton	658

Source: Comtrade through WITS. Sectors ranked at HS 2 digit level

The major exporters

Angola and Bangladesh are the largest LDC exporters, accounting for 45 per cent of the LDC total exports. The top ten countries account for 80 per cent of total imports. Angola's exports have increased from \$8 billion in 2000 to \$46 billion in 2010. The bulk of these exports are fuel (HS Chapter 27). A listing of exports for all individual LDCs can be found in Annex table A1. There are ten countries with exports of less than \$100 million.

Table 4 Major LDC exporters, 2010

	Exports \$m
Angola	46,437
Bangladesh	19,239
Sudan	10,500
Equatorial Guinea	10,400
Myanmar	8,590
Yemen	8,500
Zambia	7,200
Cambodia	5,500
Democratic Republic of the Congo	4,937
United Republic of Tanzania	4,051
LDC total	156,053

Source: Comtrade through UNCTADSTAT.

Preferential access

A list of the average non-preferential tariffs facing LDCs exporting to OECD countries are presented in table 5 (last column). Some 84 per cent of LDC exports (to the world) are eligible for duty free or preferential treatment with a very low trade weighted average tariff, practically zero. Some 20 per cent from LDC exports to OECD countries are exported under non-preferential arrangements. This is far greater than the 3 per cent of tariff lines that do not provide duty free access because the excluded items can cover a large amount of trade. The average tariff facing these exports is low, 7 per cent, but these percentages vary widely from country to country, the highest being 14 per cent for Benin. Twenty countries face non-preferential tariffs over five per cent.

Table 5 Exports and MFN tariffs facing LDCs, 2010

	Total exports \$m	MFN duty free exports \$m	Preferent ial exports \$m	Non MFN free or preferent -ial exports \$m	Simple average tariff on MFN exports to OECD %
Afghanistan	1,095	102	23	971	4.69
Angola	43,827	32,462	11,350	15	3.51
Bangladesh	16,797	751	9,422	6,623	9.84
Benin	333	135	96	101	14.18
Bhutan	518	256	243	19	5.23
Burkina Faso	450	250	88	112	4.5
Burundi	108	74	10	24	5.77
Cambodia	4,763	579	1,634	2,550	11.89
Central African Republic	125	92	7	26	3.53
Chad	2,878	806	2,051	21	4.13
Comoros	38	18	17	2	5.59
Congo, Dem. Rep.	4,079	2,928	511	640	3.3
Djibouti	210	160	50	-	2.58
East Timor	103	66	2	35	1.58
Equatorial Guinea	9,345	5,719	3,626	-	5.78
Eritrea	21	2	7	12	4.04
Ethiopia (exc. Eritrea)	1,674	814	300	559	9.33
Gambia, The	49	27	10	11	3.15
Guinea	1,243	1,130	88	25	3.68
Guinea-Bissau	20	12	1	7	3.43
Haiti	669	38	136	495	8.47
Kiribati	42	25	8	9	3.77
Lao PDR	1,633	886	209	538	10.46
Lesotho	534	206	313	15	14.02
Liberia	1,073	617	456	-	3.31
Madagascar	1,261	322	878	62	9
Malawi	1,000	178	577	245	10.68
Mali	240	104	41	95	4.06
Mauritania	2,088	1,621	367	100	7.34
Mozambique	2,952	999	1,026	927	5.55
Myanmar	5,084	965	379	3,740	12.37
Nepal	271	40	148	83	7.85
Niger	385	266	111	8	2.84
Rwanda	306	143	18	145	4.2
Samoa	62	6	36	20	3.49
Sao Tome and Principe	12	10	1	-	3.73
Senegal	1,709	155	996	558	4.89
Sierra Leone	316	260	19	37	3.98

Solomon Islands	380	314	40	26	2.66
Somalia	139	43	90	6	4.22
Sudan	9,047	8,361	359	326	5.86
Tanzania	1,993	1,009	600	384	5.29
Togo	764	392	177	194	3.47
Tuvalu	4	-	1	3	3.16
Uganda	1,221	428	462	330	4.69
Vanuatu	430	260	59	111	3.85
Yemen	5,535	4,975	271	289	5.65
Zambia	6,106	2,903	2,004	1,199	3.99
Least Developed Countries	132,930	71,911	39,319	21,700	7.02

Source: UNCTAD TRAINS, accessed through WITS. TRAINS export data differs from Comtrade, reported in table 4, because TRAINS reports only that trade that can be assigned to an HS line, whereas Comtrade reports trade that cannot be assigned to an HS line. This accounts for the difference between \$132 billion in table 5 and \$156 billion in table 4. YTRAINS is used here because its data is integrated with tariff data.

