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**A SOUTH-SOUTH SURVIVAL STRATEGY:
THE POTENTIAL FOR TRADE AMONG
DEVELOPING COUNTRIES**

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ABSTRACT

Trade between developing countries, or South-South trade, has been growing rapidly in recent years following significant reductions in tariff barriers. However, significant barriers remain, and there is currently reluctance in many developing countries to undertake further reductions, with a preference instead for focusing on opening up access to developed country markets, or maintaining the status quo given that multilateral liberalization may result in the erosion of preferential access enjoyed by some developing countries.

This emphasis on Northern markets represents a missed opportunity for developing countries. To assess this we compare the potential effects of the removal of barriers on South-South trade with the gains from developed country liberalization and from regional free trade areas within Africa, Asia and Latin America. A general equilibrium model, GTAP, containing information on preferential bilateral tariffs, is used to estimate the impacts. The results indicate that the opening up of Northern markets would provide annual welfare gains to developing countries of \$22 billion. However, the removal of South-South barriers has the potential to generate gains 60 per cent larger. By contrast, the potential gains from further regional agreements on a continental basis are limited in Africa and Asia, although scope remains in Latin America. The results imply that giving greater emphasis to removing barriers between as well as within continents could prove a successful Southern survival strategy.

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1. INTRODUCTION

Most trade negotiators appear to take a mercantilist view of regional and multilateral trade negotiations, aiming to obtain improved access for their exports while limiting the access other countries have to their domestic markets. In particular, developing countries are keen to access the major developed countries, namely the United States, the European Union and Japan. However, this emphasis may be misplaced. There is significant scope for improving trade among developing countries themselves. By seeking exemptions for sensitive products in their markets, developing countries are inadvertently limiting the trade opportunities of other developing countries.

Various studies look at the effects of the establishment of regional trade agreements (RTAs). For instance, Venables (2003) reaches the conclusion that benefits from South-South trade agreements are likely to be small and generate trade diversion. In other words, production patterns in Southern countries induced by the trade agreement are unlikely to correspond to their true underlying comparative advantage. The logic of the argument is rooted in neoclassical trade theory, with patterns of comparative advantage being exogenous and immutable. In other approaches, such as the so-called ‘new economic geography’ (Fujita, Krugman and Venables, 1999), cumulative causation mechanisms at the core of the formation of industrial clusters ‘endogenise’ the comparative advantage variable. In such a setting, the qualification of the impact of RTAs goes beyond the trade creation versus trade diversion dimension. For instance, by combining the standard features of the new trade theory and forward and backward linkages among firms, Puga and Venables (1998 and 1999) find more qualified results, although they also argue that North-South

preferential trade agreements are likely to offer better prospects for Southern countries, including for non-participating ones. Fugazza and Robert-Nicoud (2006) show that South-South trade can have the effect of lowering the price of intermediate inputs and eventually allows exporters in those countries to serve international markets.

In this paper we examine the potential for gains from liberalization of South-South trade and compare this with the impacts of developed countries opening up their markets. We use the recently released version 6 GTAP database, which includes preferential tariffs. This differs from previous versions that did not include preferential data. GTAP, a deterministic, comparative static, general equilibrium trade model, is used to assess the potential impacts. We start by examining recent trade flows, identify the existing barriers, and quantify the impacts on developed countries of eight alternative scenarios: developed country liberalization; liberalization between developing countries only; and regional trade agreements within sub-Saharan Africa; the Middle East and North Africa; Africa and the Middle East; Latin America and the Caribbean; and Asia respectively. We also simulate the three regional agreements simultaneously to illustrate the importance of links between as well as within regions. Regional agreements have appeared to be politically much more feasible on a continental basis than between all developing countries. However, the launch of the third round of GSTP negotiations in June 2004 may change this perception. The Global System of Trade Preferences among Developing Countries envisages preferential trade arrangements among 43 developing countries from all regions, and accession will be opened to China and the Group of 77.

The results indicate that there are significant potential gains from South-South trade liberalization, although part of these gains can be harvested from regional agreements. Policy implications, limitations and conclusions bring the paper to a close.

2. WHAT'S AT STAKE?

Many developing and least developed countries enjoy tariff preferences under the generalized system of preferences and more selective schemes, such as the Cotonou Agreement, the Caribbean Basin Initiative, the EU's Everything But Arms initiative and the United States' African Growth and Opportunities Act (AGOA) (UNCTAD 2003). Even taking account of these preferences, average import-weighted applied tariffs on exports from these regions to developed countries are higher than those facing developed countries themselves. This reflects the composition of imports with different tariffs rather than higher tariffs on the same item. It also reflects the relatively weak bargaining power of the developing countries in past rounds of negotiations in that they were unable to secure tariff cuts on the kind of goods that they export.

Table 1 shows trade-weighted applied tariffs levied by developed and developing countries on merchandise exports from each other. These data include preferential rates. On average, developed countries impose tariffs of 2.1 per cent on imports from other developed

countries, 3.9 per cent on imports from developing countries and 3.1 per cent on imports from LDCs. The most significant sectors contributing to the higher tariffs on developing country exports are textiles, apparel and leather. On the other hand, developed countries also face higher tariffs when exporting to developing countries (9.2 per cent) than do other developing countries (7.2 per cent), partly reflecting the composition of trade and partly reflecting preferential arrangements among groups of developing countries.

Agriculture alone tells a slightly different story (table 2), with high protection applied in both developed and developing countries against products from both groups. Developed countries, however, give greater access to least developed country products (2 per cent) than do developing countries (12 per cent). This reflects the various preferential schemes previously mentioned. However, protection is applied predominantly against temperate products grown in other developed countries with similar agronomic and climatic conditions. Typical developing country products such as coffee and tropical fruits are not particularly substitutable with temperate products. Notable exceptions are sugar (cane and beet sugar are substitutes), vegetable oils, tobacco and cotton. Many tropical products, such as coffee, attract little protection in developed countries. However, many developing countries have substantial tariffs on tropical commodities.

Table 1. Trade-weighted average applied tariffs (including preferences) by development status
(Percentages)

Source	Developed	Developing	Least developed
Developed	2.1	9.2	11.1
Developing	3.9	7.2	14.4
Least developed	3.1	7.2	8.3
Total	2.9	8.1	13.6

Source: Computed from WITS/TRAINS (2004) database.

Table 2. Trade-weighted average agricultural applied tariffs (including preferences) by development status and degree of processing
(Percentages)

Source	Developed		Developing		Least developed	
	Un-processed	Processed	Un-processed	Processed	Un-processed	Processed
Developed	9.0	17.3	15.5	17.3	5.3	16.2
Developing	7.8	13.5	17.3	17.2	10.7	14.5
Least developed	2.3	7.6	11.8	18.5	4.8	12.1

Source: Computed from WITS/TRAINS (2004) database, latest available.

Trade-weighted tariffs are averaged by imports, but it is instructive to look at the trade flows themselves to gauge the likely impacts. These are shown in table 3. Total trade in merchandise at world prices amounts to \$5.5 billion (2001) (excluding intra-EU trade). Developed countries import \$1.8 billion from other developed countries and slightly more than \$1.2 billion from developing (including least developed) countries. Developing countries themselves import a greater proportion of their imports from developed countries (\$1.19 billion versus \$0.9 billion) but South-South trade is a substantial proportion nonetheless. Taking into account trade flows, the imputed tariff revenues collected by developed countries amounts to \$76 billion. By contrast, developing countries are collecting an estimated \$152 billion. Of this, \$83 billion is on imports from developed countries and \$69 billion on imports from other developing countries.

Table 3. Merchandise imports by source, 2001
(Thousands of US dollars)

Source	Developed	Developing
Developed	1 768 340	1 188 810
Developing	1 225 821	903 627
Total	2 957 150	2 129 448

Source: Computed from GTAP 6 database.

