3

Topping up the Doha Package

In this chapter, we outline the potential gains from liberalization in several areas of market access negotiations: services, chemicals, electronics/electrical goods, environmental goods, and trade facilitation. We believe that meaningful negotiations on these topics can reinvigorate the Doha Round since the potential gains from liberalization in these areas far exceed the benefits currently on the table.

Services

Of the three areas of market access negotiations, services could offer the largest gains for both developed and developing countries. How large remains unclear because services negotiations have barely begun, but recent empirical work indicates that the potential gains from meaningful liberalization of services trade barriers substantially outweigh the potential gains from merchandise trade liberalization.[1]

In 2007 world services exports, as conventionally measured, were valued at roughly $3.3 trillion; merchandise exports (i.e., agriculture and nonagricultural market access [NAMA]) were more than four times larger at $13.6 trillion (WTO 2008a).[2] While some services are inherently nontrad-

1. For example, Brown, Kiyota, and Stern (2005) calculate that the removal of agriculture protection, manufacturing tariffs, and services barriers for the whole world would increase world welfare by $53.9 billion, $701.6 billion, and $1,661.8 billion, respectively.

2. Conventional measures of services trade do not include services furnished locally by the foreign subsidiaries of multinational corporations, for example, by a US subsidiary of a Swiss reinsurance company (a form of commerce that falls under Mode 3 of the GATS).

able, part of the imbalance between services and merchandise trade can be explained by the poor quality of data on services, which leads to the underreporting of services trade in official statistics, and another part by high barriers to services trade.

Despite the importance of services in modern economies, and despite the mandate to start new negotiations a decade ago to liberalize trade in services, WTO talks have not been fully engaged. To date, most WTO countries have not put offers on the table; some have submitted offers that would not even bind current practices. Most of the more than 100 offers for services liberalization in the Round can be classified as pro forma with limited value (Gootiiz and Mattoo 2009). Some developing countries have insisted that developed countries must offer to liberalize trade in temporary labor services (Mode 4) before developing countries issue counteroffers on other modes of delivery (WTO 2008b).

In large measure, services have been relegated to the second division of Doha negotiations for tactical reasons. WTO members agreed informally at the 2005 Hong Kong ministerial that negotiations on services would not go full-bore until decisions were made on modalities for liberalization of agriculture and NAMA.[3] This understanding was a huge mistake, indeed counterproductive, for developing countries. Instead of increasing their leverage to gain US and EU concessions in agriculture and NAMA, it effectively reduced domestic political support in Washington and Brussels for the overall Doha deal and thus limited the scope for additional policy reform.

There are few useful multilateral precedents in terms of services negotiations. Most of the serious liberalization has been done in bilateral and regional agreements. The Uruguay Round established a framework of rights and obligations in the General Agreement on Trade in Services (GATS) but little was achieved in liberalizing existing barriers. Sector agreements on basic telecommunications and financial services were concluded a few years after the Uruguay Round, and these reduced barriers maintained by the signatory countries. Simply put, the Doha Round is only the second time countries have negotiated services multilaterally. While some bilateral free trade agreements (FTAs) have made significant progress in liberalizing services trade (e.g., the North American Free Trade Agreement and Euro-Mediterranean pact), many bilateral FTAs address services issues superficially or not at all (Martin and Mattoo 2009).

Services barriers and trade flows are often opaque. Unlike merchandise trade barriers, services barriers cannot be easily quantified. And, as mentioned earlier, existing data on trade in services are notoriously bad for measuring real flows of traded services, both in overall magnitude and in determining the ultimate source and destination of trade flows. It is clear that regulations like licensing, permits, temporary visas, and nationality requirements for corporate boards impede services trade, but

3. Contrary to popular belief, this procedural "agreement" is not included in the ministerial declaration.

by how much is unclear. Unlike agriculture or NAMA, WTO members cannot apply a Swiss formula or any other ready device to cut through the web of trade restrictions on services. There appears to be no substitute for a detailed review of national laws and regulations. This process is burdensome, and in any event regulators are reluctant to tie their hands against future contingencies. As a practical matter, most WTO countries are not asked to engage in detailed services negotiations. The "free pass" for developing countries, so prevalent in the GATT era, is still available to most of them in the Doha services talks. However, middle-income and successful emerging-market countries like Argentina, Brazil, China, India, Indonesia, and Thailand are expected to participate.

The current services liberalization offers do have some value: They lock in a portion of the unilateral liberalization that countries have undertaken on their own. And just as in agriculture and NAMA talks, making services trade barriers clear and certain has value to firms doing business.[4] Recent work by the World Bank shows that applied services trade barriers are far lower than bound services barriers under Uruguay Round commitments (see Gootiiz and Mattoo 2009). To reach this conclusion, the authors construct an index of services barriers (table B.1 in appendix B). On their 100-point scale, where higher numbers indicate greater levels of restrictions, they find that the actual level of world services barriers is an index of 21 out of 100, compared with an index of 48 for commitments bound in the Uruguay Round under the GATS.

Offers on the table in the Doha Round would eliminate some of the "water" between bound and applied services barriers, by bringing the overall bound index down to 42 out of 100. However, the fact remains that, as they stand now, Doha offers create *very little new market access* in services. Instead, they slightly lower the bound levels inherited at the end of the Uruguay Round. The offers by OECD countries come close to locking in bound levels to actual levels, but they still leave some "water"—the score for actual barriers is 15 out of 100, while the score for Doha offers is 19 out of 100. But current offers from developing countries do little to reduce the "water" between bound and applied barriers.

Without a more substantive result in the services negotiations, the Doha Round is unlikely to succeed. The deal does not seem rich enough to attract the degree of political support in major trading nations that would ensure ratification by national legislatures.

Trade and GDP Gains

Table 3.1 displays estimates of the impact of a 10 percent reduction in tariff equivalent barriers by the 22 countries. We find that a 10 percent reduction

4. Businesses routinely report that making barriers definitive has value; how much value is uncertain.

Table 3.1 Impact of services trade negotiations (trade in billions of US dollars; tariffs in percent)

	Applied tariff equivalent[b]			Current trade[c]			Increase after Doha offers[d]		
Country[a]	Initial	Doha offer	10 percent cut	Exports to 20 partners	Imports from the world	Total	Exports to 20 partners	Imports from the world	Total
European Union[g]	6.7	6.7	6.0	421.3	567.1	988.4	0	0	0
Japan	16.8	16.8	15.1	81.9	150.5	232.4	0	0	0
United States[h]	6.0	6.0	5.4	394.2	378.4	772.6	0	0	0
Brazil	55.5	55.5	50.0	19.0	37.2	56.2	0	0	0
China[i]	67.9	67.9	61.1	84.8	129.3	214.1	0	0	0
India[i]	68.1	68.1	61.3	24.8	77.6	102.4	0	0	0
Other 15	22.4	22.4	20.2	370.4	437.2	807.6	0	0	0
All 21	19.6	19.6	17.6	1396.4	1777.3	3173.7	0	0	0