Note: Preferential exports are exports eligible for preferential treatment, although whether the whole amount of exports actually received preferential treatment is unknown. Some trade may be MFN duty free but still included in preferential trade. Non-MFN free or preferential exports are the difference of total and MFN duty free and preferential exports.

The 20 per cent of exports facing the mfn tariffs raises the question of why the share is so high. The more obvious explanations include:

- The country exports goods which tend not to have preferential access, such as rice, sugar or textiles;
- The country exports goods which tend to have low mfn rates. Such goods include oil-based products and minerals. For example, 15 LDCs faces mfn rates averaging less than one per cent;
- Preferential access is restricted by administrative requirements and particular rules of origin. Utilisation rates are less than 100 per cent. Where the preference margin is less than five per cent, the administrative burden of documenting rules of origin may not justify the benefits.

Next, we look at the potential gains to LDCs from the extension of duty free quota free access to all goods. The analysis assumes preferential access is taken up, ignoring the third point listed above.

A quantitative assessment of duty free quota free market access

To assess the potential gains to LDCs from 100 per cent access we utilise a general equilibrium model, GTAP, and its associated Version 8 database. The GTAP database has 113 separate

countries and regions. This includes the LDCs Cambodia, Bangladesh, Malawi, Mozambique, Senegal, Tanzania and Zambia as individual countries (table 6) and a number of regional groupings that are predominantly LDCs. This grouping is not perfect, as Developing Africa contains Lesotho, an LDC, while Rest of South East Asia contains Brunei, a small but wealthy country.

Table 6 Regional concordance

Region	Countries
European Union	Austria, Belgium, Cyprus, Czech Republic, Germany, Denmark, Spain, Estonia, Finland, France, United Kingdom, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Latvia, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Sweden
United States	
Japan	
Other developed	Australia, Canada, Switzerland, Rest of EFTA, Korea, New Zealand, Taiwan
China	
India	
Brazil	
South East Asia	Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam, Pakistan, Sri Lanka, P.R. Korea, Macau, Mongolia, Rest of Oceania
Latin America	Argentina, Caribbean, Rest of Central America, Rest of North America, Bolivia, Chile, Colombia, Ecuador, Rest of South America, Mexico, Nicaragua, Peru, Paraguay, Uruguay, Venezuela
Developing Africa	Botswana, Algeria, Libya, Egypt, Lesotho, Namibia, Swaziland, Madagascar, Mauritius, Nigeria, Tunisia, Uganda, South Africa, Zimbabwe
Rest of World	Albania, Rest of Europe, Armenia, Azerbaijan, Bulgaria, Rest of Western Asia, Belarus, Georgia, Croatia, Iran Islamic Republic of, Kazakhstan, Kyrgyzstan, Morocco, Rest of Eastern Europe, Romania, Russian Federation, Rest of Former Soviet Union, Turkey, Ukraine.
Least developed country groups	
Rest of South Asia	Afghanistan, Bhutan, Moldova, Nepal
Rest of South East Asia	Brunei, Myanmar, Laos, East Timor
Cambodia	
Bangladesh	
Malawi	
Mozambique	

Senegal	
Tanzania	
Zambia	
Rest of West Africa	Cape Verde, Benin, Gambia, Ghana, Guinea, Côte d'Ivoire, Liberia, Mali, Niger, Mauritania, Guinea-Bissau, Saint Helena, Sierra Leone, Togo, Burkina Faso
Central Africa	Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea, Gabon, Sao Tome and Principe
South Central Africa	Angola, DR Congo
Rest of Eastern Africa	Burundi, Comoros, Mayotte, Ethiopia, Eritrea, Djibouti, Kenya, Reunión, Rwanda, Seychelles, Somalia, Sudan

Regional exports corresponding to this concordance are shown in table 7. LDCs export about 65 per cent of the goods to developed countries, although this ranges from 33 (Laos) to 88 per cent (Cambodia) for the countries shown in the table.