The high tariff burden on South-South trade poses the question as to whether developing countries could assist their development by trading more with each other. One advantage is their proximity, which may imply lower transport costs. In addition, other developing countries, by definition at a similar stage of development, may not have the competitive advantage of developed countries. Thus, developing countries opening their markets are less likely to be swamped with imports. On the other hand, the benefits of trade come from divergences in relative factor endowments and costs, and there are fewer potential gains available from trading with countries that have endowments and cost structures similar to one's own.

3. SCENARIOS

To assess the potential gains from liberalization with different groups, we postulate eight scenarios that are presented in table 4. In each case there are no reductions in the services sectors.

Simulations are undertaken using the GTAP version 6 database (GTAP 2005). The database has 87 countries and regions and 57 sectors that are aggregated as shown in table 5. The group 'Other Asia' includes the Republic of Korea and Taiwan Province of China.¹ The remaining groups are self-

¹ This group is treated here as a developing country region.

Table 4. Alternative liberalization scenarios

North	Elimination of all import and export taxes and subsidies in developed countries on trade with all countries.
South-South	Elimination of all import and export taxes and subsidies in developing countries on trade with other developing countries.
Southern RTAs	Elimination of all import and export taxes and subsidies in developing countries in Asia, Latin America and Africa on trade with other developing countries in their region. This is a combination of the scenarios below. Two versions are considered: one that looks at SSA and MENA countries separately (RTAs(1)), one jointly (RTAs(2)).
Asia	Elimination of all import and export taxes and subsidies in developing Asian countries on trade with other developing countries in the region.
Latin America and the Caribbean	Elimination of all import and export taxes and subsidies in developing Latin American countries on trade with other developing countries in the region.
Sub-Saharan Africa (SSA)	Elimination of all import and export taxes and subsidies in developing Sub-Saharan African countries on trade with other developing countries in the region.
Middle East and North Africa (MENA)	Elimination of all import and export taxes and subsidies in Middle Eastern and North African developing countries on trade with other developing countries in the region.
MENA and SSA	Elimination of all import and export taxes and subsidies in Middle Eastern and African (northern and sub-Saharan) developing countries on trade with other developing countries in the region.

explanatory. The sectoral aggregation attempts to split out sectors with significant protection, such as textiles, apparel, motor vehicles and electronics. The database includes tariffs, export subsidies and taxes, and subsidies on output and on inputs such as capital, labour and land. Border measures are specified bilaterally, so the impact of preference erosion can be ascertained. Preferential tariffs are included in the initial database. Quota rents in textiles and apparel are modelled as export taxes, implying that the rents accrue to exporting Governments. The data applies to 2001. However, following Anderson, Martin and Mensbrugghe (2005), we first conduct a pre-simulation that implements pre-existing WTO commitments not implemented as of 2001. These include the phase-out of export quotas on textiles and

apparel directed to the United States and the European Union and the implementation of commitments made by newly acceding WTO members, notably China. We also implement the European Union enlargement. The data set obtained from that pre-simulation becomes the base for our analysis.

GTAP is a general equilibrium model that includes linkages between economies and between sectors within economies. Industries are assumed to be perfectly competitive and are characterized by constant returns to scale. Imports are distinct from domestically produced goods, as are imports from alternative sources. Primary factors are substitutable but as a composite are used in fixed proportions to intermediate inputs. We use the standard GTAP closure modified to

Table 5. Country and commodity coverage

Regions	Sectors
European Union	Cereals
USA, rest of North America	Vegetables, fruits and nuts
Japan	Vegetable oils
Other developed	Sugar
China	Other crops
Other Asia	Livestock
India	Resources
Other South Asia	Dairy
ASEAN	Other foods
Mexico	Textiles
Andean	Apparel
Mercosur	Leather
Rest of Latin America	Non metallic manufactures
Central America	Petroleum and coal products
Caribbean	Motor vehicles
South Africa	Electronics
Sub-Saharan Africa	Manufactures
South African Development Community ^a	Services
Middle East and North Africa	Transport
South-East Europe (SEE)	Business services
Rest of World	

^a Excludes South Africa.

maintain fixed trade balances for all regions but the United States.² This alternative closure is chosen in order to prevent balance-of-trade surpluses from increasing dramatically.³

4. RESULTS

The GTAP software and its companions generate a large set of results. Here we focus on four dimensions that we believe are relevant to illustrate the argument of the paper, namely welfare, exports, tariff revenues and sectoral effects.

Welfare

The results presented in table 6 indicate that South-South trade liberalization is the most favourable scenario to developing countries as a group. The static annual welfare gains to developing countries are estimated at \$22 billion from liberalization in the North and \$35 billion from South-South liberalization.⁴ Most developing regions gain from the removal of barriers between developing countries alone. Moreover, when losses are observed, they remain relatively small. The major beneficiaries are Other Asia (Republic of Korea and Taiwan, Province of

² The GTAP model requires that imports minus exports equals investment less savings in each region. The standard macroeconomic closure allows investment to adjust to satisfy this condition. A current account deficit is offset by a capital inflow. In the closure used in this paper, capital in other regions would be absorbed by the United States whenever it exceeds regional savings.

³ See Francois et al. (1996) and Hertel et al. (1997) for a detailed discussion on the relevance of alternative closures.

⁴ The welfare measure used here is equivalent variation, the maximum amount of income the consumer is willing to pay to avoid a price change.

China), ASEAN, Middle East and North African (MENA) countries, China and MERCOSUR countries. However, Central America and the Caribbean, India, sub-Saharan Africa (excluding SADC countries), Central and Eastern Europe and Other South Asia are net losers. So too are the developed countries. Tables A1 and A2 show that net losses are driven by negative terms-of-trade welfare effects. A more detailed analysis reveals

that this is essentially the case in the manufacturing sectors, although India faces a strong negative effect in livestock and resources sectors. Net gains are the result of both positive allocative and terms-of-trade welfare effects. Positive allocative effects are driven principally by reforms in manufacturing sectors. However, in the case of the Other Asia region, reform in agricultural sectors and in particular the cereals sector is generating

Table 6. Change in welfare relative to base
(Thousands of US dollars)

	Free trade	North-South	South-South	Southern RTAs(1)	Southern RTAs(2)	SSA	MENA	SSA+ MENA	LAC	Asia
European Union	24 245	-171	-7 681	-3 271	-3 485	-159	- 842	-1 214	-831	-1 422
United States	7 346	-1 751	-7 060	-2 547	-2 580	-29	- 247	-310	-1 402	-852
North America	727	636	204	-8	-2	7	33	46	3	-52
Japan	25 977	16 740	-2 838	-1 298	-1 322	-13	- 224	-260	-192	-868
Other developed	3 371	2 234	- 582	-305	-301	1	16	20	16	-335
Subtotal	61 666	17 688	-17 957	-7 429	-7 690	-193	-1 264	-1 718	-2 406	-3 529
China	6 453	7 850	3 381	906	874	-19	- 146	-198	-53	1 125
India	475	779	-449	-1 437	-1 483	-45	- 135	-228	-27	-1 241
Other Asia	13 153	2 776	16 208	12 387	12 360	-25	- 167	-219	-174	12 673
Other South Asia	-979	294	-170	-212	-217	-4	- 43	-53	-1	-163
ASEAN	7 450	5 529	7 309	871	845	-16	- 86	-127	17	963
Asia Subtotal	26 552	17 228	26 279	12 515	12 379	-109	- 577	-825	-238	13 357
Mexico	-68	-1 133	1 192	879	882	4	8	14	861	7
Andean	-541	379	580	-450	-449	4	30	36	-278	-206
Mercosur	4 084	4 270	2 176	1 703	1 697	-7	- 12	-26	2 008	-308
Rest of Latin America	380	851	43	371	370	-1	0	-1	462	-92
Central America	-190	1 181	-505	-46	-46	0	- 4	-5	35	-76
Caribbean	-153	61	-84	27	26	-1	- 2	-4	40	-10
LAC Subtotal	3 512	5 609	3 402	2 484	2 480	-1	20	14	3 128	-685
South Africa	-1 677	-529	-543	-158	-403	-91	17	-321	3	-84
Sub-Saharan Africa	322	308	-127	-253	-249	-203	3	-196	3	-54
SADC	491	132	1 151	265	508	380	- 3	618	-11	-105
Sub-Saharan Africa Subtotal	-864	-89	481	-146	- 144	86	17	101	-5	-243
Middle East and North Africa	-1 115	-532	5 090	704	1 119	1	1 120	1 540	21	-460
South-East Europe	-699	-162	-179	-78	-82	-2	- 25	-31	-7	-44
Rest of World	1 087	1 502	106	-49	-52	14	26	37	3	-92
Developing Countries	28 085	22 216	35 252	15 557	15 834	-23	580	830	2 906	11 969
World	90 139	41 244	17 222	8 001	8 010	-204	-683	-882	496	8 304