	Increase after Doha offers and 10 percent cut[e]			Impact of sector initiative alone		
	Exports to 20 partners	Imports from the world	Total	Exports to 20 partners	Imports from the world	Total
European Union[g]	9.8	5.2	15.0	9.8	5.2	15.0
Japan	2.5	3.5	5.9	2.5	3.5	5.9
United States[h]	10.2	3.1	13.3	10.2	3.1	13.3
Brazil	0.6	2.8	3.5	0.6	2.8	3.5
China[i]	3.3	12.0	15.4	3.3	12.0	15.4
India[i]	0.6	7.2	7.9	0.6	7.2	7.9
Other 15	10.2	15.9	26.1	10.2	15.9	26.1
All 21	37.2	49.8	87.0	37.2	49.8	87.0

Memorandum: GDP impact of new services trade[f]		
Country[a]	Billions of dollars	Percent
European Union[g]	6.9	*
Japan	2.7	0.1
United States[h]	6.1	*
Brazil	1.6	0.1
China[i]	7.1	0.2
India[i]	3.6	0.3
Other 15	12.0	0.2
All 21	40.0	0.1

a. The 21 countries are Argentina, Australia, Brazil, Canada, China, Colombia, the European Union, India, Indonesia, Japan, Korea, Malaysia, Mexico, Norway, Pakistan, Philippines, South Africa, Switzerland, Thailand, Turkey, and the United States. Taiwan is excluded.
b. Tariff equivalents provided from Wang, Mohan, and Rosen (2009). "Other 15" and "All 21" tariff equivalents are weighted averages (by total services imports).
c. Where bilateral services trade data were available from UN Services Trade Database, 2009, OECD (2009), or BEA (2009), 2007 bilateral data were used. Where bilateral data were not available a bilateral services trade flow was estimated by multiplying total services imports by the relevant proportion of bilateral merchandise trade from 2007.
d. Gootiiz and Mattoo (2009) find "no new market access" in the current Doha services trade offers. We assume that trade will not increase if the offers are implemented as they now stand.
e. An import price elasticity of –1.37 is applied here for every bilateral trade flow. This elasticity is the simple average of the general instrumental variable estimate of the elasticity of US services exports (–1.12) and the elasticity of US services imports (–1.62) from Marquez (2005). The 10 percent cuts are keyed off the 2004 applied tariff equivalents using data from GTAP 7 database.
f. GDP impacts are calculated using the dollar ratio average from table A.2.
g. Measured as the weighted average of services tariff equivalents for Belgium, France, Germany, Italy, Netherlands, and United Kingdom, using 2008 US exports to each country as weights.
h. Set equal to 0.9016 times the level reported for the European Union (6.7 percent). This factor reflects the ratio of Services Trade Restrictiveness Indices (STRI) values reported by the OECD (2.190 for the European Union versus 1.975 for the United States). Wang, Mohan, and Rosen (2009) assume a US tariff equivalent of services barriers of zero.
i. Contrary to the values reported by Wang, Mohan, and Rosen (2009), we do not think that China's barriers to services imports are higher than Indonesia's, so the reported tariff equivalent barrier attributed to China is lowered to the Indonesian level (67.9 percent). Following similar reasoning, India's barriers to services imports are lowered to the Pakistan level (68.1 percent).

* indicates that the percentage of GDP impact for these countries is positive but less than 0.05 percent.

Sources: Tariff equivalent: Wang, Mohan, and Rosen (2009); trade: BEA (2009), UN Services Trade Database, 2009, OECD (2009), UN Comtrade Database, 2009; elasticity: Marquez (2005); authors' calculations.

in services barriers would increase exports by the sample countries to the rest of the sample by $37.2 billion or 2.7 percent (table 3.1 and table 1.1 in chapter 1). Both US and EU services exports would increase by about $10 billion each. Under the 10 percent scenario, scaled-up exports of services to the world would increase by $55 billion (table 1.2). The estimated global GDP impact of the *trade gains* (exports and imports) resulting from a 10 percent reduction in services barriers is about $45.5 billion (table 1.3). Bilateral trade relationships are explored in appendix B.

Of course, given the current offers, a 10 percent reduction or even a 5 percent reduction in barriers may seem optimistic. Some efforts have been made to improve the current offers. A signaling exercise held during the July 2008 mini-ministerial at the WTO indicated that countries might be willing to budge (Gootiiz and Mattoo 2009). However, the US services industry's initial reading from the July meeting was that no "meaningful new market access" would be created (Vastine 2008).

Chemicals

The Chemical Tariffs Harmonization Agreement (CTHA), formulated in the Uruguay Round, serves as a starting point for Doha negotiators.[5] Most tariffs on chemical products for CTHA signatory countries are set at 0, 5.5, or 6.5 percent (WTO 2005). An initiative that broadens the CTHA to more countries and deepens liberalization could produce substantial gains. Currently, Canada, the European Union, Japan, Norway, Singapore, Switzerland, Taiwan, and the United States have participated in Doha Round discussions on a sector initiative for chemicals (WTO 2008c).

Chemicals account for more than 10 percent of total merchandise imports by the 22 countries (table 3.2).[6] Chemicals are also crucial to US trade, accounting for 16.7 percent of US merchandise exports (to the 21 partner countries) in 2007 and 8.9 percent of total US merchandise imports (from the world) in 2007.[7] EU trade also exhibits a concentration in chemicals: 20.9 percent of EU merchandise exports (to the 21 partner countries) and 9.2 percent of total EU merchandise imports in 2007 were in chemicals.[8]

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5. The CTHA signatory countries are Australia, Canada, Ecuador, the European Union, Hong Kong, Japan, Jordan, Korea, Mongolia, New Zealand, Norway, Panama, China, Qatar, Singapore, Switzerland, Taiwan, the United Arab Emirates, and the United States (METI 2009a).

6. Chemical goods imports and total merchandise imports by the 22 countries from the world in 2007 were $862.5 billion and $8,308.3 billion, respectively.

7. US chemical goods exports and total merchandise goods exports in 2007 to the 21 partner countries were $156.6 billion and $935.1 billion, respectively. US chemical goods imports and total merchandise imports in 2007 from the world were $179.3 billion and $2,017.1 billion, respectively.

8. EU chemical goods exports and total merchandise goods exports in 2007 to the 21 partner

In 2008 the average US applied tariff on chemical products was 2.1 percent, the average EU applied tariff was 2.6 percent, and the average Chinese applied tariff stood at 6.7 percent. The average chemical tariff across the 22 countries in 2008 was 3.3 percent (table 3.2). However, tariff peaks remain a problem, even in CTHA signatory countries.