Table 7 Value of exports from LDCs

	EU25	USA	Japan	Other developed	China	India, Brazil and South Africa	Total
	\$m	\$m	\$m	\$m	\$m	\$m	\$m
Cambodia	1073	2488	140	259	66	14	4474
Bangladesh	6288	3476	186	739	151	312	12112
Ethiopia	461	89	80	52	79	24	1386
Laos	207	30	14	110	85	2	1072
Malawi	327	107	15	77	9	105	1074
Madagascar	822	391	43	51	50	55	1628
Mozambique	2029	8	8	21	134	132	2569
Tanzania	598	81	85	488	288	287	2627
Senegal	420	14	15	59	23	116	1430
Uganda	572	217	59	139	64	73	1997
Zambia	564	51	143	811	392	594	4173
West Africa	16999	16487	500	1166	1221	9826	53882
Central Africa	5259	3960	295	497	2514	398	14222
South Central Africa	1653	4979	51	584	4363	1303	14277
Rest of Eastern Africa	1807	436	1032	362	1924	269	9472

Source: GTAP v8 database.

Tariffs on this trade (table 8) are generally very low, averaging less than 10 per cent in most instances, although exceptions are Malawi (sugar) exports to the European Union and to the USA (other crops), Cambodia and Bangladesh (mainly apparel) exports to the USA and Senegal exports (other processed agriculture) and (other crops) to Japan.

The share of LDC exports to China, India, Brazil and South Africa is relatively low, about one third of the trade with OECD countries. However, the tariffs LDCs face on these exports are much higher because of the absence of the preferential treatment similar to that provided by developed countries.² This raises the question of whether LDCs should push for further concessions from developed countries or the wealthier developing countries. The implicit tariff revenue raised on exports to developed countries is estimated at \$1,118 million compared with \$912 million on exports to China, India, Brazil and South Africa.

Table 8 Trade weighted average applied tariffs on exports from LDCs

	EU25	USA	Japan	Other developed	China	India, Brazil & South Africa	Total
	%	%	%	%	%	%	%
Cambodia	0.1	12.2	0.2	1.4	7.0	21.0	7.7
Bangladesh	0.0	10.6	0.4	0.4	3.7	9.3	4.1
Ethiopia	2.3	0.2	0.0	10.6	1.7	13.5	5.1
Laos	0.5	4.9	0.1	0.0	8.3	5.1	2.6
Malawi	7.8	16.7	0.0	0.0	1.1	2.3	6.1
Madagascar	1.0	0.0	0.0	0.3	1.1	19.7	1.5
Mozambique	1.6	2.8	0.0	0.0	7.3	6.6	6.3
Tanzania	2.5	0.5	0.4	0.5	0.7	8.6	4.3
Senegal	2.2	0.9	9.7	6.6	17.6	15.7	9.6
Uganda	0.2	0.1	0.1	0.3	2.0	14.8	2.7
Zambia	2.7	0.4	0.0	0.3	1.2	1.5	3.0
West Africa	0.4	0.0	0.2	1.0	1.1	5.2	2.0
Central Africa	0.1	0.0	0.0	0.2	0.5	3.4	0.7
South Central Africa	0.0	0.0	0.2	0.8	0.3	2.8	1.0
Rest of Eastern Africa	4.2	0.4	0.4	12.4	3.3	16.7	4.7

Source: Derived from GTAP v8 database.

Scenarios, model and data

To assess the impact of duty free quota free market access we postulate two scenarios:

- (1) The removal of developed country tariffs on exports from LDCs; and
- (2) The removal of tariffs in developed countries plus China, India, Brazil and South Africa on exports from LDCs.

² Many developing countries are members of the Global System of Trade Preferences, an agreement to encourage trade between developing countries, but the preferences are relatively weak.