Source: GTAP simulations.

more than half of total allocative welfare effects. In the case of sub-Saharan African countries, the allocative welfare effect generated by liberalization of the cereals sector accounts for almost 90 per cent of total welfare gain due to allocative effects. Removal of agricultural barriers between developing countries generates welfare gains due to reallocation effects in developing countries of \$10.8 billion (almost 51 per cent of total reallocation welfare gains), compared with gains of \$10.5 billion (49 per cent of total reallocation welfare gains) from reform in the manufacturing sector. However, if the Other Asia country group is excluded, allocative gains due to reform in agricultural sectors fall to \$4 billion, which represents less than half of the gains due to reform in manufacturing sectors.

The European Union, North America, Japan and Other Developed countries experience welfare losses derived from negative terms-of-trade effects in the manufacturing (in particular metallic and non-metallic manufactures, and electronics) and service sectors (essentially business and transport services). This stems from a fall in the price of exports of these goods. Because terms-of-trade effects sum to zero globally, these negative effects are correspondingly positive for developing countries through lower import prices.

The benefits from regional integration are less substantial, although positive nonetheless. Results also indicate that regional integration implies welfare losses for non-integrating regions. Regional integration is a good response to trade blocs forming elsewhere. It may be less than optimal but better than being left out altogether.

Liberalization within developing Asia (China, Other Asia, India, Other South Asia and ASEAN) generates gains in these countries of \$13.3 billion. Gains to Asia (i.e. excluding Japan) from South-South liberalization are

\$26.3 billion, illustrating the links between Asia and other developing countries.

The benefits from a Latin American free trade area are less than from South-South liberalization. The LAC region is also the only region that would benefit more on aggregate from North-South than from South-South trade liberalization, although this qualification does not hold for Mexico. The latter is better off by \$1.2 billion in the South-South scenario but worse off by \$1.1 billion in the North-South scenario. Mexico's welfare gains are due essentially to positive allocative effects in the motor-vehicle, electronics and textiles sectors. Losses come from negative terms-of-trade welfare effects in these same sectors. Central America and the Caribbean lose \$0.6 billion from South-South liberalization and gain \$1.2 billion from North-South liberalization due to positive terms-of-trade effects. Regional integration only slightly increases their welfare (\$0.075 billion).

The gains to sub-Saharan Africa from trade liberalization within the region amount to less than \$0.1 billion. North-South trade liberalization would generate losses of almost \$0.1 billion. Benefits to Africa from South-South liberalization are the highest (\$0.5 billion) of all the scenarios, although they remain modest in absolute terms. These gains are driven by SADC countries (excluding South Africa). The bulk of the gains come from allocative efficiency gains encountered in the cereals sector, and to a much lesser extent in the textiles, apparel and leather sectors. Terms-of-trade effects are either negative or almost insignificant in all sectors. Simulations indicate that sub-Saharan Africa would gain substantially by trade reform only if it occurs within a context of preferential and exclusive access to Northern markets.⁵ In that context, welfare gains could reach \$5.6 billion and almost at no cost to developed and other developing countries.

⁵ See Fugazza and Peters (2005) for a detailed presentation.

The gains to Middle Eastern and North African countries as a group are the highest in the South-South trade liberalization scenario (\$5 billion). These countries would face welfare losses in the North-South liberalization scenario. Regional integration would remain a desirable option, although it would be worth only one fourth of the welfare gains obtained in the South-South trade liberalization scenario.

The conclusion here is that, with the exception of Latin America, developing countries are missing out if they follow a regional approach. However, Central American and Caribbean countries would benefit more from North-South liberalization than from any other liberalization scenario.

Table 7. Change in value of exports relative to base
(Thousands of US dollars and percentages)

	Initial \$000	North %	South- South %	Southern RTAs(1) %	Southern RTAs(2) %	SSA %	MENA %	SSA+ MENA %	LAC %	Asia %
European Union	2 674 109	1	0	0	0	0	0	0	0	0
United States	888 812	5	-2	-1	-1	0	0	0	0	0
North America	267 956	4	0	0	0	0	0	0	0	0
Japan	453 022	7	-1	-1	-1	0	0	0	0	-1
Other developed	260 869	6	-1	0	0	0	0	0	0	0
Subtotal	4 544 768	3	-1	0	0	0	0	0	0	0
China	481 761	3	10	7	7	0	0	0	0	7
India	61 126	2	34	23	23	0	0	0	0	23
Other Asia	319 080	2	9	6	6	0	0	0	0	6
Other South Asia	28 837	3	25	23	23	0	0	0	0	23
ASEAN	447 936	1	6	4	4	0	0	0	0	4
Asia Subtotal	1 338 740	2	10	7	7	0	0	-1	0	7
Mexico	165 571	0	5	2	2	0	0	0	2	0
Andean	52 762	2	2	4	4	0	0	0	5	0
Mercosur	102 822	5	12	7	7	0	0	0	7	0
Rest of Latin America	55 085	2	7	5	5	0	0	0	5	0
Central America	26 970	5	5	3	3	0	0	0	3	0
Caribbean	7 484	1	11	2	2	0	0	0	2	0
LAC Subtotal	410 695	2	7	4	4	0	0	0	4	0
South Africa	44 822	-1	12	4	2	3	0	4	0	0
Sub-Saharan Africa	23 553	3	7	4	4	4	0	4	0	0
SADC	39 747	1	8	3	2	2	0	3	0	0
Sub-Saharan Africa Subtotal	108 122	1	9	4	2	3	0	12	0	0
Middle East and North Africa	315 127	0	8	4	4	0	4	5	0	0
South-East Europe	36 444	0	-1	0	0	0	0	0	0	0
Rest of World	156 334	2	0	0	0	0	0	0	0	0
Developing Countries	6 717 451	2	2	2	2	0	0	0	0	1
World	6 910 229	2	2	2	1	0	0	0	0	1

Source: GTAP simulations.

Exports

Trade negotiators seem primarily concerned about exports. In this respect South-South trade reform is estimated to be beneficial for most of the developing country regions, as shown in table 7. The exceptions to a very small extent are the Andean Pact and Central American countries, whose exports remain almost unchanged. In most cases the gains in export revenues from South-South liberalization far exceed the benefits of further access to Northern markets. However, aggregated results for developing countries are pretty similar in both scenarios. Most notable in this respect is India, which faces significant barriers in exporting textiles, apparel and non-metallic manufactures (paper products, chemicals, rubber and plastics) to other Asian countries. In most instances the gains from a regional RTA are reduced. This is particularly true for sub-Saharan African countries. For example, South African exports increase 12 per cent following South-South liberalization, as against 3 per cent with regional integration. Sub-Saharan African exports increase 9 per cent following South-South liberalization, as against 3 per cent with regional integration. In addition, each RTA leads to nil or even negative trade effects in many non-members. Three simultaneous RTAs do not provide much additional benefit either. Indeed, there are significant trade diversion effects, except for the Asian region countries, which obtain the same rise in exports as with Asian regional integration alone.

When looking at the changes in the destination of exports from the various regions and country groups, the results indicate that South-South liberalization would significantly change the current geography of trade, while North-South liberalization would affect it only slightly. With South-South trade liberalization, interregional exports within developing regions increase dramatically. For

instance, exports from the ACP region to the LAC region increase by 60 per cent and those to the SSA region by 69 per cent. Exports from the SSA region to the ACP region increase by 56 per cent. Exports among developing countries increase at the expense of exports directed to developed regions. We also observe that intra-regional trade increases for all developing countries except for some sub-Saharan African and Latin American countries.