Trade and GDP Gains

Assuming that none of the tariff cut flexibilities that are available to countries would be used on chemical goods, the tariff cuts outlined in NAMA modalities would bring down the US tariff on chemicals to an average of 1.2 percent and lower the average tariff on chemicals in the 22 countries to 2.2 percent.[9] These modality tariff cuts would increase the export trade within the 22 countries by $12.3 billion or roughly 1.6 percent from the current level of chemicals trade (table 3.2). Increases in US and EU exports, $2.5 billion and $3.6 billion, respectively, could account for half of the growth.[10]

What more could be achieved in sector negotiations? The sector scenario that we have modeled envisages, at the HS 6-digit level, reducing all tariffs at or below 2.5 percent, after the modality cuts, to zero; reducing all tariffs above 2.5 percent and equal to or below 5 percent, after the modality cuts, to a new tariff of 2.5 percent; and reducing all tariffs above 5 percent, after the modality cuts, to a new tariff of 5 percent. We estimate that the postmodality and sector cuts would increase chemical exports to the sample countries by $25.1 billion and chemical imports from the world by $30.8 billion, twice the impact from the modality tariff cuts alone (table 3.2). Nearly half this trade increase can be accounted for by increased US and EU exports ($4.6 billion and $6.9 billion, respectively); or, looking at the trade flows from the opposing direction, by increased US and Chinese imports ($4.6 billion and $8 billion, respectively). The US export gain in chemicals ($4.6 billion) represents a 0.5 percent increase in US merchan-

countries were $219.8 billion and $1,049.2 billion, respectively. EU chemical goods imports and total merchandise imports in 2007 from the world were $179.2 billion and $1,954 billion, respectively.

9. We assume that, if countries are going to participate in certain sector negotiations (e.g., chemicals, electronics/electrical, or environmental goods), they are not going to use any of their tariff cut flexibilities in those sectors. In reality, countries might exclude some sensitive products from sector negotiations and use their tariff cut flexibilities on those same products.

10. The modality impacts described here do not correspond with the impacts for all NAMA products because of different elasticities and the use of tariff cut flexibilities. Specifically, the price elasticity used here is –2.09, while the calculations for all NAMA products used an elasticity of –1.19. We think a larger elasticity value is justified because many chemical products are homogenous. Also, in the full NAMA calculations we assume that tariff cut flexibilities are used on some chemical products; in the sector calculation, we assume no flexibilities are used.

Table 3.2 Impact of sector initiative in chemicals (trade in billions of US dollars; tariffs in percent)

	Average applied tariff[b]			Current trade[c]			Increase after modality cuts[d]		
Country[a]	Initial	After modality cuts	After sector cuts	Exports to 21 partners	Imports from the world	Total	Exports to 21 partners	Imports from the world	Total
European Union	2.6	1.5	1.0	219.8	179.2	399.0	3.6	2.9	6.5
Japan	1.7	0.8	0.4	74.0	50.3	124.2	2.0	0.8	2.8
United States	2.1	1.2	0.6	156.6	179.3	335.9	2.5	2.3	4.8
Brazil	8.0	5.9	3.3	8.7	21.7	30.4	*	0.8	0.8
China	6.7	4.9	3.0	68.1	111.3	179.4	1.2	3.6	4.7
India	8.7	7.0	4.7	14.1	17.7	31.8	0.2	0.5	0.7
Other 16	3.2	2.3	1.4	208.6	303.2	511.7	2.9	4.6	7.5
All 22	3.3	2.2	1.3	749.9	862.5	1,612.4	12.3	15.4	27.7

	Increase after modality and sector cuts[d]			Impact of sector cuts alone		
	Exports to 21 partners	Imports from the world	Total	Exports to 21 partners	Imports from the world	Total
European Union	6.9	4.3	11.2	3.3	1.4	4.7
Japan	4.1	1.0	5.2	2.2	0.2	2.4
United States	4.6	4.6	9.1	2.1	2.3	4.4
Brazil	0.1	1.8	1.9	0.1	1.0	1.1
China	2.5	8.0	10.5	1.3	4.5	5.8
India	0.5	1.3	1.8	0.3	0.8	1.1
Other 16	6.4	9.8	16.1	3.5	5.2	8.7
All 22	25.1	30.8	55.9	12.8	15.4	28.2

Memorandum: GDP impact of new chemicals trade[e]

Country[a]	Billions of dollars	Percent
European Union	2.2	*
Japan	1.1	*
United States	2.0	*
Brazil	0.5	*
China	2.7	0.1
India	0.5	*
Other 16	4.0	0.1
All 22	13.0	*

Memorandum: Current total merchandise trade (billions of dollars)

Country[a]	Exports to 21 partners	Imports from the world	Total
European Union	1049.2	1,954.0	3,003.2
Japan	628.0	622.2	1,250.2
United States	935.1	2,017.1	2,952.2
Brazil	135.5	120.6	256.2
China	1,097.6	956.0	2,053.6
India	104.4	218.6	323.1
Other 16	2,322.2	2,419.7	4,741.9
All 22	6,272.0	8,308.3	14,580.3

a. The 22 countries are Argentina, Australia, Brazil, Canada, China, Colombia, the European Union, India, Indonesia, Japan, Korea, Malaysia, Mexico, Norway, Pakistan, Philippines, South Africa, Switzerland, Taiwan, Thailand, Turkey, and the United States.
b. Listed tariff rates are the weighted average (weighted by bilateral imports) of the simple average of applied HS 6-digit tariffs on all traded chemical goods in each bilateral relationship.
c. Trade data from the following years and bilateral pairs are used: Norway - all countries (2008); Pakistan - all countries (2008); Thailand - all countries (2006); Indonesia - India, Malaysia, Mexico, Pakistan, Philippines, and Taiwan (2005); Indonesia - all other countries (2007); Mexico - Brazil, India, Indonesia, Malaysia, Pakistan, Philippines, and Taiwan (2006); Mexico - all other countries (2007); all other bilateral relationships (2007).
d. An import price elasticity of –2.09 is applied here for every tariff line and bilateral trade flow. This elasticity is the simple average of all chemical goods observations in Kee, Nicita, and Olarreaga (2004).
e. GDP impacts are calculated using the dollar ratio average from table A.2.

HS = Harmonized Schedule

* indicates that the percentage of GDP or trade impact for these countries is positive but less than 0.05 percent or $0.05 billion.

Note: All HS 6-digit traded tariff lines in HS codes 28 through 39 are included: HS 28 - Inorganic chemicals; HS 29 - Organic chemicals; HS 30 - Pharmaceutical products; HS 31 - Fertilizers; HS 32 - Tanning or dyeing extracts; HS 33 - Essential oils; HS 34 - Soap, lubricating preparations, candles, etc.; HS 35 - Albuminoidal substances, modified starches, glues; HS 36 - Explosives; HS 37 - Photographic or cinematographic goods; HS 38 - Miscellaneous chemical products; HS 39 - Plastics and articles thereof.