By examining tariff changes at an industry or tariff line level, it is possible to make a reasonable estimate as to their likely effects on the industry's prices and production, consumption, and, perhaps, imports and exports. However, looking at tariffs alone is insufficient. Because many firms sell their output to other firms as intermediate inputs, lower prices in one sector are beneficial to downstream sectors. For example, the removal of tariffs on textiles makes a country's apparel sector more competitive. Such interactions should be taken into consideration in assessing a policy change. Where a large number of variables are involved, computational models are necessary to take account of the interactions. Trade models are used to make estimates of the possible effects of changes in trade policy on a number of economic variables, such as exports, imports, tariff revenues, production and welfare. The value of the models is in providing an understanding of the interplay of different economic forces, and in enabling comparisons of the relative impact of different policies. They can often help to highlight unexpected or counter-intuitive outcomes, which can assist policy-makers in their choice of policy options and/or development of support measures.

The standard GTAP model used here is a static, multiregional, multisector, computable general equilibrium (CGE) model that assumes perfect competition and constant returns to scale. Bilateral trade is handled via the so-called Armington assumption that differentiates imports by source. Input-output tables reflect the links between sectors. GTAP is ideally suited for analysis of trade policies, such as the liberalisation of industrial tariffs, which are likely to have international and intersectoral effects. The input-output tables capture the indirect intersectoral effects, while the bilateral trade flows capture the linkages between countries. A shock or policy change in any sector has effects throughout the whole economy. Tariff support for one sector, such as textiles, tends to have negative effects on downstream sectors (apparel) by raising prices and costs. Changes in policies in sectors such as steel and petroleum tend to have relatively important economy-wide effects because many sectors use these inputs. Support in one market often has a negative effect on others because each sector competes with the others for factor inputs, capital, labour and land. CGE models attempt to capture these effects. The methodology involves specifying a data set that represents a specific year, postulating a change in tariffs or other policy variable, and comparing the simulated outcome with the base data. Impacts of the removal of trade barriers on trade flows, government revenues, welfare and resource allocation within countries can then be ascertained. It is important to note that no dynamic elements are assumed here, although in reality the policy changes are implemented over time and there are, in addition, time lags for their effects to work through. There are also adjustment costs that are ignored. However, policy changes are phased in over a number of years, and, in practice, the output changes would take place in a growing world economy. This facilitates the adjustment process.

The GTAP 8 database is used here. The value (of output and trade flows) data relate to 2007 and the behavioural parameters, such as elasticities, are taken from the literature rather than econometrically estimated specifically for use within the model. Input-output data are taken from national accounts and vary from year to year, depending on their availability in particular countries. Preferences are included in the tariff database, and data for the EU are aggregated to 27 members, with internal tariffs removed.

Simulation results

Trade policy changes can have significant economic effects. The focus here is national trade and welfare effects.³ The additional exports for LDCs from developed country duty free quota free liberalisation are estimated at \$4.2 billion. Further liberalisation by China, India, Brazil and South Africa increases LDC exports by a further \$1.2 billion. If these four countries opened their market in isolation, the export gains to LDCs would amount to \$1.9 billion. This is because these markets overlap, and goods exported to developed countries would need to be redirected to take advantage of improved access in developing countries.

The changes in LDC exports are shown below in table 9 for the two scenarios. All the regions show positive gains, with no obvious trade diversion at the aggregated level. The major impact is on the exports of Cambodia and Bangladesh. Exports from these countries increase by 22 and 16 per cent respectively. This result is driven by the removal of import duties on exports of apparel, to the United States and on rice in Japan. Bilateral exports in apparel from Cambodia and Bangladesh to the United States are worth \$1.7 billion and 2.8 billion respectively in the 2008 base period database. Another major flow is sugar exported from Malawi to the European Union against an ad valorem tariff equivalent of 60 per cent. Finally, our results show the removal of Japanese tariffs on rice creates an export opportunity for Bangladesh.

The impact on LDC exports of additional liberalisation by four large developing countries appears significant in aggregate, \$1.8 billion. Developing country liberalisation, all of it outside Africa, is quite important for Laos, Madagascar, Tanzania, Senegal, Uganda, West Africa, Central Africa, and South Central Africa. The major benefit is West African exports of coal, oil and gas to India. This is a large trade flow which currently faces a 10 per cent tariff. Other

³ Sectoral changes for the developed country DFQF scenario are given in Appendix table 1.

products to benefit include West African exports of textiles to China, Senegalese and Zambian exports of other crops, West African exports of other crops, vegetables and fruit and metal products to India, and Bangladeshi exports of apparel to South Africa. There are few additional LDC exports from action taken by Brazil.