Tariff revenues

Many developing countries are concerned that trade liberalization will have a significant adverse impact on government revenues because tariff revenues make a substantial contribution to public revenue.⁶ Eliminating tariffs altogether implies that tariff revenues would be reduced to zero. In addition, although partial tariff cuts may lead to a rise in tariff revenue because of the increase in trade flows associated with liberalization, preferential agreements lead to a switch in supplies away from the taxable source, reducing revenues even further. Many developing countries would have to raise taxes on income, profits, capital gains, property, labour and consumption or increase non-tax revenues to compensate. Broad-based taxes have the advantage of being less distortionary, but they are not as simple to collect as tariff revenues, particularly for countries with poorly developed administrative systems. The simulation results indicate that the South-South scenario would result in an estimated 62 per cent decline in developing country tariff revenues, with regional averages of 63, 55, 60 and 73 per cent in Asia, Latin America, Africa and MENA respectively (see table 8). The global average tariff revenue reduction is 34 per cent, from \$231 billion to \$151 billion. Not surprisingly, the regional scenarios result in a lesser impact in the developing country regions.

⁶ In the GTAP framework, changes in tariff revenues and their impact on the economy are reflected in welfare analysis. That is to say that those losses in tariff revenues should not be compared to welfare results as the latter account for the former.

Table 8. Change in tariff revenues relative to base
(Thousands of US dollars and percentages)

	Initial \$000	North %	South- South %	Southern RTAs(1) %	Southern RTAs(2) %	SSA %	MENA %	SSA+ MENA %	LAC %	Asia %
European Union	54 537	-100	-11	-6	-6	0	-1	-1	-1	-4
United States	32 331	-100	-18	-12	-12	0	0	-1	-1	-11
North America	3 191	-98	-8	-6	-6	0	0	0	-2	-4
Japan	23 541	-100	-8	-6	-6	0	0	0	-1	-5
Other developed	9 125	-100	-9	-6	-6	0	0	0	-1	-5
Subtotal	122 726	-100	-12	-8	-7	0	0	-1	-1	-6
China	26 281	5	-51	-33	-32	0	-4	-4	0	-28
India	3 422	1	-55	-19	-18	-1	-1	-2	0	-16
Other Asia	18 617	-1	-76	-57	-57	0	-1	-1	0	-56
Other South Asia	2 106	2	-35	-15	-14	0	-1	-2	0	-13
ASEAN	21 343	3	-71	-59	-58	0	-1	-2	0	-57
Asia Subtotal	71 769	2	-63	-45	-45	0	-2	-2	0	-43
Mexico	1 676	-3	-59	-56	-56	0	0	0	-48	-8
Andean	1 991	2	-58	-35	-35	0	0	0	-22	-13
Mercosur	10 394	6	-68	-40	-39	0	0	0	-24	-16
Rest of Latin America	2 278	2	-32	-33	-33	0	0	0	-32	-2
Central America	1 757	6	-8	-17	-17	0	0	0	-16	-1
Caribbean	429	0	-26	-18	-18	0	0	0	-17	-2
LAC Subtotal	18 524	2	-55	-37	-37	0	0	0	-26	-11
South Africa	962	1	-70	-50	-45	-24	0	-30	-1	-19
Sub-Saharan Africa	1 161	-2	-28	-17	-14	-12	0	-15	0	-2
SADC	2 123	3	-74	-48	-42	-31	-1	-38	0	-11
Sub-Saharan Africa Subtotal	4 247	0	-60	-40	-35	-24	0	-30	0	-10
Middle East and North Africa	8 702	-1	-73	-36	-31	0	-22	-27	0	-9
South-East Europe	1 128	-2	-4	-2	-2	0	0	-1	0	-2
Rest of World	4 071	4	-9	-5	-5	0	0	-1	0	-5
Developing Countries	103 242	4	-62	-43	-42	-1	-3	-5	-5	-33
World	231 165	-32	-34	-23	-23	-1	-2	-3	-2	-18

Source: GTAP simulations.

Sectoral effects

Policymakers are interested in individual sectors, as some sectors are regarded as sensitive and greater weight is attached to their output, employment or exports. In addition, it is more difficult to move labour out of some sectors (e.g. fisheries) than others, or there may be limits to expansion in other

sectors due to resource (e.g. water) or environmental constraints.

The major impacts of liberalization are felt in those sectors where large trade flows are coupled with significant protection levels. These are typically agriculture, textiles and motor vehicles. This also holds to a large extent for South-South liberalization.

However, compared with North-South liberalization, South-South liberalization is accompanied by a larger impact in manufacturing sectors relative to agricultural products sectors.

The largest percentage increases in exports among the developing countries occur in cereals in Asia, dairy products in Asia and Latin America, livestock in Asia, vegetable oils in Asia and Africa, and motor vehicles in Asia (see annex table A2). The increase can reach more than 600 per cent, as in the case of the vegetal oils sector in the Other Asia group. However, big increases often occur in countries that initially had only small shares of world exports and as a consequence do not modify the geography of sectoral trade dramatically. The largest percentage decrease in exports (-27 per cent) occurs in apparel for the MERCOSUR country group. Otherwise, and as far as merchandises exports are concerned, there are only a few cases where more than 15 per cent of the initial exports are eliminated.

As to developed countries, South-South trade liberalization causes decreases in exports in almost all merchandise sectors. Decreases can be as much as 98 per cent, as in the case of cereals in Japan. Developed countries' export market shares fall significantly in the agricultural products and apparel sectors. Drops in market shares are more pronounced for the United States and Japan than for the European Union.

In terms of the necessary adjustments, perhaps a better indication can be gauged from changes in output. These are somewhat arbitrary, as they depend on the aggregation of sectors. Broader aggregation leads to smaller percentage changes. The largest estimated percentage falls in output from South-South liberalization occur in the Other Asia cereals and vegetable oils sectors (see appendix table A3). Output falls by 56 per cent in the cereals sector and by 76 per cent in the

vegetable oil sector. However, both sectors initially represented only small shares of total output, meaning that inherent adjustment costs are likely to be contained. Bigger concerns could be raised for sub-Saharan African countries, where output in cereals sectors falls by 13 per cent when it initially represented almost 5 per cent of output. This also holds for the textiles, apparel and leather sectors, where output falls on average by more than 15 per cent when it initially represented more than 2 per cent of total output. Another result is that output in textiles and apparels falls by more than 16 per cent in MENA countries, when it initially represented almost 1.5 per cent of the region's output.

Changes in value terms highlight the main differences between North-South and South-South liberalization in terms of production structure (see table 9). First, looking at developing countries as a group, production in agricultural goods increases under both scenarios. However, it is more than five times higher when access to Northern markets is liberalized. Second, and perhaps more importantly, production in manufacturing goods falls for all developing country groups except Asian countries in the North-South liberalization scenario, while it increases or decreases to a much lesser extent in the case of SSA countries in the South-South liberalization scenario. While North-South trade liberalization gives better access to developing countries' products, especially in agricultural product markets, South-South trade liberalization also gives access to the unexploited manufactures markets. This result becomes highly relevant when assessing the respective development potential of each scenario. Third, production in services increases in all developing countries under both scenarios. On aggregate, the increase is significantly higher under the South-South trade liberalization scenario, plus \$130 billion against \$95 billion under the North-South trade liberalization scenario.

Table 9. Changes in output values by economic sector
(Thousands of US dollars)

		Dev	Dvg	Asia	LAC	MENA	SSA	SEE	ROW
N-S	Agri	-194 210	178 269	102 381	58 262	10 362	7 263	4 075	21 303
	Manu	41 409	21 037	35 985	-11 360	-1 900	-1 687	-1 100	631
	Ser	22 725	95 129	53 678	35 321	4 341	1 790	628	8 034
S-S	Agri	-19 650	32 219	6 524	22 960	5 228	-2 494	46	245
	Manu	-28 932	82 595	65 172	6 016	11 906	-500	-452	-2 057
	Ser	6 418	129 940	77 965	31 466	17 529	2 979	240	929

Source: GTAP simulations.