Sources: UN Comtrade Database via World Integrated Trade Solution, 2009; UNCTAD TRAINS Database via World Integrated Trade Solution, 2009; Kee, Nicita, and Olarreaga (2004); authors' calculations.

dise exports (to the 21 other countries); the import gains ($4.6 billion) represent a 0.2 percent increase in total US merchandise imports.

For the group of 22 countries, the estimated *GDP gains* resulting from the trade increase attributable specifically to the sector cuts in chemicals are $13.0 billion (table 3.2).[11] World exports of chemicals by the 22 sample countries could increase by $15.8 billion based on this sector initiative (table 1.2). Bilateral trade and tariff relationships are detailed in appendix C.

Information Technology and Electronics/Electrical Goods

In 1996, at a ministerial conference of the WTO—i.e., not during a multilateral trade round—29 WTO members agreed to the Information Technology Agreement (ITA). The ITA committed signatory countries to reduce tariffs to zero or near zero in computers, software, telecom equipment, semiconductors, semiconductor manufacturing equipment, and scientific instruments by January 2000. The ITA is considered a "remarkably successful agreement" (Mann and Liu 2009). The agreement has grown to over 70 members, including the United States, the European Union (27), Japan, India, Korea, Taiwan, and China (which joined in 2003 as part of its WTO accession). Notable nonsignatories include Brazil, Mexico, and South Africa (WTO 2009a).

The Doha Round could supplement the ITA by expanding the country coverage and deepening tariff liberalization under the current agreement. Because of the potential large boost to world trade, expanded product coverage in the ITA is another possible outcome, even though product coverage has been a contentious issue since the beginning of the ITA.[12] A proposal by Dreyer and Hindley (2008) to expand the products covered by the ITA would almost double the amount of world trade covered. World exports of current ITA goods in 2007 to the 22 countries surveyed in this study were $1,127 billion; world exports (to the 22 countries) under Dreyer and Hindley's (2008) product list were $2,028 billion.[13]

While the Dreyer and Hindley proposal seems unlikely, a sector deal that goes beyond IT products has already been discussed in the Doha

11. *GDP gains* enumerated here are based only on the trade impact of the sector cuts and not the total gains from both the modality and sector cuts. *GDP gains* that result from modality cuts are quoted as part of the NAMA calculations earlier.

12. A recent WTO dispute settlement case brought by the United States and Japan (among others) against the European Union concerns whether televisions with multifunctionality (i.e., IT and non-IT functions) should be covered by the agreement (European Commission 2008).

13. The Dreyer and Hindley (2008) proposal is to include an entire HS 4-digit category (with a few exceptions) if at least one HS 6-digit tariff line under the HS 4-digit category is currently included in the ITA.

Round. Rather than pursuing an IT-only sector initiative, WTO negotiators have actually devised a broader electronics/electrical goods sector initiative, which largely encompasses the ITA along with many new IT products. The proposed product list for the electronics/electrical goods sector deal covers roughly 50 percent more world trade than the ITA.[14] It does exclude some of the products that would be most contentious in ITA talks—most notably televisions—yet it is still a step forward from the current ITA. Already, Hong Kong, Japan, Korea, Singapore, Thailand, and the United States have participated in the electronics/electrical goods sector initiative (WTO 2008c). On a related note, an agreement might be negotiated on "digital goods" to facilitate electronic commerce, the electronic delivery of services, and exports of information and communication technology (ICT) products. This is a promising possibility, but one that we do not explore in this study.

The ITA is a unique agreement because the product list is not entirely made up of explicitly listed Harmonized System (HS) tariff lines. Realizing that product coverage would be an issue, the negotiators in 1996 included a "positive list" of IT products defined according to functionality so that new products, regardless of where they were placed in a tariff schedule, could be covered. Many new products have been covered by this approach, but leaving product coverage open to interpretation has, in the end, created as much contention (by giving a basis for litigation) as it has prevented. The positive list approach means ITA coverage might not be exactly the same from one country to the next. For our calculations we assume that any product included in the US ITA schedule or by Finger (2007) is an ITA good for all countries. By taking this approach, we assume resolution of one of the outstanding issues with the ITA, namely product convergence, as well as the issues of country coverage and further tariff liberalization.

Trade and GDP Gains

Like all NAMA products, ITA goods would be subject to the Swiss formula modality tariff cuts. In other words, even without a sector agreement, there would be some liberalization of ITA trade. Assuming no flexibilities are used, tariff cuts under the Swiss formula would bring the average applied tariff in the 22 countries on ITA goods down to 0.9 percent from the current 1.1 percent (table 3.3). These modality cuts would increase exports by the 22 sample countries to each other by $5.8 billion while increasing their imports from the world by $6 billion. Chinese ITA imports would increase by $1.9 billion or 1 percent.[15]

14. Recent world exports of electronics/electrical goods (as defined by the WTO December 2008 NAMA modalities) to the 22 countries used in this study were $1,687.7 billion, while recent world exports to the 22 countries of ITA goods (as defined by the US ITA schedule and Finger 2007) were $1,127.1 billion.

15. The modality impacts described here do not correspond with the impacts for all NAMA

Table 3.3 Impact of sector initiative in Information Technology Agreement (ITA) goods (trade in billions of US dollars; tariffs in percent)

	Average applied tariff[b]			Current trade[c]			Increase after modality cuts[d]		
Country[a]	Initial	After modality cuts	After sector cuts	Exports to 21 partners	Imports from the world	Total	Exports to 21 partners	Imports from the world	Total
European Union	0.4	0.3	0	166.4	211.3	377.7	1.0	0.9	1.8
Japan	*	*	0	181.8	67.0	248.9	1.6	*	1.6
United States	0.6	0.4	0	157.3	195.1	352.4	0.7	0.5	1.2
Brazil	9.9	8.8	0	2.7	16.8	19.5	*	0.3	0.3
China	1.7	1.2	0	218.0	193.4	411.3	0.5	1.9	2.4
India	3.4	2.8	0	4.1	21.2	25.2	*	0.2	0.2
Other 16	1.6	1.3	0	321.2	422.3	743.5	2.1	2.2	4.3
All 22	1.1	0.9	0	1,051.4	1,127.1	2,178.5	5.8	6.0	11.8

	Increase after modality and sector cuts[d]			Impact of sector cuts alone		
	Exports to 21 partners	Imports from the world	Total	Exports to 21 partners	Imports from the world	Total
European Union	5.2	2.1	7.3	4.3	1.2	5.5
Japan	6.3	*	6.3	4.8	*	4.8
United States	3.3	1.5	4.8	2.6	1.0	3.6
Brazil	*	3.5	3.5	*	3.3	3.3
China	2.8	8.7	11.5	2.3	6.8	9.1
India	0.1	1.4	1.5	0.1	1.1	1.3
Other 16	10.0	12.0	22.1	7.9	9.8	17.8
All 22	27.9	29.2	57.1	22.1	23.2	45.3