Table 9 Change in value of exports following DFQF liberalisation

	Developed countries		Developed and selected developing countries	
	%	\$m	%	\$m
Cambodia	22	1138	19	1147
Bangladesh	16	2129	16	2226
Ethiopia	2	57	3	73
Laos	0	4	1	17
Malawi	17	195	16	201
Madagascar	1	21	4	80
Mozambique	4	122	3	137
Tanzania	3	101	4	163
Senegal	2	35	6	133
Uganda	0	2	1	40
Zambia	1	53	2	76
West Africa	1	301	2	1463
Central Africa	0	10	1	86
South Central Africa	0	9	1	158
Rest of Eastern Africa	0	4	0	2
Total		4181		6002

Source: GTAP simulations

The changes in LDC welfare are shown in table 10. Most of the change in welfare can be attributed to improvements in the terms of trade, also shown in table 10. An increase in the price of exports dominates the terms of trade. As a result, the welfare changes tend to follow the growth in exports shown in table 9. The resource allocation effects are minimal because none the LDCs is undertaking any liberalisation. Global welfare gains are \$2.1 billion and \$1.4 billion under the two scenarios respectively, but the liberalising countries are in fact worse off, by around \$6.6 billion, because of negative terms of trade effects, negative real wages and an outflow of capital.

Table 10 Change in welfare following DFQF liberalisation

	Developed countries		Developed and selected developing countries	
	Welfare	Terms of trade	Welfare	Terms of trade
	\$m	\$m	\$m	\$m
Cambodia	306	981	316	990
Bangladesh	1067	3263	1106	3388
Ethiopia	34	216	41	273
Laos	5	6	14	15
Malawi	82	265	85	272
Madagascar	10	28	42	76
Mozambique	77	216	94	252
Tanzania	33	142	70	259
Senegal	14	147	47	550
Uganda	2	7	40	125
Zambia	45	60	58	87
West Africa	72	582	652	3190
Central Africa	0	-3	26	82
South Central Africa	7	12	59	166
Rest of Eastern Africa	-5	-4	-11	-3
Total	1750	5917	2639	9723

Source: GTAP simulations

Global welfare gains are concentrated in two sectors – rice, \$745 million, and textiles, \$462 million. Manufacturing \$117 million, and other processed agriculture, \$91 million, also contribute.

Implications, limitations and conclusions

Potential export gains to LDCs from duty free quota free liberalization in developed countries are estimated at \$4.2 billion. Similar liberalization by China, India, Brazil and South Africa is estimated to generate a further \$1.8 billion, most of it attributable only to West African exports to India. The contribution of Brazil and South Africa is slight, as these countries already have relatively open economies.

These estimates are based on the assumption that the tariff estimates presented here are correct, that the tariffs would be removed and that LDCs could supply these markets, notwithstanding SPS, TBTs and other non-tariffs measures. This implies that there would be no ongoing reforms under a Doha outcome, so these estimates are not in addition to any impacts from the Round.

Two important sectors for LDC markets are apparel in the United States and rice in Japan. Although market opening would provide opportunities to LDCs, there are some doubts about the ability of LDCs to supply these markets. Firstly, these markets have prohibitive tariffs, and imports may not increase as tariffs are reduced. In other words, there may be water in the tariff, and it is not clear what reduction would be required before Japan started importing. This implies that the estimated benefits for the exporting countries may be overestimated. A second qualification is the type of rice preferred by the Japanese. Although the GTAP database shows some trade between Bangladesh, Laos, and Cambodia and Japan, these countries typically do not grow the Japonica variety favoured in Japan.⁴

Preferential tariff reductions such as those modeled here may have negative effects not only on third countries, but on the liberalizing countries themselves. That is the case here, according to our estimates. While LDCs gain as a group and individually, other developing countries in Asia and Latin America are made worse off in welfare and exports. Furthermore, the liberalizing countries are also worse off as a result of negative terms of trade and allocative efficiency effects, falling real wages and an outflow of capital. The advanced countries are importing from high cost producers and forgoing the tariff that they previously collected. It is for these reasons that some countries are reluctant to undertake these reforms in sensitive sectors.