A more detailed analysis of South-South liberalization results reveals that in value terms the most significant falls in output in developing countries are in electronics in Other Asian countries (-\$10.5 billion), textiles in the MENA region (-\$7.9 billion) and non-metallic manufactures in China (-\$3.7). Increases in non-metallic manufactures production in MENA (\$15 billion), Other Asia (\$10.5 billion) and ASEAN (\$9.3 billion) cover the fall in production in China, India (-\$1.2 billion) and some developed countries. Although non-metallic manufactures include products such as chemicals whose production requires high skill and technology intensity, it is reasonable to think that MENA countries move part of their production resources from textiles towards non-metallic manufactures that are also labour-intensive, such as mineral products or wood and paper. The falls in production in electronics in Other Asian countries is matched by an increase in all developed countries, in particular in the European Union (\$4.2 billion), Japan (\$3.9 billion) and the United States (\$3 billion), and in China (\$4.3 billion) and Mexico (\$2.7 billion) as far as developing countries are concerned. Imports into developed countries' markets initially originating from Other Asia are supplanted by imports from other developed countries and Mexico in the case of the United States. China also exports less to those markets but more to the ASEAN and Mexican markets. In addition, Other Asia and ASEAN exports to China are expected to

surge. In the North-South liberalization scenario, only Mexico is able to export significantly more non metallic manufactures, once again thanks to its access to the US market. All other developing country exports fall, sometimes quite substantially, essentially due to a reallocation of productive resources towards agricultural products.

There are also significant drops in output of textiles (-\$12.1 billion) and apparel (-\$7.5 billion) in the developed countries. Output drops translate into conspicuous falls in exports. There are also important reductions in production, and to a large extent in exports, in the Middle East and North Africa, MERCOSUR and Mexico. China, India, Other Southern Asia and Other Asia fill in the production and export gap for textiles and to a large extent for apparel. This represents a significant shift in textile production to developing countries. However, the shift in apparel manufacture is smaller. Textile production is generally more capital-intensive than apparel, but the technological requirements are not so demanding as to put it out of reach of mid-range developing countries. Perhaps the most significant shift occurs in China, which imports additional textiles (but not apparel) from Other Asia (Republic of Korea and Taiwan, Province of China). The imported textiles are used to produce apparel that is then exported to MENA. Some countries show an increase in output in the textile sector but at best a small

increase in the downstream processing stage. For example, countries belonging to the Other Asia group also expand their textile sector, but only slightly increase output of apparel. By contrast, in Central America, output of apparel expands almost six times as much as output of textiles, reflecting differential protection on these products. In Other South Asia, the same pattern appears, although output in apparel increases only twice as much as that of textiles. North-South liberalization gives substantial differences in the results as far as export destinations are concerned. In particular, China is found to cover most of the exports to developed countries markets. In the South-South scenarios, exports to these markets originate from other developing countries and not from China, whose exports flow to other developing countries.

Another highly protected sector is motor vehicles, parts and components. The average applied tariff imputed from the GTAP database is 3.3 per cent globally, but 11 per cent on developing country imports.⁷ Among the developing countries, the major exporters are Other Asia, Mexico and Mercosur. These countries operate assembly industries with a high proportion of imported components. For example, Mexican imports in this sector are valued at 75 per cent of its exports. Following South-South liberalization, exports from Other Asia (\$5.8 billion), Mercosur (\$4.7 billion), China (\$4.4 billion), Mexico (\$2.4 billion), and ASEAN (\$1.7 billion) displace those from the United States (-\$3.9 billion), Europe (-\$3.8 billion), and Japan (-\$2.5 billion). In the North-South liberalization scenario, all developed countries would see their exports increase, in particular Japan (\$13.1 billion), while developing countries' exporters would all face decreases, with the exception of Other Asia countries. Export patterns closely reflect production patterns.

5. CONCLUDING REMARKS AND IMPLICATIONS

A feature of South-South trade is that developing country economies are, by definition, at a similar stage of development, and the levels of competitiveness are somewhat similar. Developing countries need be less concerned about being swamped by high-quality or cheap imports with which it is difficult to compete. Nonetheless, many developing countries appear concerned about China, which has the potential to be competitive in many markets, particularly textiles and apparel, sectors where many other developed countries see themselves competing. These fears appear to be founded, especially in the context of North-South trade liberalization. Results presented here also suggest that if China were to expand into these sectors, it would vacate others, such as non-metallic manufactures, agriculture and services. In addition, a surge in Chinese exports implies a similar increase in imports. For developing countries, an important question is where these additional imports are likely to come from. In the North-South liberalization scenario, they would principally come from developed countries. On the contrary, in the South-South liberalization scenario, they would come from other developing countries. Principal import sources would be other Asian countries and MERCOSUR.

A limitation of regional agreements among developing countries is that the economies are not so different, and the potential gains stemming from differing relative factor endowments and costs are not forthcoming. Many countries within Africa have low labour and high capital costs, and the gains from trading with each other are limited and even contrasting. Contrasting

⁷ This estimate is imputed from the GTAP database, and may not reflect actual revenues collected.

results are evident when comparing the effects of North-South and South-South liberalization. For individual developing countries, obtaining further access to developed countries markets is particularly beneficial if preferential access is obtained, but this is at the expense of other countries that are shut out.

Some limitations ought to be noted when drawing inferences from this analysis. Missing from the modelling are several factors that are important in trade negotiations, such as investment and competition policies, SPS, TBT, services and various so-called non-trade concerns. In addition, there are deficiencies in the model, in both the structure and the data. For example, no dynamic gains are calculated here. These include the increase in productivity resulting from enhanced competition and new technologies. These gains may outweigh static gains. Also ignored are the benefits of increasing returns to scale, which imply that specialization of production leads to productivity gains. Monopolistic competition is also ignored (also in foreign markets, where the power of large marketing chains often drives down prices received by producers in developing countries). Nor is consideration given to adjustment costs. These are difficult to measure, but real enough, even though they occur only once whereas the benefits accrue every year. Labour is assumed to be fixed, whereas in reality there is scope for drawing unemployed or underemployed labour into the workforce, especially in developing countries. This makes a significant difference to the welfare effects, reinforcing both gains and losses.

The inclusion of preferential tariffs in this database makes its use desirable, but it also remains relatively untested. There is uncertainty about the utilization of preferences and how quota rents should be allocated. There is also scope for debate about the method used to convert from specific to

ad valorem tariffs, as well as the weight given to inquota versus outquota tariff rates, or the use of simple versus trade weights to aggregate across tariff lines. Data on services protection are missing for most countries. Furthermore, there are bound to be errors and omissions in databases of the size used here.

These qualifications affect the magnitude of the estimated gains and losses, but apply across all scenarios. The ranking of the outcomes are unlikely to change by addressing these concerns, and hence the conclusions drawn from the results are likely to be relatively robust.

Given these estimated potential impacts on welfare, trade flows, government revenues and output, and keeping in mind possible drawbacks and limitations of the methodology adopted in this paper, what can be said about a developing country's optimal strategy? The simulations undertaken here show that the largest overall gains would be obtained with trade liberalization. However, some regions like sub-Saharan Africa would be net losers, calling for the establishment of some redistributive schemes able to countervail possible adjustment issues. Various studies highlight the existence of supply capacity constraints in most of the countries of that region, which may indicate a plausible way forward in a context of international redistribution of trade liberalization gains. However, the simulations also show that there are potentially large gains for developing countries from South-South trade, though capturing these gains would still require substantial reform, and this has invariably proved difficult to implement. Nevertheless, the promotion of South-South trade may appear to be a redistributive instrument, possibly qualifying a desirable sequencing of overall trade liberalization. The recent revival of the GSTP programme could be a very efficient means of realizing these gains and establishing de facto such a sequencing.