Memorandum: GDP impact of new ITA goods trade[e]

Country[a]	Billions of dollars	Percent
European Union	2.5	*
Japan	2.2	0.1
United States	1.7	*
Brazil	1.5	0.1
China	4.2	0.1
India	0.6	0.1
Other 16	8.2	0.1
All 22	20.8	*

Memorandum: Current total merchandise trade (billions of dollars)

Country[a]	Exports to 21 partners	Imports from the world	Total
European Union	1,049.2	1,954.0	3,003.2
Japan	628.0	622.2	1,250.2
United States	935.1	2,017.1	2,952.2
Brazil	135.5	120.6	256.2
China	1,097.6	956.0	2,053.6
India	104.4	218.6	323.1
Other 16	2,322.2	2,419.7	4,741.9
All 22	6,272.0	8,308.3	14,580.3

a. The 22 countries are Argentina, Australia, Brazil, Canada, China, Colombia, the European Union, India, Indonesia, Japan, Korea, Malaysia, Mexico, Norway, Pakistan, Philippines, South Africa, Switzerland, Taiwan, Thailand, Turkey, and the United States.
b. Listed tariff rates are the weighted average (weighted by bilateral imports) of the simple average of HS 6-digit applied tariffs on all traded IT goods in each bilateral relationship.
c. Trade data from the following years and bilateral pairs are used: Norway - all countries (2008); Pakistan - all countries (2008); Thailand - all countries (2006); Indonesia - India, Malaysia, Mexico, Pakistan, Philippines, and Taiwan (2005); Indonesia - all other countries (2007); Mexico - Brazil, India, Indonesia, Malaysia, Pakistan, Philippines, and Taiwan (2006); Mexico - all other countries (2007); all other bilateral relationships (2007).
d. An import price elasticity of -2.01 is applied here for every tariff line and bilateral trade flow. This elasticity is the simple average of all existing and new IT goods observations in Kee, Nicita, and Olarreaga (2004).
e. GDP impacts are calculated using the dollar ratio average from table A.2.

* indicates that the percentage of GDP, trade impact, or applied tariff rate for these countries is positive but less than 0.05 percent or $0.05 billion.

Note: See table D.1 for product list. Calculations are made using all traded tariff lines listed in table D.1 at the HS 6-digit level.

Sources: UN Comtrade Database via World Integrated Trade Solution, 2009; UNCTAD TRAINS Database via World Integrated Trade Solution, 2009; Kee, Nicita, and Olarreaga (2004); authors' calculations.

Table 3.4 Impact of sector initiative in electronics and electrical goods (trade in billions of US dollars; tariffs in percent)

	Average applied tariff[b]			Current trade[c]			Increase after modality cuts[d]		
Country[a]	Initial	After modality cuts	After sector cuts	Exports to 21 partners	Imports from the world	Total	Exports to 21 partners	Imports from the world	Total
European Union	0.9	0.6	0	175.8	342.0	517.8	1.3	1.7	3.0
Japan	*	*	0	197.6	109.5	307.1	2.3	*	2.3
United States	1.0	0.6	0	198.2	350.9	549.1	0.9	1.4	2.3
Brazil	11.2	9.1	0	5.9	22.8	28.7	*	0.5	0.5
China	6.6	4.6	0	393.7	306.9	700.6	1.9	3.6	5.5
India	6.4	5.7	0	5.4	28.9	34.3	*	0.4	0.4
Other 16	2.8	2.3	0	584.0	526.7	1,110.7	3.1	2.3	5.4
All 22	2.3	1.8	0	1,560.7	1,687.7	3,248.3	9.6	9.9	19.4

	Increase after modality and sector cuts[d]			Impact of sector cuts alone		
	Exports to 21 partners	Imports from the world	Total	Exports to 21 partners	Imports from the world	Total
European Union	7.0	4.7	11.7	5.7	3.0	8.6
Japan	8.8	*	8.8	6.5	*	6.5
United States	4.4	4.0	8.4	3.4	2.6	6.1
Brazil	0.1	4.4	4.5	0.1	3.9	4.0
China	8.6	14.9	23.5	6.7	11.3	18.0
India	0.2	2.1	2.3	0.2	1.7	1.9
Other 16	14.0	15.3	29.3	10.8	13.0	23.8
All 22	43.1	45.4	88.4	33.5	35.4	68.9

Memorandum: GDP impact of new electronic goods trade[e]

Country[a]	Billions of dollars	Percent
European Union	4.0	*
Japan	3.0	0.1
United States	2.8	*
Brazil	1.8	0.1
China	8.3	0.3
India	0.8	0.1
Other 16	11.0	0.1
All 22	31.7	0.1

Memorandum: Current total merchandise trade (billions of dollars)

Country[a]	Exports to 21 partners	Imports from the world	Total
European Union	1,049.2	1,954.0	3,003.2
Japan	628.0	622.2	1,250.2
United States	935.1	2,017.1	2,952.2
Brazil	135.5	120.6	256.2
China	1,097.6	956.0	2,053.6
India	104.4	218.6	323.1
Other 16	2,322.2	2,419.7	4,741.9
All 22	6,272.0	8,308.3	14,580.3

a. The 22 countries are Argentina, Australia, Brazil, Canada, China, Colombia, the European Union, India, Indonesia, Japan, Korea, Malaysia, Mexico, Norway, Pakistan, Philippines, South Africa, Switzerland, Taiwan, Thailand, Turkey, and the United States.
b. Listed tariff rates are the weighted average (weighted by total bilateral merchandise imports) of the simple average of HS 6-digit applied tariffs on all traded electronics/electrical goods in each bilateral relationship.
c. Trade data from the following years and bilateral pairs are used: Norway - all countries (2008); Pakistan - all countries (2008); Thailand - all countries (2006); Indonesia - India, Malaysia, Mexico, Pakistan, Philippines, and Taiwan (2005); Indonesia - all other countries (2007); Mexico - Brazil, India, Indonesia, Malaysia, Pakistan, Philippines, and Taiwan (2006); Mexico - all other countries (2007); all other bilateral relationships (2007).
d. An import price elasticity of -2.01 is applied here for every tariff line and bilateral trade flow. This elasticity is the simple average of all IT goods in Kee, Nicita, and Olarreaga (2004).
e. GDP impacts are calculated using the dollar ratio average from table A.2.

* indicates that the percentage of GDP, trade impact, or applied tariff rate for these countries is positive but less than 0.05 percent or $0.05 billion.

Note: See table D.2 for product list. Calculations are made using all traded tariff lines listed in table D.2 at the HS 6-digit level.