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⁴ Comtrade data show \$6 million tonnes of rice exports from LDCs to Japan in 2005, all of it from Bangladesh. There were no imports of rice into Japan from LDCs in 2007.

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Appendix

Table A1 LDC exports by country

Country	2010 \$m
Afghanistan	400
Angola	46,437
Bangladesh	19,239
Benin	1,188
Bhutan	540
Burkina Faso	1,050
Burundi	100
Cambodia	5,500
Central African Republic	161
Chad	3,071
Comoros	13
Democratic Republic of the Congo	4,937
Djibouti	85
Equatorial Guinea	10,400
Eritrea	12
Ethiopia	2,580
Gambia	15
Guinea	1,105
Guinea-Bissau	123
Haiti	560
Kiribati	15
Lao People's Democratic Republic	1,550
Lesotho	849
Liberia	200
Madagascar	1,275
Malawi	1,066
Mali	1,954
Mauritania	2,040
Mozambique	2,243
Myanmar	8,590
Nepal	950
Niger	926
Rwanda	238
Samoa	60
Sao Tome and Principe	6
Senegal	2,161
Sierra Leone	340
Solomon Islands	227
Somalia	450
Sudan	10,500
Timor-Leste	11
Togo	923
Tuvalu	-
Uganda	2,164

United Republic of Tanzania	4,051
Vanuatu	49
Yemen	8,500
Zambia	7,200
Total LDCs	156,053

Source: Comtrade through WITS.

Table A2 Change in value of LDC exports by sector: developed country duty free quota free liberalisation

	Cambodia	Bangladesh	Ethiopia	Laos	Malawi	Madagascar	Mozambique	Tanzania	Senegal	Uganda	Zambia	West Africa	Central Africa	South Central Africa	Rest of Eastern Africa
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Paddy and proc. rice	0	51469	-13	183	-19	94	-8	-12	-6	-9	-8	30	-5	4	-2
Other crops	-48	-19	0	7	4	85	-17	5	41	19	2	-2	1	49	0
Vegetables, fruit, nuts	50	-14	4	18	-6	-8	50	53	5	-5	-5	37	1	-2	-1
Sugar	-38	1	413	-14	401	672	514	395	-17	-6	259	560	7	8	-7
Livestock	-40	-22	-5	0	-21	-11	-20	-7	-9	-8	-3	3	0	-2	0
Coal, oil, gas, petroleum Resources	-12	13	-7	-10	-5	-1	-7	3	-4	-1	3	2	0	0	0
Meat, pig, poultry, cattle etc	-4	-6	-1	4	-11	0	7	-1	-2	6	4	1	0	1	0
Beverages & tobacco	-73	-8	-9	-16	-48	-19	-36	-12	-24	-15	-16	0	-2	-3	0
Other processed agriculture	-9	53	-2	1	-6	-4	-2	-2	-1	-2	-1	3	0	0	2
Textiles & apparel	9	-17	-1	7	-18	2	-11	-3	10	-7	-4	8	8	1	1
Wearing apparel	14	-27	5	4	-37	-8	-12	-5	-7	22	-8	3	18	1	1
Chemicals	51	7	0	1	-39	-9	-16	2	2	-7	-8	2	20	-2	-3
Metal manufactures	-27	-12	-3	126	-26	12	0	10	44	-4	-4	0	0	1	1
Wood & paper products	-23	-15	-4	-5	-36	71	-11	-5	5	-4	-4	6	11	19	0
Motor vehicles	-29	-25	-1	-4	-25	-8	12	-3	-5	-7	-4	5	0	-1	1
Manufactures	-12	-24	-5	-1	-6	0	1	-4	-5	-4	-2	0	0	1	0
Electronics	-27	-26	-4	-5	-37	-10	-7	3	-6	-7	-6	-1	-1	-1	1
Transport & communications	-26	-41	-8	-4	-34	0	-10	-3	-4	-2	-4	-2	0	-1	0
Business services	-13	-20	-2	-3	-15	-4	-3	-2	-5	-3	-1	-1	0	-1	0
Services and activities	-23	-23	-4	-2	-25	-7	-8	-4	-6	-5	-4	-2	-1	-1	0
	-21	-22	-4	-3	-23	-5	-8	-5	-7	-5	-3	-2	-1	-1	0

Source: GTAP simulations