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Table A1. Decomposition of welfare effectsA. Contribution to Welfare of changes in terms of trade (*thousands of US dollars*)

	North-South	South-South	Southern RTAs(1)	Southern RTAs(2)	SSA	MENA	SSA+ MENA	LAC	Asia
European Union	-14 577	-7 149	-3 216	-3 411	-149	-665	-1 008	-636	-1 754
United States	-2 869	-6 069	-2 174	-2 214	-30	-196	-264	-1 039	-889
North America	-2 963	-7	-136	-134	4	26	32	-11	-156
Japan	-1 972	-3 611	-1 730	-1 764	-24	-207	-264	-243	-1 253
Other developed	-939	-705	-415	-411	0	24	27	-6	-431
Subtotal	-23 320	-17 541	-7 671	-7 934	-199	-1 018	-1 477	-1 935	-4 483
China	6 747	2 121	-382	-428	-29	-148	-225	-93	-111
India	607	-2 629	-2 278	-2 308	-27	-95	-152	-14	-2 142
Other Asia	3 183	9 397	6 859	6 829	-27	-167	-225	-143	7 171
Other South Asia	258	-750	-715	-720	-3	-33	-41	-2	-678
ASEAN	5 822	6 709	1 331	1 300	-22	-91	-146	3	1 448
Asia Subtotal	16 617	14 848	4 815	4 673	-108	-534	-789	-249	5 688
Mexico	-924	-112	580	581	2	6	9	624	-53
Andean	320	472	-389	-388	4	28	32	-222	-198
Mercosur	3 585	1 579	1 131	1 126	-7	-10	-22	1 420	-291
Rest of Latin America	724	-127	250	250	-1	0	-1	336	-87
Central America	825	-275	-68	-68	0	-2	-1	-21	-46
Caribbean	41	-7	7	6	0	-1	-2	5	3
LAC Subtotal	4 571	1 530	1 511	1 507	-2	21	15	2 142	-672
South Africa	-278	-543	0	-41	11	16	-14	7	-34
Sub-Saharan Africa	289	-327	-146	-152	-123	3	-126	4	-29
SADC	121	979	268	487	404	-4	616	-11	-125
Sub-Saharan Africa Subtotal	132	109	122	294	292	15	476	0	-188
Middle East and North Africa	-225	893	1 282	1 523	7	1 510	1 759	30	-266
South-East Europe	-3	-72	-21	-23	-1	-16	-18	-1	-3
Rest of World	1 891	-125	-176	-181	8	18	22	-5	-198
Developing Countries	22 983	17 183	7 533	7 793	196	1 014	1 465	1 917	4 361
World	-337	-358	-138	-141	-3	-4	-12	-18	-122

.../...

Table A1. Decomposition of welfare effects (continued)**B. Contribution to welfare of allocative effects (thousands of US dollars)**

	North-South	South-South	Southern RTAs(1)	Southern RTAs(2)	SSA	MENA	SSA+ MENA	LAC	Asia
European Union	13 495	-1 662	- 523	- 561	- 28	- 178	- 243	- 219	- 93
United States	1 638	- 147	284	285	1	- 5	- 2	- 70	355
North America	3 344	- 4	12	13	1	5	7	0	7
Japan	18 234	- 308	- 127	- 132	- 3	- 36	- 44	- 4	- 86
Other developed	2 803	- 183	- 55	- 59	- 3	- 13	- 19	6	- 45
Subtotal	39 514	-2 304	- 409	- 454	- 32	- 227	- 301	- 287	138
China	2 059	1 373	800	795	- 7	- 27	- 39	- 2	838
India	108	2 064	784	766	- 20	- 40	- 80	- 14	848
Other Asia	- 68	8 197	6 364	6 360	- 5	- 20	- 29	- 65	6 396
Other South Asia	- 16	611	543	542	- 1	- 8	- 10	1	552
ASEAN	381	1 137	124	120	- 2	- 14	- 20	- 11	151
Asia Subtotal	2 464	13 382	8 615	8 583	- 35	- 109	- 178	- 91	8 785
Mexico	- 390	1 147	271	271	0	0	0	269	3
Andean	45	79	- 91	- 91	0	3	3	- 69	- 24
Mercosur	590	503	527	525	- 2	- 3	- 6	573	- 44
Rest of Latin America	106	131	106	106	0	0	- 1	126	- 19
Central America	158	- 87	5	5	0	- 1	- 1	21	- 15
Caribbean	- 19	- 13	- 9	- 9	0	0	0	- 5	- 4
LAC Subtotal	490	1 760	809	807	- 2	- 1	- 5	915	- 103
South Africa	- 248	267	- 135	- 293	- 96	- 1	- 257	- 3	- 34
Sub-Saharan Africa	21	167	- 116	- 106	- 84	0	- 75	- 1	- 29
SADC	16	278	28	85	52	- 1	107	- 3	- 21
Sub-Saharan Africa Subtotal	- 211	712	- 223	- 314	- 128	- 2	- 225	- 7	- 84
Middle East and North Africa	- 427	4 046	- 626	- 441	- 9	- 342	- 162	- 13	- 283
South-East Europe	- 111	- 41	- 17	- 18	0	- 6	- 8	- 2	- 8
Rest of World	- 155	- 4	- 25	- 26	3	6	8	1	- 34
Developing Countries	2 050	19 855	8 533	8 591	- 171	- 454	- 570	803	8 273
World	41 564	17 551	8 124	8 137	- 203	- 681	- 871	516	8 411

Source: GTAP simulations.

Table A2. Change in sectoral exports relative to base from South-South liberalization
(percentages)