Sources: UN Comtrade Database via World Integrated Trade Solution, 2009; UNCTAD TRAINS Database via World Integrated Trade Solution, 2009; Kee, Nicita, and Olarreaga (2004); authors' calculations.

An additional sector initiative in ITA goods, which brings tariffs in the 22 countries down from their current level (an average of 1.1 percent) to zero, would spur substantially more trade. Trade within the 22 countries would increase by $27.9 billion from the modality and sector cuts, with an increase in Chinese imports of $8.7 billion accounting for about a third of the total increase (table 3.3). US gains would be modest, a $3.3 billion gain in exports and a $1.5 billion gain in imports.

The increase in potential exports by sample countries to each other and their imports from the world from just the sector cuts on ITA goods is $22.1 billion and $23.2 billion, respectively (table 3.3). This estimation does not include the gains from modality tariff cuts. These trade gains translate into $20.8 billion of *GDP gains* for the 22 countries.

Gains under a sector initiative in electronics/electrical goods would be still larger. Free trade in these goods would increase exports among the 22 countries and imports from the world by an additional $43.1 billion and $45.4 billion, respectively, including the increase from the modality tariff cuts (table 3.4)—these are increases of more than $14 billion each compared with an ITA-only modality and sector initiative. Among the 22 countries, Chinese imports again dominate the increase in trade. Under the sector and modality tariff cuts in electronics/electrical goods, Chinese imports would increase by an estimated $14.9 billion. Chinese exports would increase by $8.6 billion. US total *trade gains* would almost double those from the ITA-only modality and sector cuts: US exports in electronics and electrical goods would increase by $4.4 billion and imports by $4 billion.

The estimated gains in exports among sample countries and imports from the world based on just the sector initiative in electronics/electrical goods are $33.5 billion and $35.4 billion, respectively. World export gains from the sector initiative (not including modality cuts) in electronics/electrical goods is $49.2 billion (table 1.2). The corresponding *GDP gains* are $31.7 billion, which is $10.9 billion more than the ITA goods sector initiative alone (tables 3.3 and 3.4). Bilateral trade and tariff relationships under the ITA-only and electronics/electrical goods sector initiatives are detailed in appendix D.

Environmental Goods

The Doha declarations call for "the reduction or, as appropriate, elimination of tariff and nontariff barriers to environmental goods and services." Tariffs on environmental goods will be reduced to some extent under

the price elasticity used here is –2.01, while the calculations for all NAMA products used an elasticity of –1.19. Much the same justification for a larger elasticity applies to ITA as to chemicals. Also, in the full NAMA calculations we assume tariff cut flexibilities are used on some ITA products; in the sector calculation we assume no flexibilities are used.

the NAMA formula cuts: Additional liberalization could arise from a *sui generis* sector initiative. To estimate this "additionality" we limit our assessment to the potential trade growth that would result from eliminating tariffs on environmental goods entering bilateral trade between the 22 countries in our study (the same countries used in the agriculture and NAMA analysis). While liberalization of nontariff barriers and services barriers to environmental trade—if pursued—would generate additional gains, we have focused our attention on the area where substantial progress seems most likely, namely merchandise trade.[16]

Liberalization in environmental goods is more than just a "feel-good" proposition. In 2007 total imports by the 22 countries of environmental goods were $135.6 billion or roughly 1.6 percent of all merchandise imports (table 3.5). For the United States, 1.7 percent of merchandise exports and imports are in the 45 tariff lines identified by the World Bank as environmental goods (table E.1 in appendix E).[17] Considering that the United States exported and imported products in roughly 5,000 tariff lines in 2007, the large amount of trade in the few environmental tariff lines is quite exceptional (UNCTAD TRAINS Database, 2009).

Negotiations on environmental goods have taken place at the tariff line level rather than the product level—i.e., for 6-digit codes rather than 8- or 10-digit codes. Under any given tariff line (6-digit codes) there could be scores of products (8- or 10-digit codes). The likely outcome in the environmental goods negotiations is that all products under an environmental tariff line will be accorded special treatment, whether or not all of them are "environment-friendly."[18] We follow this approach in our calculations.

In terms of product inclusion, a recent unofficial proposal by the Japanese delegation could drastically raise the stakes for the environmental goods negotiations. The proposal seeks to include environment-friendly automobiles (notably, hybrid cars) in the negotiations (METI 2009b). Details are sketchy at this point, but depending on what types of cars are included it could vastly increase the amount of trade covered by the negotiations. We do not include environment-friendly automobiles in our calculations.

16. Kirkpatrick (2006) reviewed the environmental services negotiations and found limited progress at that time. Little new ground has been broken since 2006.

17. In 2007 US exports of environmental goods (to the 21 partner countries) were $17 billion; US environmental goods imports from the world were $33.7 billion. All US merchandise exports (to the 21 partner countries) in 2007 were $935.1 billion; total US merchandise imports were $2,017.1 billion (table 3.5).

18. Tariffs are internationally consistent only at the HS 6-digit level; "overinclusiveness"—i.e., including all products under an environmental tariff line—has been adopted to avoid contentious disagreements over product definitions. The United States supports overinclusiveness in negotiating environmental goods (Howse and van Bork 2006).

Table 3.5 Impact of sector initiative in environmental goods (trade in billions of US dollars; tariffs in percent)

	Average applied tariff[b]			Current trade[c]			Increase after modality cuts[d]		
Country[a]	Initial	After modality cuts	After sector cuts	Exports to 21 partners	Imports from the world	Total	Exports to 21 partners	Imports from the world	Total
European Union	1.6	1.2	0	26.4	23.7	50.2	0.3	0.1	0.4
Japan	0.3	0.2	0	15.8	6.5	22.3	0.3	*	0.3
United States	1.2	0.8	0	17.0	33.7	50.7	0.1	0.3	0.4
Brazil	11.7	9.8	0	0.4	2.3	2.7	*	0.1	0.1
China	9.0	6.0	0	18.0	18.9	36.9	0.1	0.6	0.7
India	8.5	8.2	0	1.3	5.0	6.3	*	*	*
Other 16	4.0	3.3	0	26.3	45.4	71.7	0.2	0.4	0.6
All 22	3.3	2.5	0	105.2	135.6	240.8	1.0	1.5	2.4

	Increase after modality and sector cuts[d]			Impact of sector cuts alone		
Country[a]	Exports to 21 partners	Imports from the world	Total	Exports to 21 partners	Imports from the world	Total
European Union	1.7	0.4	2.1	1.4	0.3	1.8
Japan	1.2	*	1.2	0.9	*	0.9
United States	0.7	0.9	1.6	0.6	0.6	1.2
Brazil	*	0.5	0.5	*	0.5	0.5
China	0.9	2.3	3.1	0.7	1.7	2.4
India	0.1	0.8	0.9	0.1	0.8	0.9
Other 16	0.9	2.8	3.7	0.7	2.4	3.2
All 22	5.5	7.8	13.3	4.5	6.3	10.8

Memorandum: GDP impact of new environmental goods trade[e]

Country[a]	Billions of dollars	Percent
European Union	0.8	*
Japan	0.4	*
United States	0.6	*
Brazil	0.2	*
China	1.1	*
India	0.4	*
Other 16	1.5	*
All 22	5.0	*

Memorandum: Current total merchandise trade (billions of dollars)

Country[a]	Exports to 21 partners	Imports from the world	Total
European Union	1,049.2	1,954.0	3,003.2
Japan	628.0	622.2	1,250.2
United States	935.1	2,017.1	2,952.2
Brazil	135.5	120.6	256.2
China	1,097.6	956.0	2,053.6
India	104.4	218.6	323.1
Other 16	2,322.2	2,419.7	4,741.9
All 22	6,272.0	8,308.3	14,580.3

a. The 22 countries are Argentina, Australia, Brazil, Canada, China, Colombia, the European Union, India, Indonesia, Japan, Korea, Malaysia, Mexico, Norway, Pakistan, Philippines, South Africa, Switzerland, Taiwan, Thailand, Turkey, and the United States.
b. Listed tariff rates are the weighted average (weighted by bilateral imports) of the simple average of HS 6-digit applied tariffs on all traded environmental goods in each bilateral relationship.
c. Trade data from the following years and bilateral pairs are used: Norway - all countries (2008); Pakistan - all countries (2008); Thailand - all countries (2006); Indonesia - India, Malaysia, Mexico, Pakistan, Philippines, and Taiwan (2005); Indonesia - all other countries (2007); Mexico - Brazil, India, Indonesia, Malaysia, Pakistan, Philippines, and Taiwan (2006); Mexico - all other countries (2007); all other bilateral relationships (2007).
d. An import price elasticity of -2.10 is applied here for every tariff line and bilateral trade flow. This elasticity is the simple average of all environmental goods observations in Kee, Nicita, and Olarreaga (2004).
e. GDP impacts are calculated using the dollar ratio average from table A.2.

* indicates that the percentage of GDP or trade impact for these countries is positive but less than 0.05 percent or $0.05 billion.

Note: See table E.1 for product list. Calculations are made using all traded tariff lines listed in table E.1 at the HS 6-digit level.

Sources: UN Comtrade Database via World Integrated Trade Solution, 2009; UNCTAD TRAINS Database via World Integrated Trade Solution, 2009; Kee, Nicita, and Olarreaga (2004); authors' calculations.

Trade and GDP Gains

We first estimate the impact of NAMA modality tariff cuts. Swiss formulas with a coefficient of 20 for developing countries and 8 for developed countries are applied to the simple average of 2008 bound product-level tariffs at the tariff line level.[19] If the resulting new bound tariff is lower than the 2008 applied tariff, the consequence is a tariff reduction—i.e., new market access. To calculate the impact of the tariff cuts—tariff cuts being measured as applied tariffs before the modality reductions minus the applied tariffs after the reductions—we multiply the tariff cut expressed in percentage points by the same price elasticity of imports, namely –2.10, for every bilateral trade relationship.[20] One minus the resulting figure (expressed as a percent) is then multiplied by current trade to estimate new trade after the tariff cut.[21] Actual tariff cuts in environmental goods from the modality discussions are minimal. For example, for the United States as an exporter, EU tariffs on environmental goods imports drop from 2.5 to 1.8 percent as a result of modality cuts, and Chinese tariffs drop from 9.3 to 6.1 percent (table E.2). The modest tariff cuts produce modest *trade gains*; environmental goods exports among the sample countries and imports from the world will increase by only $1 billion and $1.5 billion, respectively, after the modality tariff cuts (table 3.5). The modality cuts will increase US exports (to the 21 other countries) by $0.1 billion and US imports (from the world) by $0.3 billion.[22]

Under a sector initiative in environmental goods, tariffs would drop to zero, and the gains from such an initiative would be much larger than the modality tariff cuts. We estimate the impact of complete tariff elimination on environmental goods for the 22 countries. The calculation procedure is identical to that for the modality tariff cuts, but with much larger tariff cuts. The result of a sector initiative, including the modality cuts, would be an additional $7.8 billion increase in environmental goods imports from

19. Under the Swiss formula, a coefficient of 20 means that the maximum permitted tariff, after the formula cut, is 20 percent. Likewise, a coefficient of 8 means that the maximum permitted tariff, after the formula cut, is 8 percent.

20. This elasticity is calculated as the simple average of all environmental goods observations in Kee, Nicita, and Olarreaga (2004). See table E.1 for a list of environmental goods.

21. For example, if imports of environmental goods totaled $100 in the presence of a 10 percent tariff, and then the tariff is removed, new trade would be: $100 * (1 – (10 * –2.10) /100) = $121.

22. The modality impacts described here do not correspond with the impacts for all NAMA products because of different elasticities and the use of tariff cut flexibilities. Specifically, the price elasticity used here is –2.10, while the calculations for all NAMA products used an elasticity of –1.19. Also, in the full NAMA calculations we assume that tariff cut flexibilities are used on some environmental products; in the sector calculation we assume no flexibilities are used.

the world (table 3.5). The increase in exports of environmental goods to the 22 countries could reach $5.5 billion from the modality and sector tariff cuts combined. A trade increase of this size would increase total world trade by roughly one-tenth of 1 percent (0.1 percent). Together, the sector and modality tariff cuts would increase US exports (to the 21 other countries) by $0.7 billion and US imports (from the world) by $0.9 billion; these figures amount to a 4.1 and 2.7 percent increase in exports and imports, respectively, above current levels of US environmental goods trade.

Trade gains associated with free trade in environmental goods (not including the modality cuts) would yield world exports of $5.9 billion (table 1.2) and *GDP gains* of $5.0 billion for the group of 22 countries (table 3.5). Bilateral trade and tariff relationships are detailed in appendix E.

Trade Facilitation

Trade facilitation has become one of the more successful subjects of negotiation in the Round. To date, WTO members have put forward over 70 new proposals dealing with trade facilitation (see table F.1 in appendix F). A representative from the Global Express Association—an organization representing private express delivery companies (notably, DHL, FedEx, and UPS)—partially attributes this success to "a growing recognition on the part of developing countries that Trade Facilitation is not a zero sum proposition" (Simpson 2009). Negotiations have been so positive that some WTO members—including the European Union—have expressed interest in a separate plurilateral agreement on trade facilitation, if the Doha Round ultimately fails (Simpson 2009).