	CER	VFN	VOL	SGR	OCR	LVS	RES	DRY	OFD	TXT	WAP	LEA	NMM	P_C	MVH	ELE	MMN	SER	TRN	BFS
European Union	-1.6	0.4	1.6	-2.5	-1.8	0.4	1.7	-1.1	-1.6	-7.1	-8.8	0.1	-1.3	-1.5	-1.1	0.4	-0.8	3.0	1.9	2.0
United States	-10.4	-3.4	-6.7	-2.7	-6.3	-1.2	2.4	-12.8	-6.1	-16.6	-26.3	-16.8	-2.1	-4.7	-3.7	-1.4	-1.0	3.3	2.3	3.0
North America	-3.1	-5.2	-1.7	-0.2	-0.6	-0.8	1.5	-9.4	-2.5	-4.8	-4.9	-0.1	-0.7	-0.2	-0.7	1.9	0.0	2.2	1.0	1.2
Japan	-97.9	-11.9	-21.7	-32.4	-7.8	0.3	2.7	-3.0	-12.1	-23.3	-63.8	-4.0	-2.3	-5.5	-2.6	0.9	0.0	4.0	2.6	4.0
Other developed	-5.9	-4.7	-3.9	-12.2	-8.0	-1.3	0.8	-2.4	-4.7	-7.4	-8.4	-3.7	-1.3	-2.1	-4.2	0.4	-1.0	3.0	1.9	1.9
China	220.5	38.2	20.0	7.2	39.5	-6.1	4.4	18.8	-0.8	20.2	19.2	0.1	4.5	17.1	49.8	8.9	8.9	-3.1	-4.3	-5.7
India	55.8	22.9	26.8	88.4	27.6	85.1	72.3	164.5	29.5	35.6	11.9	33.2	42.6	43.9	96.8	62.0	71.6	6.7	7.6	5.7
Other Asia	415.3	35.8	606.8	39.2	62.4	365.5	-17.2	55.2	147.1	49.0	16.9	41.3	11.8	8.3	13.9	-11.3	3.4	-6.9	-18.1	-21.5
Other South Asia	4.5	40.9	509.6	2.8	27.1	5.7	15.4	74.4	11.8	26.0	33.4	22.5	57.4	28.9	7.1	53.3	70.1	-0.4	-0.4	-1.5
ASEAN	47.5	7.7	1.6	0.9	20.4	38.8	-3.5	36.0	-3.4	19.7	-0.5	1.9	12.8	2.7	22.0	-0.9	15.7	-7.7	-10.7	-13.7
Mexico	-0.4	-0.3	15.9	19.0	2.7	3.5	3.0	125.1	5.6	0.7	-2.3	14.9	5.7	1.6	9.3	8.6	3.2	-0.4	-1.0	-1.3
Andean	-4.0	3.3	-1.4	-3.6	-2.8	1.7	0.0	23.9	1.7	1.0	-4.3	-0.3	7.2	0.7	1.8	1.8	0.6	-1.9	-3.0	-3.8
Mercosur	51.5	-8.3	-2.1	10.9	6.0	-0.2	0.8	177.8	6.5	-6.4	-26.8	-3.8	0.4	3.1	44.2	12.9	10.0	-4.7	-7.1	-7.3
Rest of Latin America	-2.0	6.1	1.0	-3.0	4.8	8.5	1.5	36.3	1.3	11.7	-1.4	14.9	8.2	14.0	41.0	19.2	10.2	0.2	-1.6	-1.3
Central America	-1.7	0.9	0.2	5.8	-0.1	15.2	8.2	22.8	3.0	9.1	11.8	20.7	1.9	14.2	11.2	12.6	6.2	2.1	0.9	1.0
Caribbean	0.6	-1.1	-2.2	19.4	14.3	8.4	7.8	263.8	6.5	50.7	75.3	70.1	12.7	4.3	15.0	16.9	17.4	-0.8	-1.8	-2.8
South Africa	-4.4	16.6	174.3	4.3	8.1	9.2	3.1	16.9	16.0	49.7	61.5	27.6	31.5	3.2	27.8	40.0	32.6	7.2	8.4	7.2
Sub-Saharan Africa	-14.1	25.8	4.8	3.8	13.9	1.7	1.0	62.6	10.3	-3.1	6.6	7.2	9.0	1.3	24.1	14.3	14.7	4.3	1.9	4.1
South African																				
Development Community	20.8	-4.3	-4.0	36.8	22.8	-1.1	2.3	-18.3	8.4	-9.5	10.6	-5.6	-5.1	5.8	1.8	-9.8	14.4	-7.6	-8.7	-10.6
Middle East and																				
North Africa	8.5	2.1	105.7	-3.1	12.2	-1.0	-1.1	12.5	7.0	11.9	25.0	9.9	39.6	4.3	13.7	8.1	15.0	-3.8	-5.7	-6.9
South-East Europe	-3.1	0.0	-1.6	-1.5	-1.5	0.0	3.5	-0.3	-0.4	-3.4	-4.2	2.2	-1.7	-0.2	-3.8	2.4	-1.0	3.0	1.8	1.9
Rest of world	-3.1	0.3	0.9	-7.0	-2.8	0.2	1.7	-0.8	-5.5	-4.4	-4.2	1.4	-3.9	-0.4	-3.6	-1.7	-2.1	3.3	1.8	1.1

Source: GTAP simulations.

Note: Cereals (CER), Vegetables, fruits & nuts (VFN), Vegetable oils (VOL), Sugar (SGR), Other crops (OCR), Livestock (LVS), Resources (RES), Dairy (DRY), Other foods (OFD), Textiles (TXT), Apparel (WAP), Leather (LEA), Non metallic manufactures (NMM), Petroleum and coal products (P_C), Motor vehicles (MVH), Electronics (ELE), Manufactures (MMN), Services (SER), Transport (TRN), Business services (BFS)

Table A3. Change in output relative to base from South-South liberalization
(percentages)

	CER	VFN	VOL	SGR	OCR	LVS	RES	DRY	OFD	TXT	WAP	LEA	NMM	P_C	MVH	ELE	MMN	SER	TRN	BFS
European Union	-0.4	0.4	1.1	-0.3	-0.4	0.2	0.5	-0.3	-0.3	-4.3	-3.9	0.4	-0.5	-0.4	-0.6	0.7	-0.3	0.3	0.1	0.0
United States	-3.5	-0.2	-3.4	0.0	-0.3	0.0	0.5	-0.1	-0.3	-2.2	-1.7	-0.1	-0.1	-0.5	-0.6	0.7	0.2	0.1	0.0	0.0
North America	-2.5	-2.8	-1.4	0.1	-0.1	-0.3	0.5	-0.4	-0.8	-2.0	-1.3	1.3	-0.5	-0.1	-0.6	1.5	-0.1	0.2	0.1	0.0
Japan	-3.1	0.1	-0.2	0.1	0.0	0.2	0.5	-0.1	-0.5	-6.1	-1.5	1.4	-0.1	-0.2	-1.2	1.1	0.4	0.1	0.0	0.0
Other developed	-3.5	-1.0	-2.7	-4.0	-1.7	-0.5	0.5	-0.9	-1.5	-2.7	-1.5	-1.4	-0.4	-0.3	-0.9	1.1	-0.4	0.4	0.2	0.0
China	6.0	0.2	-1.7	-4.0	1.3	-1.0	-0.5	-1.6	-1.3	0.6	9.8	-1.0	-1.7	-0.7	4.3	3.1	-0.3	-0.8	0.1	-0.4
India	1.5	-2.9	-3.1	1.9	0.8	-19.9	-2.2	0.5	5.8	6.6	8.9	13.9	1.6	3.7	2.7	4.6	0.5	0.7	0.7	-0.7
Other Asia	-55.7	1.8	-75.9	-5.3	6.6	23.9	-1.6	6.5	33.1	32.2	5.3	24.2	2.1	1.5	5.1	-10.4	-4.2	-0.2	-0.1	0.5
Other South Asia	-0.6	-0.4	3.5	-6.6	2.5	-9.1	-1.7	-2.2	-0.7	5.4	30.1	11.8	-1.5	-8.7	-13.1	-7.6	-5.0	-0.3	-0.2	-1.1
ASEAN	1.3	-0.1	-4.9	-2.5	0.2	9.7	-1.7	3.6	-4.2	0.1	-1.5	-1.7	3.2	-0.4	-2.7	-1.1	7.2	-1.5	-1.3	0.1
Mexico	-1.1	-0.7	0.8	0.4	-0.4	-0.4	0.3	-6.8	0.1	-5.7	-6.4	-7.1	-0.7	-1.0	4.0	6.3	0.5	0.1	0.1	-0.2
Andean	-0.6	0.6	-0.2	-0.3	-0.4	0.2	0.0	0.2	0.3	-0.8	-0.6	-0.3	0.5	0.3	-0.3	-1.3	-0.9	0.0	0.0	0.0
Mercosur	19.1	-3.0	-1.1	3.2	0.4	-0.3	-0.6	7.2	1.1	-8.2	-3.8	-5.8	-2.2	-0.3	9.6	-3.1	-1.3	-0.2	-0.1	-0.2
Rest of Latin America	-2.0	1.4	-0.3	-3.1	0.4	-0.6	0.1	0.2	-0.5	-1.7	-5.5	-4.9	-0.4	1.2	10.7	2.6	3.4	-0.1	-0.1	-0.4
Central America	-1.7	-0.1	-0.5	0.7	-0.9	0.2	0.5	-2.2	-0.6	1.4	6.2	-1.0	-1.2	-2.2	3.0	8.6	1.0	0.0	0.1	-1.1
Caribbean	-5.4	-0.5	0.0	12.2	1.8	-1.0	0.1	7.9	-0.4	-5.0	-7.8	4.0	-0.2	1.2	7.6	-3.1	5.1	-0.2	-0.2	-0.6
South Africa	-12.7	1.8	49.4	-0.9	0.5	-1.3	1.3	0.5	1.3	-18.9	-7.2	-13.7	-1.4	-4.1	18.9	9.5	6.1	0.9	0.9	-0.7
Sub-Saharan Africa	-1.2	2.7	-1.2	0.7	0.2	-1.4	0.5	-5.5	-0.2	-10.2	-8.7	-21.7	0.9	-5.9	-14.9	-5.3	6.0	0.5	0.4	-0.3
South African																				
Development Community	-1.0	-2.4	-1.9	13.1	4.5	-1.4	0.2	-3.6	0.5	-14.6	-10.8	-25.1	-4.5	1.5	-2.7	-9.8	7.0	-0.1	0.6	0.4
Middle East and																				
North Africa	-1.4	-0.3	0.4	-0.3	-1.8	-1.7	-0.3	-0.8	-0.9	-5.3	-16.1	-4.7	8.1	1.8	0.5	0.8	2.0	-0.4	-0.3	-0.4
South-East Europe	0.0	0.0	0.1	0.4	-0.1	0.0	0.5	-0.1	0.1	-1.6	-3.4	1.5	-0.3	0.0	-0.5	0.7	-0.2	0.4	0.2	-0.1
Rest of world	-0.3	-0.1	0.0	0.2	-0.3	-0.1	0.5	-0.2	-0.7	-0.8	-1.3	0.5	-0.7	-0.1	-0.2	0.1	-0.9	0.3	0.1	-0.1

Source: GTAP simulations.