Trade facilitation negotiations have a narrow scope. Only three GATT articles are affected: Article V on Freedom of Transit, which calls for goods to transit via the most convenient routes, and for reasonable transit charges, with no distinction between the vessels or contracting parties involved; Article VIII on Fees and Formalities connected with Importation and Exportation, which limits border fees and charges as well as penalties for minor breaches of customs regulations or procedural requirements; and Article X on Publication and Administration of Trade Regulations, which requires transparent trade regulations and prompt publication of laws, regulations, judicial decisions, and administrative rulings affecting imports and exports.[23] These articles, especially Article VIII, cover a wide range of topics that may constrict trade but are not tariffs, quotas, or other formal barriers. Proposals for reform range from the use of international standards on customs documents, to limits on import and export fees, to the online publication of customs procedures and policies (table F.1).

23. World Trade Organization, "WTO Analytical Index: Guide to WTO Law and Practice—General Agreement on Tariffs and Trade 1994," available at www.wto.org.

Most consumers in the developed world regard trade facilitation and customs procedures as third-tier issues. But even in the United States, which has some of the best practices in the world according to a recent World Bank study, trade facilitation costs can be significant. The cost of exporting a standard cargo container from the United States, with contents valued at $20,000, is about $990, almost 5 percent of the average shipment value. The cost of importing a standard container into the United States is higher, around $1,245, about 6 percent of the average shipment value (World Bank 2009). These costs are official charges (not including any bribes) incurred from completing all necessary documents, plus inland transportation (usually waterways), customs clearance and inspection, and port handling. The additional 5 to 6 percent ad valorem costs exceed the average ad valorem tariffs that US exports and imports face, but they tell only half the trade facilitation story. US exports face an additional cost when they arrive in the destination country, and US imports face costs in the originating country. While additional trade costs can never go to zero—even the top performing country, Singapore, adds costs of $456 and $439, respectively, to each container exported and imported—the possible gains from improved trade facilitation are clearly large (World Bank 2009).

A number of studies take on the heroic task of estimating the potential gains for trade in manufactured goods from improved trade facilitation. Among them, OECD (2003b) evaluates direct and indirect total trade costs to measure the effects of trade facilitation. Using a computable general equilibrium (CGE) model, the paper uses an "iceberg" representation: The longer goods are in transit, the larger the fraction of value that "melts away." Taking the analysis a step further, the OECD differentiated between sectors and traders: Agrifood products face a faster decay time (thus a higher total trade cost) when in transit compared with nonfood merchandise; small and medium-sized enterprises often face higher trade costs because of infrequent transactions and handicaps in taking advantage of "simplified procedures" that are available to bigger enterprises. Iwanow and Kirkpatrick (2009) estimated the impact of trade facilitation in sub-Saharan Africa, using a gravity model that is fitted with policy variables. Decreux and Fontagné (2009) measured trade facilitation as time to import and time to export. While these papers have been very useful in promoting trade facilitation as a worthwhile topic on the negotiating agenda, we found Wilson, Mann, and Otsuki (2005) to be best suited for estimating potential gains, largely because these authors expressed their results in a manner that maps directly onto the trade facilitation agenda of the Doha Round. (We compare this study with OECD 2003b in appendix F.)

Wilson, Mann, and Otsuki (2005) used a gravity model to estimate trade facilitation gains among a group of 75 countries. They examined the impact of a modestly optimistic scenario for improved trade facilitation: In their scenario, any country whose trade facilitation policies fall below

the global average in one of four areas would (following successful negotiations) be brought up halfway to the global average in that area.[24] The four trade facilitation areas covered by Wilson, Mann, and Otsuki (2005) are port efficiency, customs environment, own regulatory environment, and service-sector infrastructure (effective use of information technology). They argue that port efficiency, which is measured by the efficiency of airport and seaport facilities and inland waterways, is related to GATT Article V; customs environment, measured by hidden import barriers and bribery, is relevant to GATT Article VIII; regulatory environment, measured by transparency of government policies and corruption control, is relevant to GATT Article X; and services infrastructure, which is measured by the efficacy of internet access, is related broadly to trade in services within the trade facilitation agenda.

The simulation results of Wilson, Mann, and Otsuki (2005) are shown in table F.2 of appendix F. Their estimates of increased trade due to improvements in trade facilitation are very large for some regions. For example, exports might rise as much as 40 percent for South Asia. As a starting point, we attribute these estimated trade effects to all countries that belong to the region and are in our sample. By this approach, we are explicitly assuming that the sample country in question and all its trading partners undertake the specified magnitude of reforms—and lift themselves halfway to the global average (if the starting point was below the global average).

However, in this exercise we omit port efficiency and service infrastructure from our trade facilitation calculations, for two reasons. First, since our study is concerned with the Doha Round negotiations, we have decided to limit our trade facilitation measure to topics that fall squarely within the cited GATT Articles. This approach eliminates reforms to services infrastructure used by ports.[25] Second, port efficiency may be partly or largely covered by our calculations (previously surveyed) for the services sector. We did not want to double-count or blur the boundary between broad services reforms and trade facilitation; accordingly, port efficiency was excluded from the present calculations.[26]

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24. For example, if the global average were an index score of 50 and a country had a score of 20, that country would be brought up to a score of 35 for the purpose of the simulation.

25. Improved services infrastructure could raise imports from the world by the 22 countries by $196.8 billion, mostly additional imports by the United States, the European Union, and China. Exports from the group of 22 countries could rise by $118.1 billion (table F.4). These are very large sums. However, the trade facilitation negotiations do not appear to cover services infrastructure; reforms in services for handling cargo will be addressed, if at all, in the services negotiations.

26. Port efficiency reforms could boost imports from the world by the 22 countries by $133 billion and increase exports of the 22 countries by $79.1 billion (table F.4).

Trade and GDP Gains

Table F.3 in appendix F shows our calculations of potential *trade gains* for the 22 countries in our sample. To be complete, we show both a "broad definition"—covering everything in the Wilson, Mann, and Otsuki analysis—and a "narrow definition," omitting reforms to services infrastructure used by ports and port efficiency (table F.4). With successful coverage of trade facilitation, imports from the world would increase by $138.5 billion using the "narrow definition" and $468.2 billion using the "broad definition." Exports to the group of 22 countries would rise by $86.8 billion using the "narrow definition" and $284 billion using the "broad definition." The positive *GDP gains* for the 22 countries are $103.6 billion for the "narrow definition," amounting to a 0.2 percent increase. This translates into a global total of $117.8 billion in *GDP gains*. The "broad definition" estimates an increase of $346 billion of *GDP gains*, a 0.7 percent increase, which in turn is a global total of $393.2 billion.

Clearly, trade facilitation is big stuff. But even the narrow definition numbers should be taken with a tablespoon of salt, since the underlying data and scenarios are more speculative than calculations in other sections of this study. Even if the trade facilitation negotiations are highly successful, full implementation will take many years. However, the broad thrust should not be dismissed. Trade facilitation is key to boosting global commerce, and gains would be very large, especially for developing countries.