Note: Cereals (CER), Vegetables, fruits & nuts (VFN), Vegetable oils (VOL), Sugar (SGR), Other crops (OCR), Livestock (LVS), Resources (RES), Dairy (DRY), Other foods (OFD), Textiles (TXT), Apparel (WAP), Leather (LEA), Non metallic manufactures (NMM), Petroleum and coal products (P_C), Motor vehicles (MVH), Electronics (ELE), Manufactures (MMN), Services (SER), Transport (TRN), Business services (BFS)

Table A4. Initial share in total world sectoral output
(percentages)

	CER	VFN	VOL	SGR	OCR	LVS	RES	DRY	OFD	TXT	WAP	LEA	NMM	P_C	MVH	ELE	MMN	SER	TRN	BFS
European Union	7.1	12.0	9.1	15.9	23.7	26.0	10.2	33.6	25.1	17.8	21.2	26.5	29.5	19.7	29.7	23.2	28.1	25.2	29.7	25.2
United States	7.1	6.0	19.5	19.4	21.8	20.6	11.5	22.9	25.5	18.8	21.7	7.5	25.6	19.8	30.2	20.4	27.0	32.7	37.8	34.7
North America	1.3	0.5	2.2	0.2	1.2	2.4	4.4	2.2	2.0	1.2	1.5	0.6	2.3	2.5	3.6	1.3	2.0	2.2	1.8	2.4
Japan	10.1	5.3	0.5	7.2	10.7	3.3	3.2	5.2	12.8	5.0	11.3	3.7	10.8	8.9	15.9	21.3	12.5	13.6	11.8	15.2
Other developed	1.1	1.6	0.6	2.5	2.1	2.8	5.5	4.2	2.2	0.8	1.0	0.9	2.3	1.6	1.7	0.8	2.6	3.0	2.4	3.0
China	14.9	28.3	7.2	0.9	6.6	10.8	11.7	0.9	6.3	21.3	14.8	27.2	9.3	8.9	3.8	7.5	10.1	5.1	3.4	2.7
India	10.6	5.7	24.5	8.3	3.1	1.9	1.9	5.7	0.9	4.5	1.2	1.8	1.5	2.7	0.9	0.4	1.6	1.5	0.8	1.1
Other Asia	4.7	3.7	0.5	0.7	1.8	2.3	1.0	1.1	2.2	5.5	3.1	3.2	3.0	5.4	3.3	8.1	4.3	2.2	2.1	2.5
Other South Asia	5.6	2.4	3.7	2.0	0.9	0.7	1.0	1.1	0.4	2.6	1.7	0.6	0.3	0.3	0.1	0.0	0.2	0.5	0.2	0.3
ASEAN	8.7	3.8	2.3	4.8	3.5	4.2	5.3	0.4	3.0	4.6	4.9	5.6	2.4	4.2	1.6	10.2	1.7	1.8	1.5	1.4
Mexico	1.1	2.0	0.3	3.8	3.1	3.6	3.1	1.5	3.6	2.7	3.5	3.9	2.0	1.6	2.3	2.4	2.0	2.5	1.1	0.8
Andean	1.2	2.1	1.1	2.2	1.8	1.9	3.0	1.8	1.7	1.0	1.5	1.6	0.7	1.7	0.5	0.1	0.4	1.0	0.5	0.7
Mercosur	2.7	1.2	15.9	6.2	2.6	4.3	2.3	3.4	3.9	2.0	2.2	4.0	2.2	3.1	1.8	0.9	1.6	1.8	2.1	2.6
Rest of Latin America	0.7	1.5	1.6	1.4	0.9	1.0	0.9	0.9	1.2	0.7	1.3	0.9	0.6	0.7	0.3	0.2	0.4	0.6	0.4	0.6
Central America	0.3	0.9	0.4	0.9	0.5	0.5	0.2	0.4	0.5	0.7	1.2	0.4	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2
Caribbean	0.1	0.2	0.2	0.4	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.0	0.0	0.1	0.1	0.1
South Africa	3.2	1.4	1.3	3.1	2.8	1.2	3.4	0.2	0.9	0.5	0.3	0.8	0.4	0.6	0.1	0.0	0.1	0.4	0.3	0.3
Sub-Saharan Africa	0.8	0.3	0.5	1.5	1.0	0.5	0.7	0.2	0.5	0.3	0.3	0.1	0.2	0.1	0.0	0.0	0.1	0.2	0.1	0.1
South African																				
Development Community	0.3	0.4	0.2	0.5	0.5	0.7	1.2	0.3	0.6	0.5	0.1	0.4	0.4	0.9	0.4	0.1	0.6	0.4	0.2	0.5
Middle East and																				
North Africa	6.5	13.5	3.0	9.5	2.6	4.4	16.9	3.9	2.1	4.1	4.6	4.4	2.5	9.9	0.9	1.1	1.4	3.1	1.8	3.1
South-East Europe	2.7	1.6	1.2	1.7	2.2	1.6	0.8	2.3	1.0	1.3	1.2	1.8	0.8	1.0	0.4	0.4	0.6	0.5	0.4	0.4
Rest of world	9.1	5.7	4.1	6.9	6.2	5.1	11.9	7.5	3.6	4.0	1.2	4.0	2.9	6.0	2.2	1.4	2.5	1.7	1.3	2.0

Source: GTAP simulations.

Note: Cereals (CER), Vegetables, fruits & nuts (VFN), Vegetable oils (VOL), Sugar (SGR), Other crops (OCR), Livestock (LVS), Resources (RES), Dairy (DRY), Other foods (OFD), Textiles (TXT), Apparel (WAP), Leather (LEA), Non metallic manufactures (NMM), Petroleum and coal products (P_C), Motor vehicles (MVH), Electronics (ELE), Manufactures (MMN), Services (SER), Transport (TRN), Business services (BFS)

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Corrigendum

Page 3

The first paragraph should read:

Trade-weighted tariffs are averaged by imports, but it is instructive to look at the trade flows themselves to gauge the likely impacts. These are shown in table 3. Total trade in merchandise at world prices amounts to \$5.5 **trillion** (2001) (excluding intra-EU trade). Developed countries import \$1.8 **trillion** from other developed countries and slightly more than \$1.2 **trillion** from developing (including least developed) countries. Developing countries themselves import a greater proportion of their imports from developed countries (\$1.19 **trillion** versus \$0.9 **trillion**) but South-South trade is a substantial proportion nonetheless. Taking into account trade flows, the imputed tariff revenues collected by developed countries amounts to \$76 billion. By contrast, developing countries are collecting an estimated \$152 billion. Of this, \$83 billion is on imports from developed countries and \$69 billion on imports from other developing countries.

Page 3, table 3, subheading

Page 6, table 6, subheading

For (Thousands of US dollars) read (Millions of US dollars)

Page 8, table 7, subheading

Page 10, table 8, subheading

For (Thousands of US dollars and percentages) read (Millions of US dollars and percentages)

Page 12, table 9, subheading

Pages 16-17, table A1, subheading

For (Thousands of US dollars) read (Millions of US dollars)